

UPDATED Edition
Includes new data,
three efficacy reports, and
18 additional case studies!



MAKING THE GRADE, V.4.1

More!

How to Improve Your MyMathLab Implementation through Personalization + Best Practices

BY MICHELLE D. SPECKLER • JANUARY 2011

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Making the Grade, V.4.1: More! How to Improve Your MyMathLab Implementation through Personalization and Best Practices

By Michelle D. Speckler
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From the Editor

Welcome to the revised and expanded Making the Grade, Version 4.1, our most comprehensive report yet, in both size and scope. This year's report includes case studies from the entire MyMathLab suite of products and dives more deeply into some of the many successful two-year, four-year, and private-sector school implementations and redesigns in the U.S. and Canada. On the following pages we take you behind each campus's student success data. We provide actionable blueprints for replicating the schools' successes and share the impact that those strategic redesigns are having on today's students.

According to Alexander Astin, founding director of the Cooperative Institutional Research Program, students decide during the first six weeks of college whether or not they are academically viable. Because it's the first course most freshmen encounter, math—from developmental to college level—has the power to significantly influence students' likelihood of graduation. The addition of MyMathLab products—through the use of which almost all students are successful—enables students to master both mathematical concepts and the direct connection between effort and results during this critical learning stage. “[With MyMathLab] Basic Math students draw from firsthand experience the conclusions that math ability is not something one is either born with or not and that, with practice, they can become competent in math,” says Mary Raddock, Ed.D., professor at Norwalk Community College.

The case studies in this report have four major traits in common.

1. They have fully integrated the required, for-credit use of a MyMathLab product into their courses and have tracked and documented positive student pass rates and retention rates. Often, the faculty were also able to reduce costs, thereby creating a correlation between the integration of information technology into the curriculum and increased gains for students, faculty, and the institution.

2. They have made sound pedagogy and proven best practices the focus, and technology the enabler, of improved student learning and overall success. “Our program is not about technology,” says Phoebe Rouse, precalculus mathematics director at Louisiana State University. “It’s

about solving human problems—listening to student needs and responding in the most effective way possible.”

3. They have leveraged the interactive nature of information technology for greater student engagement with content and with one another. Perhaps best expressed in the seminal article “Seven Principles for Good Practice in Undergraduate Education” (Chickering and Gamson, 1987), facilitating immediate feedback, encouraging active learning, respecting diverse learning styles, and promoting increased contact between students and faculty are some of the key indicators for improved teaching and learning.

4. They reflect a collective, long-term commitment by faculty to participating as a team. In each case, faculty have assessed the greater structures and systems of the teaching and learning process and have embraced departmentally, if not institutionally, a common set of core values.

More than ever before, we're seeing dramatic results from those schools taking the product to the next level by requiring its use to increase time on task and leveraging its flexible learning platform to work in more fine-tuned and specific environments: modularized, mastery learning, and review or refresher courses, among them. Instructors using MyMathLab in these redesigned environments have experienced changes—specifically among students in remedial and prerequisite math courses—that have impact beyond individual grades. They ensure that those students who previously constituted the largest percentage of drop/fail/withdrawals not only stay in school but also graduate having mastered concepts that mean they, too, have a shot at personal and economic success in a knowledge economy.

The campuses included in this report represent but a fraction of our growing community. By publishing these proven best practices from the field, we aim to inspire innovation, cultivate a culture of sharing, and help students both effectively prepare for college and succeed once they get there.

Making the Grade, Version 5, is scheduled for release in summer 2011. To ensure your institution's successes are included in our next collection, contact your local sales representative and send your measurable results to Karen Mullane, vice president and director of faculty programs, at Karen.Mullane@pearson.com.

Product Used MyMathLab
Course Name Intermediate Algebra
Credit Hours Three



KEY TAKE-AWAY

MyMathLab's multimedia features enable students to access help before they fall behind. ITCC's use of the program promotes perseverance, supplements class content in a variety of learning styles, and facilitates communication with the instructor outside of class time.

Textbook in Use

Intermediate Algebra, 5e, John Tobey, Jeffrey Slater

Course Implementation

Course Design

Intermediate Algebra is offered on-site and at extension sites. Classes meet once or twice a week, face-to-face, for a total of three hours a week. In fall 2007, Ivy Tech's mathematics department adopted MyMathLab for use by all intermediate algebra courses.

Assessments

Homework 10 percent
 Quizzes 10 percent
 Tests (three) 20 percent each (*in class, paper and pencil*)
 Final exam 20 percent (*in class, paper and pencil*)

Students take review exams prior to each of the four exams, through which they can earn an additional 5 percent.

Use of MyMathLab

MyMathLab is used in every intermediate algebra course to assign and complete required homework and to create and complete chapter quizzes. Students have two weeks to complete weekly homework assignments. They are afforded unlimited attempts until the due date to earn 100 percent. Quizzes are timed (20 minutes), and students are afforded attempts to successfully complete them.

Use of MyMathLab contributes 20 percent to a student's final course grade.

Results and Data

Prior to adoption of MyMathLab, math was viewed as a "hard" subject, and retention in some classes was as low as 50 percent. Students had no means to receive help in context, and frustration levels—and dropout rates—were high.

Data collected from fall 2007, the first semester in which MyMathLab was implemented, through fall 2009 illustrates both consistent and significant improvements in student success and retention.

	Percentage of As	Percentage of Bs	Percentage of Cs	Percentage of Ds	Percentage of Fs	Percentage of F Students Who Did Not Take Final	Retention Rate
Fall 2009	12.6%	19.0%	28.3%	24.6%	15.4%	62.0%	90.5%
Spring 2009	15.7%	22.2%	25.2%	20.0%	16.9%	63.6%	89.2%
Fall 2008	14.0%	19.5%	24.1%	16.9%	25.3%	64.8%	83.6%
Spring 2008	14.0%	18.5%	21.3%	18.5%	27.6%	68.5%	81.1%
Fall 2007	18.0%	21.6%	19.9%	13.0%	27.4%	70.8%	80.6%

Table 1. Intermediate Algebra Final Grades and Retention Rates from Initial MyMathLab Adoption in Fall 2007 through Fall 2009

Use of MyMathLab keeps my students involved in the class. My retention rates have increased significantly.

*—Abdalla Hazaimah, Ph.D., Chair, Math and Physical Science
Ivy Tech Community College*

Of particular note are the following statistics:

- The percentage of students earning Cs has increased by 42 percent.
- The percentage of students failing the course has decreased by 44 percent.
- The retention rate has increased by 12.5 percent.

The Student Experience

Use of MyMathLab promotes student engagement, and most important, perseverance. According to Abdalla Hazaimah, chair, math and physical science, his students are both more involved in the class and more prepared—thanks to the increased time on task they experience by completing required homework—and therefore are less likely to drop out.

Hazaimah also points to MyMathLab’s interactive nature and multimedia features as vital contributors to his students’ increased success.

- MyMathLab’s Ask My Instructor feature enables students to receive help before they reach a level of frustration and stop attending class. It promotes communication between instructor and student that is unencumbered by the embarrassment or intimidation many students feel in the classroom.

- Help Me Solve This—together with MyMathLab’s wealth of online videos, tutorials, and other practice aids—supplement what students hear in lecture with the type of assistance that suits their learning styles. Students who must miss a class are able to watch video clips of the content, whereas in the past, those students would likely fall behind and ultimately give up.
- Using the tracking and reporting features found in MyMathLab’s Gradebook, Hazaimah tracks his students’ progress. He can see what concepts they are struggling with, and he can intervene long before the concepts show up—and potentially penalize the student—on an exam.

Conclusions

The significant student success rates experienced in Intermediate Algebra have promoted the implementation of MyMathLab in all but one Ivy Tech mathematics course. As an enthusiastic advocate for technology in learning, Hazaimah is thrilled with the difference it has made. “When I first came on board in 2007, we didn’t have any math majors,” he says. “Today we have 15.”

The inclusion of math majors is just one of many signs that the department’s culture is changing. “The lines of communication between students and instructors are more comfortable and open now,” says Hazaimah. “And instructors are experiencing firsthand how technology can not only increase their students’ success, but also makes teaching itself more interesting and more fun.”

Hazaimah looks forward to next semester, when he will replace Intermediate Algebra with a new MyMathLab-enabled course, Concepts in Mathematics. “The course includes critical thinking, theory, and financial concepts that satisfy the needs of a broader range of majors,” he says. “I also hope to collect a wider range of data not just from my campus but also from Ivy Tech campuses around the state.”

The success he’s experienced in just three years encourages Hazaimah to continue delving further into the program. “It’s better than anything else I have seen in my 16 years of teaching,” he says. “I really enjoy it.”

*Submitted by Abdalla Hazaimah, Ph.D., Chair, Math and Physical Science
Ivy Tech Community College*

Product Used MyMathLab
Course Name Beginning Algebra
Credit Hours Four



KEY TAKE-AWAY

MyMathLab's intuitive interface and ease of use mean a fast learning curve for both traditional and nontraditional students. Because RCCD's course lives online, enrollment caps can be lifted without stretching resources, thereby saving money and serving more students.

Textbook in Use

Introductory Algebra, 10e, Marvin L. Bittinger

Course Implementation

Course Design

The lab-enabled Beginning Algebra course meets two days a week for two hours each day. The first hour comprises classroom lecture; the second hour takes place in a Math Learning Center (computer lab), where students work on MyMathLab assignments. Students may receive extra help at optional weekly study group sessions in the Math Learning Center.

times; they may take quizzes after class up until midnight that night on their own or in advance of class time. Most instructors encourage students to work together and ask questions during quizzes.

Assessments

10 percent Homework
Students complete required weekly homework assignments on their own time at home or in the Math Learning Center. They may redo missed questions as many times as they choose.

45 percent

Tests
Students take four proctored tests each semester. Tests are scheduled over a week-long period and are taken via MyMathLab in the Math Learning Center.

10 percent Lab assignments
Students have required weekly lab assignments.

20 percent

Final exam
The final exam is a paper-and-pencil exam.

15 percent Quizzes
Students complete a weekly quiz by using MyMathLab. Quizzes are taken during lab time with the instructor. As quizzes are designed largely to reinforce practice, students may retake quizzes up to three

Use of MyMathLab

Homework, lab assignments, quizzes, and tests are created and completed using MyMathLab. In addition, the coordinator course function is employed to ensure standardization across sections. Because all assignments, lectures, and test schedules are the same, the department can compare and assess results; and can easily and effectively implement department-wide changes.

Use of MyMathLab contributes 80 percent to a student's final course grade.

Results and Data

Pamela Whelchel, associate professor of mathematics and cocoordinator of the Math Learning Center at Riverside Community College District (RCCD) has compared final exam scores across the course formats offered at the college. (See Figure 1.)

A brief explanation of the course categories in figure 1: Hybrid courses meet for two hours a week for lecture, and students use MyMathLab to complete assignments on their own time. Lab-enabled courses meet for two hours a week for lecture and two hours a week in the Math Learning

In math, the key to success is practice. Traditionally delivered courses don't offer the amount of practice students need; MyMathLab does—and then some. I've tried lots of other programs. MyMathLab is superior to them all.

—Pamela Whelchel, Associate Professor of Mathematics and Cocomordinator of the Math Learning Center
Riverside Community College

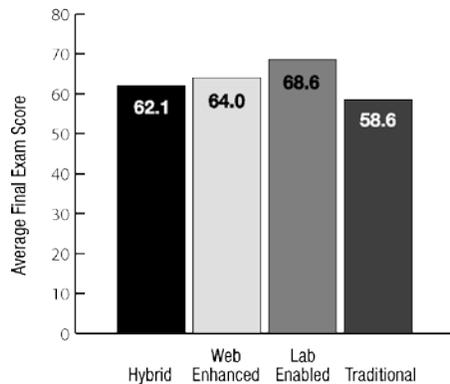


Figure 1. Comparison of Fall 2009 Average Final Exam Scores by Course Format

Center; students use MyMathLab to complete assignments. Web-enhanced courses are generally smaller than lab-enabled courses and have a similar format but are more flexible in their delivery in that they meet for lecture and/or computer work and use MyMathLab to complete some or all assignments. Traditional courses do not use MyMathLab at all.

Whelchel's data shows that students in the lab-enabled courses earn higher average final exam scores on the department's common final than do students in any of the other Beginning Algebra course formats. Whelchel also reports an ability to successfully serve more students in the lab-enabled course than in the other Beginning Algebra course formats.

The Student Experience

Both Whelchel and her students appreciate the increased opportunities for communication and collaboration in the lab-enabled formats. "There is definitely more interaction in the computer lab," says Whelchel. "Students then take the communication further with MyMathLab's Ask My Instructor feature."

As a community college, RCCD receives both traditional and nontraditional students. Students are from all along the continuum of knowledge and skill sets. MyMathLab appeals to them all.

- "MyMathLab is awesome. I am slowly overcoming my math phobia. The book at our fingertips is truly convenient."

- "At 45 years of age, I have overcome my anxiety around math with the help of MyMathLab. I can continue my education and achieve my goals. I encourage others who have given up their dream of a bachelor's degree because they couldn't get through the math to try again using MyMathLab."
- "I like that when doing homework assignments, if you don't understand the question, you can see how a similar problem is worked out. That's helpful."
- "I enjoy MyMathLab. I'm able to take my time and learn according to *my* ability rather than someone else's."

Conclusions

Final exam scores and final course grades indicate that students are learning more in the MyMathLab + lab-enabled course format. "Students in the lab-enabled format get more practice than the other students do," says Whelchel. "They no longer copy written assignments from their peers, and are more prepared for exams."

The lab-enabled courses benefit the college, too. "Instead of a traditional cap of 45 students, these courses have a cap

of 60 students," says Whelchel. "For every three courses taught in this format, the college saves one full class cost."

Future plans include offering more sections using MyMathLab and the lab-enabled format.

*Submitted by Pamela Whelchel, associate professor of mathematics and cocomordinator of the Math Learning Center
Riverside Community College District*

Product Used MathXL
Course Names Introduction to Algebra, Math Analysis I
Credit Hours Three



KEY TAKE-AWAY

MyMathLab's proven best practices—including increased time on task, immediate feedback, and multimedia resources—helped Blinn students improve their study habits and helped the college increase its pass rates by more than 16 percent.

Textbooks in Use

Elementary Algebra, 2e, Tom Carson, Ellyn Gillespie, Bill E. Jordan
Finite Mathematics and Calculus with Applications, 8e, Margaret L. Lial, Raymond N. Greenwell, Nathan P. Ritchey

Course Implementation

Course Design

Fall 2006, Blinn College's faculty in the mathematics division selected one course offering and offered students homework using MathXL. Ron Hammond, division chair, was impressed with the increased pass rates that resulted—so much so that he decided to adopt online courseware and make it mandatory for every course in the division. After exploring other products, in Spring 2007 the division selected MathXL. Simultaneous to MathXL's adoption, the college was beginning its Southern Association of Colleges and Schools–mandated Quality Enhancement Plan (QEP). A hallmark of the Blinn plan was the addition of enhanced academic support for high-risk courses. The mathematics division designated MathXL as the tool for delivering that extra support and committed to track data based on homework completion rates.

Introduction to Algebra students attend three hours a week of lecture and complete homework and quizzes outside the classroom by using MathXL.

Math Analysis I students, too, attend three hours a week of lecture and use MathXL to complete homework outside the classroom.

Assessments

Instructors' curricula and assessment values vary, but for all classes, homework is completed in MathXL.

Use of MathXL

MathXL is used by all instructors for homework. Many also use MathXL for quizzes, and some for tests. Students are encouraged to use the eBooks, video tutorials, and other teaching and learning resources provided on the school's custom Web portal. In addition, the Coordinator Course feature is used to ensure consistent course quality across all sections and all instructors.

Use of MathXL contributes 10 to 15 percent to each student's final course grade.

Results and Data

Table 1 and figure 1 illustrate semester pass rates (a grade of A, B, or C) for all sections of Introduction to Algebra and Math Analysis I from fall 2005 through spring 2010. Data indicates that pass rates in both courses significantly increased after implementation of MathXL in fall 2007.

- The average combined pass rate for Introduction to Algebra increased 16.1 percent.
- The average combined pass rate for Math Analysis I increased 16.2 percent.

Although subsequent success data was not tracked, the division-wide increase in pass rates indicated by figure 2 is nonetheless noteworthy. Figure 2 shows that the combined average pass rate for all courses in the division increased 8.9 percent.

As a result of the positive impact of MathXL on student success, Math Analysis I, which was at one time labeled “high risk” in the school's QEP, is no longer so labeled.

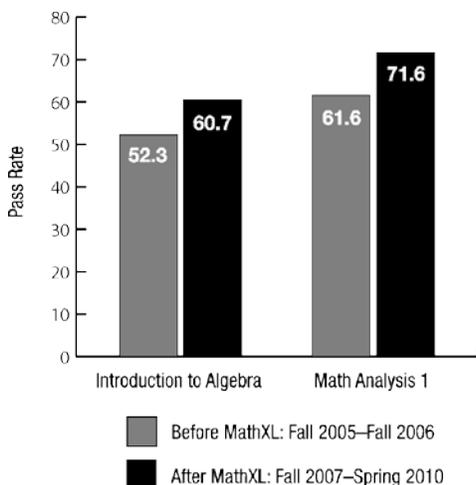


Figure 1. Comparison of Combined Average Pass Rates in Introduction to Algebra and Math Analysis I with and without the Use of MathXL, Fall 2005–Spring 2010 ($n=47,505$)

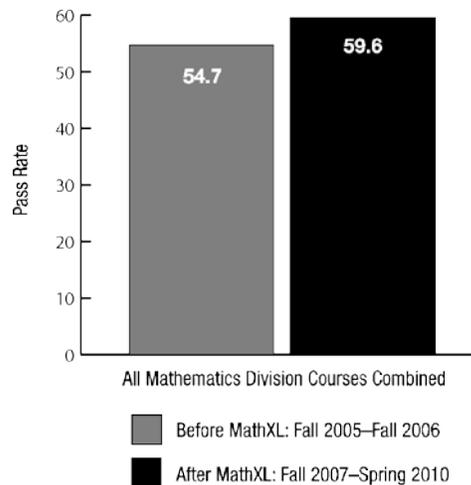


Figure 2. Comparison of Combined Average Pass Rates in All Mathematics Division Courses before and after MathXL Adoption, Fall 2005–Spring 2010 ($n=47,505$)

	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Spring 2009	Fall 2009	Spring 2010
Introduction to Algebra	52.6	45.1	57.4	53.9	50.5	58.8	65.7	59.3	68.7	61.1
Math Analysis I	61.8	61.2	61.7	61.6	68.4	71.4	68.8	73.8	70.3	75.5

Table 1. Comparison of Pass Rates before and after MathXL Adoption, Fall 2005–Spring 2010 ($n=47,505$)

Note: Pass rates are averages of all course sections and are weighted according to class size.

The Student Experience

According to Hammond, most Blinn College students prefer the MathXL homework system over the traditional paper homework that may or may not have been graded for correctness. Hammond attributes their preference—and increased success—to the added support provided by MathXL: more homework, immediate feedback, and mul-

timedia options. “Students work on problems until they get them right,” he says. “They get more practice and are more likely to master a concept before moving on to the next. That translates into better grades, but more important, it teaches students more-effective study habits that help them throughout their academic careers.”

Conclusions

MathXL works not only for Hammond’s students; it works also for him and for the school. “As an instructor, it enables me to be more effective; I now assign more homework and low-stakes quizzing and as a result, have seen increased pass rates,” he says. “In addition, it helped standardize math sections and formed the backbone of our QEP.”

Being able to leverage the data obtained through MathXL also created needed buy in from reluctant faculty. “Their

comfort levels have increased over time,” says Hammond. “Plus they’ve had the opportunity to experience the pedagogical benefits of the program—including increased time for hands-on teaching, reduced worry about cheating, and increased quality control over class content and objectives.”

*Submitted by Ron Hammond, Division Chair
Blinn College, Bryan Campus*

Product Used MyMathLab

Course Names Prealgebra, Beginning, Introductory, and Intermediate Algebra

Credit Hours Three



KEY TAKE-AWAY

By upgrading its use of MyMathLab homework from optional to required, adding MyMathLab quizzes, and implementing common exams, Brookhaven College significantly increased its Intermediate Algebra pass rates and decreased its DFW rates.

Textbook in Use

Beginning and Intermediate Algebra, 4e, Margaret L. Lial, John Hornsby, Terry McGinnis

Course Implementation

Course Design

Prior to spring 2010, MyMathLab was offered only as an optional homework supplement and for no credit. After a successful pilot in fall 2009, more-comprehensive use of MyMathLab was incorporated into all developmental math courses (except Basic Math) and its use is now required for both homework and quizzes. In addition, Coordinator Courses are created and each instructor is given a member course that includes homework assignments, quizzes, unit/test reviews, and a review of the final exam. Course assignments are standardized throughout the department to promote content alignment, minimize course drift, and facilitate relevant data comparisons and analyses.

computers on campus. Students have one attempt and may not use any of the program's learning aids.

60 percent

Tests
Proctored, instructor created, pencil and paper

20 percent

Departmental final exam
Proctored, pencil and paper

Tutors are available in the school's math lab to help students complete MyMathLab homework assignments.

Use of MyMathLab

Students use MyMathLab to complete homework assignments, unit/test reviews, and quizzes. They use the eBook and may use all available learning aids during completion of homework assignments.

Instructors pull most homework questions from the program's bank of problems and are encouraged to use the item analysis feature to create problems that can be used for in-class reviews or warm-up exercises. The coordinator course is employed throughout the department.

Use of MyMathLab contributes 20 percent to a student's final course grade.

Assessments

10 percent MyMathLab homework
Completed at home or using any of the computers on campus. Soft deadlines are set, and students are encouraged to use the learning aids to complete homework assignments the class period following lecture. Assignments remain open until the corresponding test deadline.

10 percent MyMathLab quizzes
Completed at home or by using any of the

Results and Data

In a comparison of spring 2009 and spring 2010 student success rates, Sharon Jackson, professor, found that Intermediate Algebra courses that required use of MyMathLab in the new format experienced both significantly increased pass rates and decreased drop/fail/withdrawal (DFW)

rates. Further, an examination of all of the developmental math courses using MyMathLab showed a strong correlation between successful completion of MyMathLab homework and a final course grade of A, B, or C.

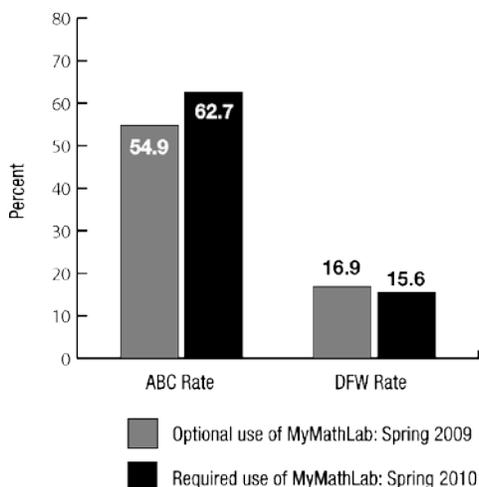


Figure 1. Comparison of Intermediate Algebra ABC and DFW Rates before and after Required Use of MyMathLab, Spring 2009 and Spring 2010 (*n*=1,147)

Figure 1 shows that intermediate algebra courses, which required use of MyMathLab, had a combined average ABC

Prealgebra	Introductory Algebra	Beginning Algebra	Intermediate Algebra
86.1%	81.1%	81.7%	88.9%

Table 1. Pass Rates by Course of Developmental Math Students, who Earned at least 70 Percent on MyMathLab Homework

rate 14.2 percent higher than those courses that did not require use of MyMathLab. Similarly, intermediate algebra courses, which required use of MyMathLab showed a decrease of 7.7 percent in the combined average DFW.

Table 1 indicates that for Prealgebra, Introductory Algebra, Beginning Algebra, and Intermediate Algebra there is a positive correlation between earning a homework score of at least 70 percent and completing the course with a final grade of A, B, or C. Conversely, instructors report that students who have trouble completing homework and other assignments generally didn't complete the course successfully.

The Student Experience

Via the requirement that students complete homework by using MyMathLab, their time on task is increased, their understanding of the material is greater, and their accountability for their own learning is more apparent. One indication of this is how students ask questions. Jackson reports that instead of saying, "I don't understand how to do it," students now ask specific step-by-step questions.

An end-of-semester student survey overwhelmingly reinforced that the positive changes instructors observed were also recognized by their students.

- 78 percent agreed or strongly agreed that MyMathLab helped them understand the subject matter better.
- 75 percent agreed or strongly agreed that MyMathLab helped them prepare for tests.

- 82 percent agreed or strongly agreed that the resources available in MyMathLab encouraged them to stay in the course.

Students said the following.

- "I am a college graduate returning to school 32 years after receiving a bachelor's degree. MyMathLab was enormously helpful. When I had difficulties grasping a concept, I worked multiple homework questions using the Help Me Solve This feature until I got it. It was essential to my successful completion of this course."
- "MyMathLab is an excellent program. It provided all the resources I needed to succeed."
- "MyMathLab has been so helpful: it encouraged me, and I've seen improvement as a result. I have no doubt it will help me on my final score."

Conclusions

Data indicates unequivocally that requiring MyMathLab for homework and quizzes significantly improves student pass rates and decreases DFW rates. Students spend more time in hands-on practice and as a result, gain the confidence to persist in class and achieve higher scores. And because the courses are now standardized throughout the

department, results can be compared and analyzed, and any necessary adjustments quickly and easily implemented.

*Submitted by Sharon Jackson, Professor
Brookhaven College*

Product Used MyMathLab
Course Name Prealgebra
Credit Hours Four



KEY TAKE-AWAY

By combining a highly motivating student contract with MyMathLab's immediate feedback and interactive features, Woodbury increased his students' time on task. As a result, he increased the retention rate in his Prealgebra course by 8 percent and the ABC rate by 74 percent.

Textbook in Use

Prealgebra, 4e, Jamie Blair, John Tobey

Course Implementation

Course Design

Instructor George Woodbury has been using MyMathLab to supplement his traditional classes since 2000. Classes meet for four hours of lecture a week and use MyMathLab outside of class to complete homework and take quizzes.

In summer 2010, as an experiment to further boost student success rates in his Prealgebra course, Woodbury added a student contract to the course curriculum. For each of the first three weeks, if a student met the following criteria, Woodbury added 10 points to the student's test score:

- Zero absences
- A score of 100 percent on all MyMathLab homework assignments
- Completion of all written textbook homework assignments
- A score of at least 80 percent on every MyMathLab quiz

Assessments

10 percent	MyMathLab homework <i>Completed from any location. Students without Internet access at home used the school's Learning Center. Students had three assignments per day, due at the start of class the next morning.</i>
20 percent	MyMathLab quizzes <i>One quiz per chapter, not proctored, due before the weekly exam, with unlimited attempts to score 100.</i>

50 percent

Tests

A pencil-and-paper test covering one to three chapters and given on each of the first three Fridays of the course.

20 percent

Final exam

A standardized, departmental exam comprising 50 free-response questions, graded via a four-point rubric.

Use of MyMathLab

Woodbury builds homework assignments and quizzes using MyMathLab's bank of problems. He uses the Search/E-mail by Criteria and Item Analysis functions in the MyMathLab Gradebook to keep tabs on students and to determine which students are struggling and with what topics. Woodbury also makes "heavy use" of the Home Page Manager to send students updates and summaries of sections covered in class. "I love using the Home Page Manager," he says. "It enables me to both e-mail announcements and post them on the MyMathLab site."

Students use the Dashboard to keep track of their grades as well as upcoming deadlines. They also take advantage of section videos, Pass the Test videos, and PowerPoint presentations.

Use of MyMathLab contributes 30 percent to each student's final course grade.

I have never had results in Prealgebra that were as strong as those from these students. They reported to me that the student contracts motivated them to do the necessary work and that MyMathLab really helped them to learn the material.”

—George Woodbury, Instructor
College of the Sequoias

Results and Data

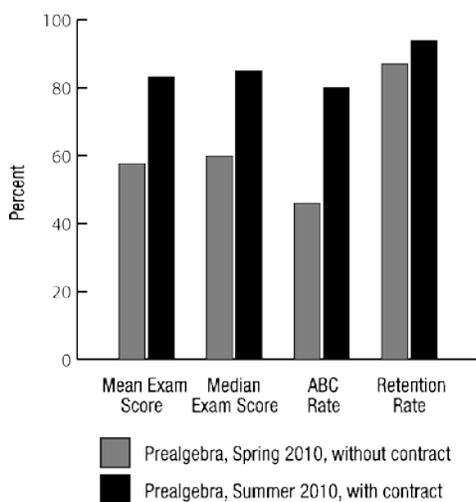


Figure 1. Comparison of Student Success in Prealgebra with and without Woodbury's Contract+MyMathLab Approach

Figure 1 compares mean and median final exam scores, ABC rates, and retention rates between Woodbury's spring 2010 Prealgebra students, whose course did not include the extra credit contract, and his summer 2010 Prealgebra students. The summer course was for four weeks and the spring course was for 17 weeks. Both classes used the same departmental final exam.

Students who completed Prealgebra with the contract far outperformed those students who completed the course without the contract.

- The summer mean exam score was 44 percent higher than the spring score: 83.3 percent compared with 57.5 percent.
- The summer median exam score was 42 percent higher than the spring score: 85 percent compared with 60 percent.
- The summer ABC rate was 74 percent higher than the spring rate: 80 percent compared with 46 percent.
- The summer retention rate was 8 percent higher than the spring rate: 94 percent compared with 87 percent.

The Student Experience

Woodbury attributes the significantly higher gains by the summer 2010 students both to the contracts and to use of MyMathLab. “Using the contracts in conjunction with MyMathLab motivated students to persist through difficult problems,” he says. “As they began to connect success with their work in MyMathLab, their self-confidence increased.

In turn, they practiced more and were able to better learn the material in a condensed, four-week session.”

Students' comments indicate that they aren't sure they could have been as successful without the contractual structure and the MyMathLab courseware.

Conclusions

Woodbury has never before had Prealgebra results that were as strong as his summer 2010 results. “The next time I teach this course,” he says, “I will definitely use the contract/MyMathLab approach, including short-term

deadlines and rewards for performance benchmarks on MyMathLab homework and quizzes, as well as attendance.”

Submitted by George Woodbury, Instructor
College of the Sequoias

Product Used MyStatLab
Course Name Introduction to Statistics
Credit Hours Three



KEY TAKE-AWAY

MyStatLab's easy-to-use interface meant FRCC students were willing to complete more and more difficult assignments and enabled the addition of quizzes to the curriculum. Even with the increased workload and rigor, students outperformed those without the product.

Textbook in Use

Fundamentals of Statistics, 2e, Michael Sullivan

Course Implementation

Course Design

In fall 2007 Sandra Williams adopted MyMathLab in her College Algebra course. Its ease of use and its efficacy convinced her to try MyStatLab in her spring 2008 Introduction to Statistics course. She was so convinced, she traded the college's standard statistics textbook for a Pearson title—solely so she could use MyStatLab.

Introduction to Statistics is an online course. At the beginning of the semester, students receive a course syllabus. They are required to read the course material and complete assignments in MyStatLab according to the deadlines in the syllabus. The instructor answers questions via e-mail, discussion postings, or phone; or during virtual office hours; or in person by appointment.

Assessments

- 60 percent Exams
(Paper and pencil, on-site, and proctored)
- 20 percent Homework
(Completed in MyStatLab, 11 assignments, one per chapter)
- 20 percent Quizzes
(Completed in MyStatLab, three per semester, three-hour time limit covering several chapters each)

Use of MyStatLab

Homework and quizzes are required and are completed in MyStatLab. Use of the Study Plan is optional. Grades are imported into MyStatLab.

Use of MyStatLab contributes 40 percent to a student's final course grade.

Results and Data

Data in Table 1 shows that students using MyStatLab achieved higher averages across every comparison metric: a 12 percent increase in homework scores, a 4 percent

increase in overall exam scores, a 6 percent increase in average course grades, and a 5 percent increase in the course pass rates.

	Average Homework Score	Average Quiz Score	Average Exam Score	Average Course Grade	Average Pass Rate
Prior to MyStatLab (Spring 2006 and Spring, Fall 2007)	84.9	—*	78.6	79.7	77.7
With MyStatLab (Spring, Fall, Summer 2008 and Spring, Summer 2010)	95.2	81	81.9	84.5	81.3

Table 1. Comparison of Student Achievement before and after Implementation of MyStatLab ($n=233$)

*Quizzes were not offered in spring and fall 2007. "I was so frustrated with the old software, I was using it as little as possible," says Williams.

With MyStatLab, I know my students are getting the practice they need to succeed in the course.

—Sandra Williams, Faculty
Front Range Community College

“These achievement increases are even more significant,” says Williams, “when you consider that the students using MyStatLab were given harder questions—and still they performed better than students in the previous semesters. I believe that the students who used MyStatLab actually learned more than the previous semester’s students did.

“With MyStatLab,” says Williams, “students can’t fake their homework like they could with paper-and-pencil homework. They must get the question completely correct to receive credit. For some students, that means working the problem several times. Thanks to the user-friendliness of the software, students are willing to put in the extra time.”

Williams reports that adding quizzes to the curriculum was another benefit of switching to MyStatLab and a contribut-

ing factor to the increased student gains. She had considered adding quizzes in the previous semester, but the courseware she was using at the time made it less than convenient, and within the context of the program, it was not a value add. “MyStatLab made it easy to add quizzes to the curriculum,” Williams says. “There are lots of great questions to choose from, and the questions are interactive, not just multiple-choice.”

Williams attributes the higher pass rate to her students’ understanding the material better. “They experience first-hand that they can be successful,” she says. “All of these grades are for online classes, which typically have low pass rates. This says a lot for what MyStatLab does to improve retention.”

The Student Experience

Williams’s Introduction to Statistics students made the following unsolicited comments about MyStatLab.

- *I want to compliment you on your choice of text and accompanying Web site. Both were very well organized and user-friendly.*
- *This software was very easy to navigate and made doing homework much easier than previous software I’ve used. If I had a question on how to solve a problem, the software worked through a sample problem with me, helping me understand where my mistakes were being made. I love the new book and software.*
- *By the way, MyStatLab is a pretty cool setup. I write Web site code for a living and find this program’s features and quality pretty impressive. The user interface is easy to navigate regardless of user skill level, and no weird errors caused me to stop or lose work. Plus it works well across multiple browsers, not just Internet Explorer.*

Conclusions

Both the objective data from Table 1 and her own subjective observations of the students have convinced Williams to continue using MyStatLab. “It’s the best statistics product out there,” she says. “My students really like MyStatLab. That means they’re more likely to use it.”

Williams’s students were particularly responsive to the program’s Help Me Solve This feature. “In paper-and-pencil homework, students can view examples only in the text,” says Williams. “Most students don’t find that useful because frequently there’s no connection between the example and the problem they’re trying to solve. Help Me Solve This inserts different numbers into the same

problem the student is stuck on, and students learn in context how to arrive at the solution.”

Williams plans to explore how she can leverage future use of MyStatLab to further improve retention. One potential idea is to offer incentives for extra work in the program.

Meanwhile, Williams plans to continue tracking data in an effort to establish a more substantial, longitudinal, and defensible picture of MyStatLab’s effect on student success.

Submitted by Sandra Williams, Faculty
Front Range Community College

Product Used MyMathTest
Course Name Math Compass Brush Up Sessions
Credit Hours Zero



UNIVERSITY of HAWAII
KAPI'OLANI
 COMMUNITY COLLEGE

KEY TAKE-AWAY

By creating a supportive environment using MyMathTest and peer tutors in short, math refresher courses, KCC students overcome math anxiety and are better prepared for math placement tests. By scoring higher, students save significant amounts of tuition dollars.

Textbook in Use

N/A

Course Implementation

Course Design

Implemented in summer 2009, the Math Compass Brush Up Sessions was a pilot project comprising free refresher courses for high school students who had been accepted into Kapi'olani Community College (KCC).

The objective of the project was to help high school students improve both their Math Compass Placement Test scores and their attitudes toward math itself. Courses included 10 days of two hours of hands-on tutorial support each day. Students chose either a morning or afternoon session. Peer tutors were KCC students who had previous tutoring experience and had completed at least College Algebra.

MyMathTest was used for identifying areas of improvement and for providing tools to increase math comprehension. Each student was offered a minimum of two-weeks'

access to the peer tutors, who were available to help students with MyMathTest assignments.

The students had the option to retest the math portion of Compass after completing the MyMathTest assignments and consulting with the peer tutors.

Assessments

Students completed a diagnostic test in MyMathTest. They then worked on their MyMathTest Study Plan at home or with peer tutors. When ready, they completed a MyMathTest posttest and decided whether or not to retest the Math Compass Placement Test.

Use of MyMathTest

MyMathTest was used for pre- and posttests, the study plan, and homework assignments.

Results and Data

The post-Brush Up Compass Placement Test scores show that there were improvements to most students' raw score, and that in most cases, students advanced to the next math course.

Of those students who retested, the majority experienced improvement in either their raw score or their course placement. Of the 37 students who retested, 34 improved their raw score. Of those 34, 19 improved by one course level and four improved by two course levels.

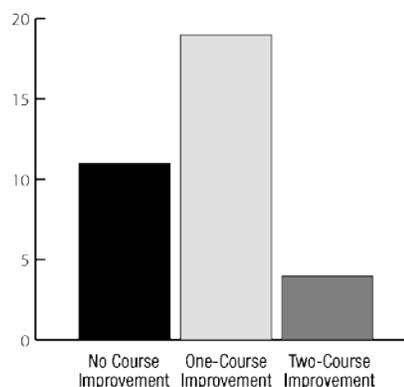


Figure 1. Comparison of Student Gains as Measured by Course Improvement after Brush Up Sessions Program and Retesting

Because MyMathTest is so user-friendly, students had few questions about the program itself. Students and peer tutors were able to spend class time productively addressing math concerns.

*—Sheldon Tawata, Coordinator
Kapi'olani Community College*

The Student Experience

Peer tutors noticed more participation by students in small-group settings—in which small groups of students sat facing each other—versus in larger classroom settings in which students sat at rows of tables facing forward.

By retesting into higher-level math courses, students save both time and money. For example, tuition for the precollege mathematics course during 2009/10 is \$474; tuition for Introduction to Algebra and subsequent math courses is \$253. A student advancing from precollege mathematics to a higher-level math course saves \$221.

Most important, the Brush Up Sessions with MyMathTest worked.

- “What helped me to improve my score was the [MyMathTest] study plan. It helped me to refresh my brain.”
- “[MyMathTest] helped me out a lot when I had problems.”
- “[MyMathTest] taught me to understand the problems better.”

Conclusions

The MyMathTest-enabled Brush Up Sessions successfully provided students with a safe way to address their fears and concerns around math. By combining online and in-person support, the program was able to address students in the manner in which this generation most effectively obtains—and retains—information.

KCC looks forward to continuing the summer program—and its use of MyMathTest—in an effort to enable students to better bridge the transition from high school to college. Possible changes to next summer's program include charging \$15 for the program as a way of promoting a sense of its value and thereby increasing retention.

*Submitted by Sheldon Tawata, Coordinator,
and Cory Ando, Student Services Specialist
Kapi'olani Community College*

Product Used MyMathLab
Course Name Intermediate Algebra
Credit Hours Three



KEY TAKE-AWAY

MyMathLab students at OC receive immediate feedback and are able to rework problems as many times as they wish—proven strategies for reinforcing the learning process and increasing student success.

Textbook in Use

Elementary and Intermediate Algebra: Concepts and Applications, 3e, Marvin L. Bittinger, David J. Ellenbogen, Barbara L. Johnson

Course Implementation

Course Design

Class meets twice a week for 80 minutes each and includes lecture and examples. There is a required one-hour-per-week lab component, during which students may work on homework assignments and get the help of a tutor.

Assessments

Students take four chapter tests and one comprehensive final. There are two versions of every test and no quizzes.

MyMathLab Implementation

Homework is completed outside of class on MyMathLab. Paper tests are composed via MyMathLab and distributed during class. Students are encouraged to use the study plan, particularly when they miss a class or need extra help.

Use of MyMathLab contributes 100 percent to a student's final course grade.

Results and Data

Tables 1 and 2 indicate a direct and positively significant relationship between the number of students who pass the course and their use of MyMathLab. The same is true for the number of students who received an A.

A comparison of grades by semester shows a marked increase in the percentage of students passing the course, as well as a significant decrease in the percentage of those failing the course. The nine-semester time span enables

a longer-term assessment of the fully MyMathLab-enabled program and the conclusion that all the successes realized after immediate implementation have sustained over time.

Similarly inspiring, the average percentage of students earning an A since adoption of MyMathLab in spring 2006 has more than tripled, jumping from an average of 9 percent to 28 percent.

Grade	Without MyMathLab			With MyMathLab					
	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2008	Spring 2009	Fall 2009
A	4%	11%	13%	39%	44%	42%	23%	27%	20%
B	20%	31%	35%	39%	35%	22%	41%	33%	30%
C	32%	31%	23%	14%	13%	12%	9%	20%	30%
D	12%	17%	10%	4%	0%	12%	9%	7%	10%
F	32%	10%	19%	4%	9%	12%	18%	13%	10%

Table 1. Comparison of Success Rates by Semester, Fall 2004–Fall 2009

Grade	Without MyMathLab	With MyMathLab
A	9%	28%
B	29%	34%
C	28%	18%
D	13%	8%
F	20%	12%

Table 2. Comparison of Average Success Rates

I wouldn't use anything but MyMathLab. Period.

—Theresa Evans, Mathematics Instructor
Odessa College

The Student Experience

Student surveys indicate students' appreciation for MyMathLab's interactive features and immediate feedback.

- “MyMathLab offers help right when I need it. I don't have to wait for an instructor or results.”
- “The Help Me Solve This button helped the most.”
- “I like that [MyMathLab] gives me extra problems if I need more practice. And when I get a problem wrong, I can try it again.”
- “I liked all the support I had. All the tools on the site were a great help. I especially liked the videos.”
- “I liked the videos and that how to solve the problems was explained step-by-step.”
- “I have always had trouble with math, but I think older age and the way this course was taught really helped me. I wouldn't change anything. The course works well just the way it is.”
- “I liked that I could rework the same problems over again regardless if I got them wrong or right.”
- “If I had another math class I needed to take, I'd like it to be in MyMath Lab. It really helped me.”

Conclusions

Odessa College has been using MyMathLab in its online Intermediate Algebra courses for six years, and in its on-ground Intermediate Algebra courses for three years. Over that time, the program has sustained a high level of student success. “After six years, I still have students saying that they couldn't have passed the class without MyMathLab,” says Theresa Evans, mathematics instructor.

After the initial implementation of MyMathLab in Odessa's developmental math sequence, students who advanced to College Algebra math complained that MyMathLab wasn't being used in College Algebra. Today, those College Algebra classes that employ the program are consistently filled. “Students appreciate the immediate feedback,” says Evans. “They know immediately when they've correctly completed a homework problem. If they've done it incorrectly, they have all the support they need to learn how to do it correctly before they've repeated the wrong process over and over again.”

Faculty at Odessa are always looking for ways to further support their students. Since most developmental math students need help learning how to study, faculty have created and incorporated into MyMathLab weekly Study Plan discussion boards specifically related to study skills. There are a total of 15 topics, including how to take a test, learning styles, test anxiety, and how to take notes.

Future plans include exploring the use of MyMathTest to identify and support students who place at a developmental level, but simply need a brushup. The proposed three- to six-week courses would be a faster, less expensive way for students to learn the material, retest, and advance in their college careers.

Submitted by Theresa Evans, Mathematics Instructor
Odessa College

Product Used MyMathLab

Course Names Basic Math, Beginning Algebra, Intermediate Algebra, College Algebra

Credit Hours Three



KEY TAKE-AWAY

By redesigning its developmental math sequence with required practice on MyMathLab, peer collaboration, and mastery of content, QCC's mathematics program sustains a high level of student success within developmental math and subsequent college math courses.

Textbooks in Use

Basic Mathematics, 7e, Margaret L. Lial, Stanley A. Salzman, Diana L. Hestwood; *Introductory Algebra*, 9e, Margaret L. Lial, John Hornsby, Terry McGinnis

Course Implementation

Course Design

In 2001, Quinsigamond Community College (QCC) received a Title III grant to, among other things, strengthen developmental education. From 2001 to 2006, QCC redesigned its three levels of developmental math and today continues to support those efforts. Classes meet for three hours per week and are offered in computer classrooms, traditional classrooms, evening classes, fast-paced courses, and online courses, as well as at off-campus sites. Instructors are provided a resource manual on CD, which includes a sample syllabus, course pacing, group activities, quizzes, and exams.

Computer classrooms. Students attend a minilecture followed by independent computer work using MyMathLab. Required MyMathLab homework may be completed at home, at the campus Math Resource Center, or at the campus Computer Lab. Students may have quizzes and exams administered using MyMathLab.

Noncomputer classrooms. Students experience an interactive lecture format with group work, applications, and the like. Required MyMathLab homework may be completed at home, at the campus Math Resource Center, or at the campus Computer Lab. Students may have quizzes and exams administered using MyMathLab.

Evening classes. These are three-hour classes held in computer or noncomputer classrooms, following the same format as the aforementioned classes.

Fast-paced courses. Held in a variety settings, these courses finish earlier than the traditional semester's do. Students use MyMathLab to support their learning.

Online courses. All developmental math courses are offered online and use MyMathLab content, homework, and assessments. The final exam is taken on-site.

Off-campus remote sites. Developmental math courses are offered at off-campus remote sites, such as high schools, nursing homes, and correctional facilities. MyMathLab is used where there is Internet access.

Assessments

Instructors decide on the number of quizzes and exams for their classes. All students take the departmental, paper-and-pencil final exam. A score of at least 73 percent is required to continue to the next level.

Use of MyMathLab

All levels of developmental math have a predesigned course that can be copied and adjusted for each learning environment.

The location and format of a course dictate the degree to which MyMathLab is used and the amount of its contribution to a student's final course grade.

Results and Data

During actual redesign—from 2001 to 2006—the following cumulative results were reported from Title III data:

- In Basic Mathematics, an overall 8 percent increase in student success from fall 2004 to fall 2006
- In Beginning Algebra, an overall 30 percent increase in student success from fall 2004 to fall 2006
- In Intermediate Algebra, an overall 11 percent increase in student success from fall 2003 to fall 2006

Table 1 shows the percent of students who passed the final exam and could therefore advance to the next level of mathematics. *Note:* This table shows only students who completed the semester and sat for the final exam; it does not include grades of X and W.

As students progress through the developmental mathematics program, they enjoy a high level of success in College Algebra. Figure 1 compares students who take

Course	Fall 2006	Fall 2007	Fall 2008*	Fall 2009
Basic Mathematics	80.4	80	73	79
Beginning Algebra	79.5	82	77	81
Intermediate Algebra	72.6	74	64	71

Table 1. Student Pass Rate Percentages, Fall 2006–Fall 2009

*A severe ice storm in 2008 caused exam-day cancellations and a drop in pass rates.

the College Board’s ACCUPLACER and place directly into college-level mathematics versus students who come from Intermediate Algebra. QCC strives to ensure that its developmental-math students are performing the same, or close to the same, as those students who are placed directly into a course. In 2009, 67 percent of students who placed directly into College Algebra finished the course with a grade of at least C. That same semester, 64 percent of students who came from the developmental math program finished the course with a grade of at least C. See Figure 1.

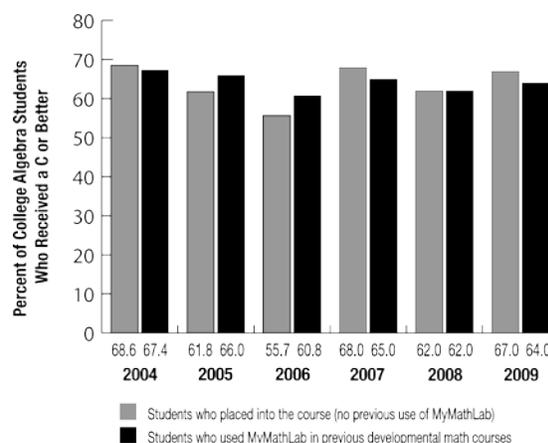


Figure 1. Student Pass Rate Percentages in College Algebra, Fall 2004–Fall 2009

The Student Experience

QCC is confident that the present curriculum is strong and supports students. MyMathLab enables QCC faculty to deliver this curriculum in a unified manner. The Math

Center (a student drop-in tutorial center) has increased its number of computers by more than 60 percent to meet student demand for computer mathematics support.

Conclusions

The full range of Title III data shows an increase in student success from previous semesters and a trend of strong academic success among students who complete the course.

Retention—decreasing the number of students who drop out or withdraw—remains a focus for the future. Students who complete the course have a very strong chance of passing the final exam: 75 percent of students who take the final exam score 73 percent or better, allowing them

to advance to the next level of mathematics.

Today, QCC is turning its focus toward student success—not in comparison to past years but in search of trends that emerge as the present successful model is maintained.

*Submitted by Andreana Grimaldo, Associate Professor
Quinsigamond Community College*

Product Used MyMathLab
Course Name Beginning Algebra
Credit Hours Four (earned in two two-credit classes)



KEY TAKE-AWAY

By leveraging MyMathLab's item analysis and e-mail features to identify and reach out to at-risk students, RVC both increased its pass rate by nearly 50 percent and cut its withdrawal rate by more than half.

Textbook in Use

Algebra: A Combined Approach, 3e, Elayn Martin-Gay

Course Implementation

Course Design

Rock Valley College (RVC) redesigned its beginning algebra course from a traditional, one-semester, 5-credit course covering nine chapters to a 4-credit course divided into two 2-credit classes, each spanning eight weeks. The redesigned course is offered in both hybrid and traditional lecture formats.

Computer-assisted sections meet in a computer lab two days a week for 100 minutes at a time. Classes include 70–80 minutes of direct instruction (lecture) plus 20–30 minutes of hands-on, MyMathLab-enabled instruction facilitated by instructor support on a one-on-one basis.

Assessments

- In-class activities, participation, attendance 40 points
- ~20 MyMathLab homework assignments of 3 points each 60 points
- Three unit tests of 100 points each 300 points
- A department-wide final exam 100 points

Use of MyMathLab

A minimum of three MyMathLab homework assignments per week is required in all sections.

The developmental math coordinator creates MyMathLab coordinator courses for instructors to copy. Coordinator courses include a homework assignment for every section, a unit-test review assignment for each unit, and a final-exam practice assignment. In addition, each instructor receives a MyMathLab Gradebook preloaded with test and homework points in the appropriate amounts.

Instructors are encouraged to use the Item Analysis feature of the MyMathLab Gradebook to assess both individual and overall class mastery and needs.

Use of MyMathLab contributes approximately 12 percent to a student's final course grade.

Results and Data

Required use of MyMathLab was one of several transformations in RVC's developmental math sequence. Although not the only positive change, Kathleen Almy, associate professor at RVC, considers it a significant contributor to the success of the new two-part curriculum via a more than 50 percent increase in the percentage of students receiving As, Bs, or Cs and a more than 50 percent decrease in the overall course withdrawal/fail rate.

"The quality of the class experience has changed," says Almy. "Students come with constructive questions. I'm able to move forward instead of constantly back over old material. Class time is more productive."

MyMathLab has forever changed the way I teach. I have a more accurate picture of how individual students are doing and how the class as a whole is faring. Having a better idea of what they're having problems with helps me adjust my lessons to better support them—and helps me be a better teacher.

—Kathleen Almy, Associate Professor
Rock Valley College

Semester	Enrollment	Course Format	Percentage of Students Earning A, B, or C	Withdrawal/Fail Rate
Fall 2009 Beg. Algebra, Part 2	335*	Redesign using consistent MML homework	69.9	18.2%
Fall 2009 Beg. Algebra, Part 1	568 (489 first time + 79 repeat)	Redesign using consistent MML homework	68.8	22.4%
Fall 2008	537	5-credit format + inconsistent use of MML	48.2	40.8%
Fall 2007	589	5-credit format	47.2	42.6%

Table 1. Comparison of Student Success and Withdrawal/Fail Rates before and after Redesign and Required MyMathLab Homework

*Students who take the first eight weeks usually also take the second eight weeks. The 335 students enrolled in the second eight-week class of fall 2009 are a subset of the 568, who started out in the first eight-week class of fall 2009.

The Student Experience

Almy reports that significantly more students are doing the homework. Because they can redo assignments until they earn 100 percent, students spend more time on task.

The engaging, interactive nature of MyMathLab encourages students to persevere. “They do better when they see success more often,” says Almy.

MyMathLab helps students keep up with assignments who otherwise juggle school and employment and who may miss a class. The online resource means that personal and employment stressors are less likely to result in students’ falling behind in their schoolwork and dropping out.

Conclusions

MyMathLab improves RVC’s two-day, computer-assisted sections by (1) keeping students focused and engaged during the 100-minute course period and (2) providing a tool for assessments between classes. Students therefore don’t lose momentum and the content remains fresh between classes.

From a departmental standpoint, MyMathLab has also enabled RVC’s mathematics department to establish con-

tent and assessment consistency across all of its sections.

Based on the results of the MyMathLab-enabled redesign, the department plans to convert the new curriculum to a format in which MyMathLab is required for homework in all sections and to make as many of the two-days-a-week courses into a hybrid format as lab space will allow.

Submitted by Kathleen Almy, Associate Professor
Rock Valley College

Product Used MyMathLab

Course Names Prealgebra, Elementary Algebra, Intermediate Algebra

Credit Hours Five



KEY TAKE-AWAY

By using MyMathLab to ensure that students master developmental math concepts before advancing in either the course or the sequence, Triton College helps more students both complete their courses and do better on their final exams.

Textbooks in Use

Prealgebra, 5e, Elayn Martin-Gay; *Elementary and Intermediate Algebra*, 5e, Marvin L. Bittinger, David J. Ellenbogen, Barbara L. Johnson

Course Implementation

Course Design

Mathematics faculty at Triton College piloted MyMathLab four years ago in two classes. Today, all developmental students are required to use MyMathLab for all homework and some online testing.

All homework is completed online and outside of class. Instructors may reserve the computer lab to give online tests and quizzes. At least 35 percent of all testing must be proctored.

Assessments

Instructors may vary the weight assigned to homework and assessments. In addition, several instructors offer extra credit to students who complete practice tests with scores of 80 or above. The following is a rough guide.

20 percent	Homework
20 percent	Quizzes
30 percent	Tests (<i>online and on ground</i>)
30 percent	Departmental final exam (<i>paper-and-pencil</i>)

Use of MyMathLab

MyMathLab is used for homework, unproctored quizzes, proctored tests and quizzes, and prerequisites, including practice tests and study plan exercises. Some instructors also assign custom MyMathLab exercises.

Use of MyMathLab contributes 25–75 percent of a student’s final course grade.

Results and Data

Table 1 illustrates that since full implementation of MyMathLab, the numbers of students completing Pre-algebra, Elementary Algebra, and Intermediate Algebra each semester have increased. And their success continues in subsequent classes. “It’s like a domino effect,” says Ellen O’Connell, mathematics department chair. “Students in subsequent courses have an advantage over other students, since they are already familiar with MyMathLab.”

In addition, O’Connell reports that in the past four semesters, average departmental final exam scores in each course have increased. “They sneak up a few points each semester,” she says.

Practice, practice, practice. Students can redo problems until they get them right. There is a direct correlation between students who take advantage of this opportunity and those who successfully pass the course.

—Ellen O’Connell, Chair, Mathematics Department
Triton College

	Prealgebra			Elementary Algebra			Intermediate Algebra		
	Took Final	10th day	Retention	Took Final	10th day	Retention	Took Final	10th day	Retention
Fall 2004	207	495	41.8%	356	605	58.8%	169	397	42.5%
Spring 2005	166	264	62.9%	255	416	61.3%	172	324	53.0%
Fall 2005	260	387	67.2%	388	601	64.6%	198	339	58.4%
Spring 2006	160	295	54.2%	283	471	60.1%	211	352	59.9%
Total Before Redesign	793	1,441	56.5%	1,282	2,093	61.2%	750	1,412	53.5%
Fall 2008	339	559	60.6%	387	562	68.9%	307	450	68.2%
Spring 2009	242	418	57.9%	427	555	76.9%	242	350	69.1%
Fall 2009	428	712	60.1%	480	666	72.0%	299	465	64.3%
Spring 2010	294	522	56.3%	515	704	73.2%	297	450	66.0%
Total After Full Implementation	1,303	2,211	58.7%	1,809	2,487	72.8%	1,145	1,715	66.9%

Table 1. Comparison of Retention Rates before and after Developmental Math Sequence Redesign with MyMathLab ($n=11,359$)

The Student Experience

“With a few exceptions, students love using MyMathLab,” says O’Connell. “They like the online homework, and they really use the Gradebook button, always checking to see how they are doing in the class.”

O’Connell also reports that students enjoy and use the help offered by MyMathLab’s many interactive resources. “I tell my students that I expect to see nothing less than 100 percent on their homework because I know they can repeat the problem as many times as they need to master it.”

Conclusions

Faculty are unanimously in agreement about MyMathLab’s efficacy. “Probably the greatest impact has been for faculty and the reduced time spent grading homework papers,” says O’Connell. “Previously, some faculty didn’t assign as much homework as the students need because of the time it would take to grade that much homework. Faculty don’t shy away anymore from assigning as much homework as needed, and our students are more prepared.”

Triton College currently uses MyMathLab in every course for which the program is available—from the Developmental Math sequence through the Calculus series. Future plans include utilizing the program’s coordinator course feature to help manage the department’s 60–70 adjuncts.

Submitted by Ellen O’Connell, Ph.D., Chair, Mathematics Department
Triton College

Product Used MyMathLab
Course Names Prealgebra, Beginning Algebra, Intermediate Algebra
Credit Hours Three



KEY TAKE-AWAY

Significant increases in pass and completion rates after MyMathLab implementation indicate that requiring MyMathLab homework and lab time helps CTC's on-site and online students get the practice they need to succeed in math.

Textbooks in Use

Prealgebra, 5e, Elayn Martin-Gay; *Beginning Algebra*, 5e, Elayn Martin-Gay; *Intermediate Algebra*, 5e, Elayn Martin-Gay

Course Implementation

Course Design

Courses are offered both on-site and online. Students in on-site courses meet for 65 minutes, Monday through Thursday, and are required to spend a minimum of 12 hours per semester in the math lab.

50 percent

Departmental final exam
For the Intermediate Algebra course, the 50 percent is split into a midterm worth 20 percent and a final exam worth 30 percent.

Assessments

15 percent Homework (for online courses, also quizzes)
For all courses, homework in MyMathLab is required.

Use of MyMathLab

MyMathLab homework is required in all courses; online courses also require quizzes. Students are encouraged to use the Study Plan. Grades are imported from other sources.

35 percent Chapter tests
In classroom, on paper, for each chapter.

Use of MyMathLab contributes 15 percent to each student's final course grade.

Results and Data

The positive change in pass and withdrawal rates illustrated in table 2 indicates that required use of MyMathLab increases both student success and retention rates.

Additional departmental data collected during the fall 2008 through fall 2009 terms indicates that MyMathLab also contributes to increased subsequent success.

- 65 percent of students who successfully completed Prealgebra earned an A, B, or C in Beginning Algebra.
- 89 percent of students who successfully completed Beginning Algebra earned an A, B, or C in Contemporary Mathematics.
- 50 percent of students who successfully completed Beginning Algebra earned an A, B, or C in Elementary Statistics courses.
- 65 percent of students who successfully completed Beginning Algebra earned an A, B, or C in Intermediate Algebra.
- 67 percent of students who successfully completed Intermediate Algebra earned an A, B, or C in Contemporary Mathematics.
- 88 percent of students who successfully completed Intermediate Algebra earned an A, B, or C in Elementary Statistics.
- 88 percent of students who successfully completed Intermediate Algebra earned an A, B, or C in College Algebra.

		A	B	C	69% or Below	Student Withdraw	Drop or Incomplete	Total Number	Passing Number	Completion Number	Pass Rate	Completion Rate	D/W Rate
ON-SITE	Prealgebra	200	477	560	606	227	580	2,650	1,237	1,843	46.7%	67.1%	30.5%
	Beg Algebra	152	241	623	794	280	645	2,835	1,116	1,910	39.4%	58.4%	32.6%
	Inter Algebra	75	222	391	684	309	447	2,128	688	1,372	32.3%	50.1%	35.5%
ONLINE	Prealgebra*	-	-	-	-	-	-	-	-	-	-	-	-
	Beg Algebra	2	23	10	22	10	19	66	15	37	22.7%	40.5%	43.9%
	Inter Algebra	1	3	4	13	16	19	56	8	21	14.3%	38.1%	62.5%

Table 1. Success Rates before MyMathLab Implementation, Fall 2002–Summer 2004 ($n=7,735$)

*Taught only with MyMathLab support.

		A	B	C	69% or Below	Student Withdraw	Drop or Incomplete	Total Number	Passing Number	Completion Number	Pass Rate	Completion Rate	D/W Rate
ON-SITE	Prealgebra	400	642	712	606	321	614	3,295	1,754	2,360	53.2%	74.2%	28.2%
	Beg Algebra	248	529	829	1,023	353	613	3,595	1,606	2,629	45.5%	61.6%	26.2%
	Inter Algebra	120	265	467	425	310	376	1,963	852	1,277	43.7%	66.8%	34.8%
ONLINE	Prealgebra	76	95	53	43	63	113	443	224	267	50.4%	83.8%	39.8%
	Beg Algebra	17	47	74	118	62	168	486	138	256	30.5%	56.0%	46.0%
	Inter Algebra	9	26	39	82	113	130	396	74	156	18.2%	46.3%	60.6%

Table 2. Success Rates after MyMathLab Implementation, Fall 2004–Fall 2009 ($n=10,178$)

The Student Experience

Jenny Shotwell, professor, cites a number of ways that MyMathLab's design and underlying pedagogy positively impact her students.

- The individually tailored study plans make good just-in-time teaching tools for students working at home or otherwise not in a classroom environment.
- For those students who are intimidated by asking questions in class, MyMathLab provides a variety of resources to turn to, in addition to a direct e-mail link to the instructor.
- Central Texas College uses MyMathLab in all math courses through calculus. The program's intuitive interface and easy-to-learn features mean that students have a consistent learning experience each semester, and that at each new level, they need concentrate solely on learning new course content—not new software.

Conclusions

MyMathLab's benefit to developmental-level students prompted Central Texas College to pilot two new ways to deter these higher-risk students from dropping out. Options include two 8-week, self-paced courses in which students use MyMathTest and can more quickly move into college-level courses by one and possibly two levels.

The college also plans to encourage all full-time faculty members to become faculty advisers for incoming developmental studies students. Faculty advisers will help students register for the correct classes, and will be available to assist students when problems arise that threaten their ability to succeed.

Submitted by Jenny Shotwell, Professor, Developmental Studies
Central Texas College

Product Used MyMathLabPlus**Course Names** Elementary Algebra, Intermediate Algebra, College Algebra, Finite Math**Credit Hours** Three

KEY TAKE-AWAY

By redesigning its math program into modular units, each emphasizing mastery learning and requiring MyMathLabPlus for homework and assessments, CSCC has significantly increased its completion and pass rates and positively impacted subsequent success.

Textbooks in Use

Elementary and Intermediate Algebra, 4e, Marvin L. Bittinger; *Essentials of College Algebra*, 3e, Gary Rockswold

Course Implementation

Course Design

Prior to the redesign, MyMathLab was optional: some instructors required it, some left it optional, and others didn't use it at all. In spring 2008, the Elementary Algebra and Intermediate Algebra courses employed the redesigned MyMathLabPlus model. In fall 2008, six college-level courses were added, and today all developmental and college-level math courses use MyMathLabPlus to complete homework and take assessments.

Each course consists of 10–12 minimodules. Each module contains at least one homework set, a quiz, a midterm, and a final exam. Students are encouraged to complete at least one module per week.

All classes take place in the math lab, which is staffed by both instructors and lab tutors. There are no live lectures. Each week, students attend proctored, one-hour classes, plus at least one additional hour in the math lab. Students may complete homework during class time or at home. All testing is password protected and completed on campus, in either the lab or a classroom.

Assessments

Faculty at Cleveland State Community College (CSCC) customizes MyMathLabPlus with their own videos, and they hand select homework problems. Students must score at least 70 percent before advancing to the next module.

10 percent	Participation
30 percent	Homework
50 percent	Quizzes
5 percent	Midterm exam
5 percent	Final exam

Use of MyMathLabPlus

MyMathLabPlus is used for homework, quizzes, and tests. The program's View an Example and Help Me Solve This features are enabled during homework assignments. Prerequisites promote mastery learning and keep students on track by ensuring that they don't work too far ahead.

Use of MyMathLabPlus contributes 100 percent to a student's final course grade.

Results and Data

The primary goals of the redesign were to increase success rates, better prepare students for college-level courses, and increase the ability of students to move quickly through the developmental math program. Data from a fall 2009 department report indicate that the redesign is a success.

Figures 1–4 show significant increases in completion and pass rates after redesign with MyMathLabPlus in Elementary Algebra, Intermediate Algebra, College Algebra, and Finite Math. Both Elementary and Intermediate Algebra experienced completion rate increases of approxi-

mately 27 percent over the traditional lecture courses. College Algebra completion rates increased by 17 percent; Finite Math completion rates increased by nearly 11 percent.

In addition, the report indicates that students who took developmental math courses before advancing in the math sequence outperformed those students who placed directly into College Algebra, Statistics, or Finite Math. Completion rates, passing rates, and even the course grade point averages in these courses experienced increases.

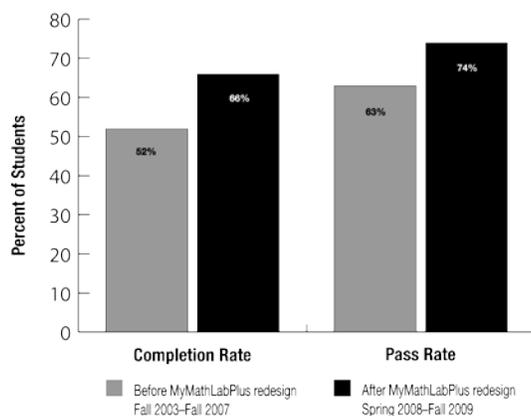


Figure 1. Elementary Algebra Completion and Pass Rates before and after MyMathLabPlus Redesign ($n=1,101$)

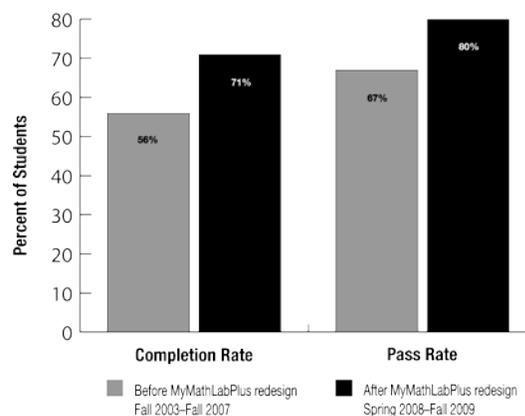


Figure 2. Intermediate Algebra Completion and Pass Rates before and after MyMathLabPlus Redesign ($n=1,332$)

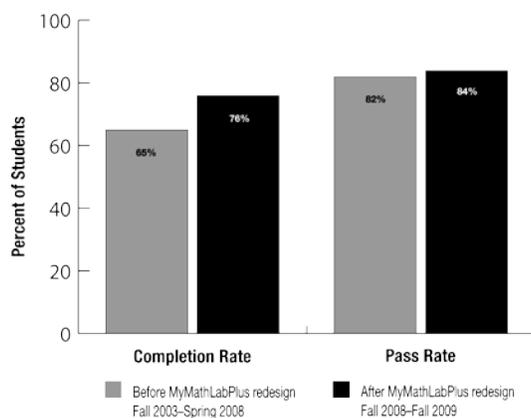


Figure 3. College Algebra Completion and Pass Rates before and after MyMathLabPlus Redesign ($n=820$)

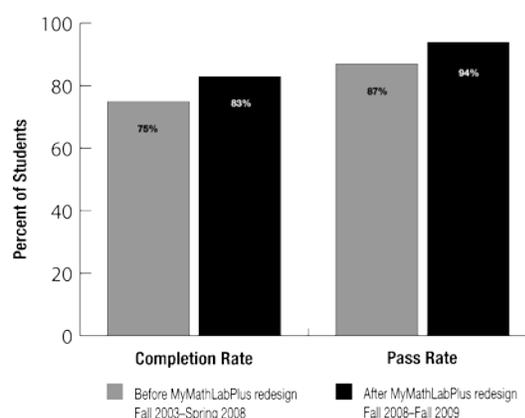


Figure 4. Finite Math Completion and Pass Rates before and after MyMathLabPlus Redesign ($n=71$)

The Student Experience

Student survey comments reflect CSCC students' positive attitude toward MyMathLabPlus.

- “MyMathLabPlus is an easy way to learn and better for quicker students like myself.”
- “MyMathLabPlus explained things much better than other online math classes I've taken.”

- “MyMathLabPlus is flexible enough for students who have busy lives outside of school. It's also great for students who progress faster than others.”
- “I am very grateful for MyMathLabPlus. I learned at my own pace and had help when and where I needed it. I plan to take more math classes.”

Conclusions

The data is incontrovertible: more students are completing and passing both developmental and college-level math courses since the MyMathLabPlus redesign was launched. More than simply figures on a page, the numbers reflect an increase in student learning and student success—and an increased likelihood of graduating from college.

From an institutional standpoint, the redesign is a win-win deal for everyone. Not only are students achieving more, but also the redesign format has resulted in a 20 percent decrease in instructor costs.

Submitted by Karen Wyrick, Associate Professor and Math Department Chair Cleveland State Community College and John Squires, Associate Professor Chattanooga State Community College

Product Used MyMathLab

Course Names Arithmetic, Prealgebra, Beginning Algebra, Intermediate Algebra

Credit Hours Three



KEY TAKE-AWAY

By using MyMathLab to track data as per the college's Quality Enhancement Plan mandate, FDTC statistically proves that the program positively impacts students in the areas of exam scores, retention, and subsequent success.

Textbooks in Use

Developmental Mathematics, 7e, 2008, Bittinger, Beecher; *Intermediate Algebra: Graphs and Models*, 3e, 2008, Bittinger, Ellenbogen, Johnson; *Algebra and Trigonometry: Graphs and Models*, 4e, 2009, Bittinger, Beecher, Ellenbogen, Penna

Course Implementation

Course Design

Students attend three hours per week in the Hub (math lab), attend two hours of lecture per week, and use MyMathLab to watch videos, see samples, work problems, and take tests.

Assessments

Each course includes up to six tests on which students must demonstrate mastery. The prerequisite feature of MyMathLab prevents students from moving ahead to new sections prior to completing mastery. Students who

demonstrate mastery may move to the next chapter. Students who do not pass must complete the exercises selected by the MyMathLab Study Plan. All assessment takes place within the MyMathLab program.

Use of MyMathLab

MyMathLab is used for homework, quizzes, proctored tests, Study Plans, prerequisites, and announcements.

Use of MyMathLab contributes 15 percent to each student's final course grade.

Results and Data

MyMathLab is a required component in every Hub math course. Courses defined as Traditional in the tables that follow are courses in which use of MyMathLab is optional. The college has established the following four goals against which all progress is measured.

Primary Goal: Increase students' course competencies by at least 5 percent in remedial/prerequisite courses.

Secondary Goal 1: Increase course completion rates in remedial/prerequisite math courses by at least 5 percent.

Secondary Goal 2: Increase course completion rates of students in curriculum math courses, who took prerequisite math course, by at least 5 percent.

Secondary Goal 3: Increase final exam average in each remedial/prerequisite math course by at least 5 percent.

Course	Environment	Number of Students	Pretest Mean	Posttest Mean	Mean Increase	Percent Difference (Hub over Traditional)	Has Goal Been Met?
Arithmetic	Hub	696	38.9	83.1	44.1	13.4%	Yes
	Traditional	279	38.4	77.3	38.9		
Prealgebra	Hub	689	38.9	60.1	21.2	35.0%	Yes
	Traditional	584	40.0	55.7	15.7		
Beg Algebra	Hub	263	34.3	76.8	42.5	29.6%	Yes
	Traditional	1,070	37.0	69.7	32.8		
Inter Algebra	Hub	183	34.0	67.6	33.6	10.9%	Yes
	Traditional	670	35.0	65.3	30.3		

Table 1. Primary Goal: Combined Test Score Data from Fall 2006 through Fall 2009 ($n=4,434$)

Course	Environment	Number of Students Who Completed	Number of Students Who Attempted	Completion Rate	Percent Difference (Hub over Traditional)	Has Goal Been Met?
Arithmetic	Hub	778	1,367	56.9%	20.6%	Yes
	Traditional	819	1,737	47.2%		
Prealgebra	Hub	874	1,160	75.3%	61.2%	Yes
	Traditional	1,210	2,589	46.7%		
Beg Algebra	Hub	362	868	41.7%	13.9%	Yes
	Traditional	1,294	3,536	36.6%		
Inter Algebra	Hub	197	452	43.6%	3.3%	No
	Traditional	721	1,695	42.5%		

Table 2. Secondary Goal 1: Combined Retention Data from Summer 2005 through Fall 2009 (n=13,404)

Course Sequence	Environment	Number of Students Who Completed	Number of Students Who Attempted	Completion Rate	Percent Difference (Hub over Traditional)	Has Goal Been Met?
Inter Algebra from Beg Algebra	Hub	177	313	56.5%	18.7%	Yes
	Traditional	583	1,225	47.6%		
College Algebra from Inter Algebra	Hub	116	162	71.6%	13.8%	Yes
	Traditional	459	730	62.9%		
Contemp Math from Beg Algebra	Hub	83	102	80.9%	0.6%	No
	Traditional	407	503	80.4%		
Alg, Geom, Trig 1 from Prealgebra	Hub	27	35	77.1%	3.5%	No
	Traditional	35	47	74.5%		

Table 3. Secondary Goal 2: Combined Completion Rates in Subsequent Course Data from Summer 2005 through Fall 2009 (n=3,117)

Course	Environment	Number of Students Taking Exam	Mean Exam Score	Standard Deviation	Percent Difference (Hub over Traditional)	Has Goal Been Met?
Arithmetic	Hub	794	84.2	9.6	11.4%	Yes
	Traditional	1,202	75.6	13.0		
Prealgebra	Hub	933	72.9	11.7	5.2%	Yes
	Traditional	1,943	69.3	13.1		
Beg Algebra	Hub	337	74.6	11.6	12.5%	Yes
	Traditional	2,385	66.3	15.0		
Inter Algebra	Hub	233	67.8	12.2	4.5%	No
	Traditional	1,275	64.9	13.3		

Table 4. Secondary Goal 3: Combined Final Exam Data from Summer 2005 through Fall 2009 (n=9,102)

The Student Experience

The school’s students appreciate MyMathLab and recognize its contribution to their overall learning.

- “I liked the instruction videos and the eBook. It was good to have more than one place to go for help.”
- “I’ve been out of school for more than 20 years. MyMathLab helped me to recover most of the knowledge I had lost.”
- “When I caught on more quickly than others, I didn’t have to wait to advance in the course.”

Conclusions

Data from primary goal competency studies, secondary goal 1 completion studies, and secondary goal 3 studies indicate that students learn more when MyMathLab is required than when it is optional. What’s more, data from secondary goal 2 suggest that the completion rates in

subsequent courses are generally higher for students whose remedial or prerequisite course required MyMathLab.

*Submitted by Susan Haley, Mathematics Instructor
Florence-Darlington Technical College*

Product Used MyMathLabPlus
Course Name Developmental Mathematics
Credit Hours Three



KEY TAKE-AWAY

By using MyMathLabPlus in a lab-based redesign model, JSCC addresses developmental math issues, including low success rates and institutional cost. Modularization of content enables the college to accommodate varied levels of preparedness and learning styles.

Textbook in Use

Developmental Mathematics, custom edition for Jackson State Community College, Marvin L. Bittinger, David J. Ellenbogen

Course Implementation

Course Design

Jackson State Community College's (JSCC's) SMART Math redesign with MyMathLabPlus reorganizes three courses (basic algebra, elementary algebra, and intermediate algebra) into one self-paced, 12-module developmental mathematics course. Classes meet three hours per week with an instructor. Students may also seek individual assistance from the instructor or with tutors at the SMART Math Center. Tutors are either retired teaching professionals or peer tutors who have passed College Algebra with at least a B and who have completed tutor training.

Student mastery of each module must be demonstrated before moving to the next. The number of modules required varies based on each student's educational and career goals.

Assessments

Students must complete a minimum of four modules per semester until the required modules for their majors are completed. A student's final grade is the average grade of the modules that have been mastered.

5 percent Attendance

10 percent

Guided-studies assignment
A combination of MyMathLabPlus problems and written work from the text. Students must score at least 80 percent to receive credit.

15 percent

Homework
Completed on MyMathLabPlus. Students must score at least 80 percent to receive credit.

70 percent

Test
Completed on MyMathLabPlus, proctored, in the math center. Students must score at least 75 percent to advance to the next module.

Use of MyMathLabPlus

MyMathLabPlus is used for placement, homework, and tests. The Study Plan is assigned to students who fail a test. The coordinator course feature is also used.

Use of MyMathLabPlus contributes 95 percent to a student's final course grade.

Results and Data

The data at right illustrates that across all metrics, JSCC's SMART Math redesign with MyMathLabPlus is a success.

- The percentage of As and Bs more than doubled.
- The fail/withdrawal rate decreased dramatically—by approximately 40 percent.
- Completion rates increased by 51 percent.
- Retention increased by 13.5 percent.

Unlimited practice on MyMathLabPlus motivates students to do more math, thereby increasing not just student success, but mastery. Use of the Study Plan encourages remediation, increases confidence and accountability, and offers a point at which a tutor or instructor may intervene if necessary. And because the course is self-paced, students who are able can move quickly through the material and exit early; those who need more time can proceed more slowly.

Grade	Traditional Format Spring 2008	Redesign Pilot Phase 1 Spring 2008	Redesign Pilot Phase 2 Fall 2008	Redesign Pilot Phase 3 Spring 2009	SMART Math Format Fall 2009
A	8.18%	8.71%	11.83%	15.37%	17.52%
B	14.55%	26.40%	35.30%	33.58%	38.52%
C	18.64%	18.82%	9.56%	9.56%	3.93%
Progress*	13.63%	12.36%	13.92%	13.28%	12.99%
Fail (attended class)	18.64%	4.22%	7.73%	11.34%	10.80%
Fail (stopped attending)	18.64%	23.31%	7.03%	4.93%	11.33%
Withdrawal	7.72%	6.18%	14.63%	11.94%	4.91%

Table 1. Grade Distribution, Fail, and Withdrawal Rates before, during, and after SMART Math Redesign with MyMathLabPlus (n=3,281)

*Signifies that the student successfully completed two modules of the required four.

Note: Spring 2008–Spring 2009 data represents a sample of the enrolled students; fall 2009 data includes all enrolled students.

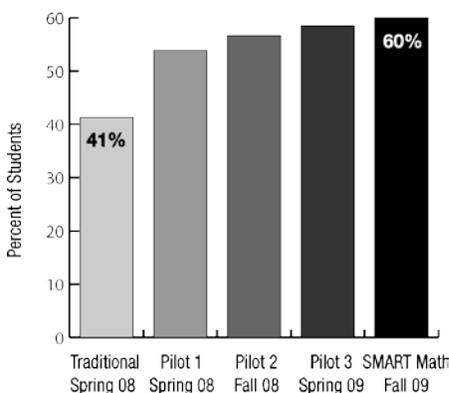


Figure 1. Pass Rates (A, B, or C) before, during, and after SMART Math Redesign with MyMathLabPlus (n=3,281)

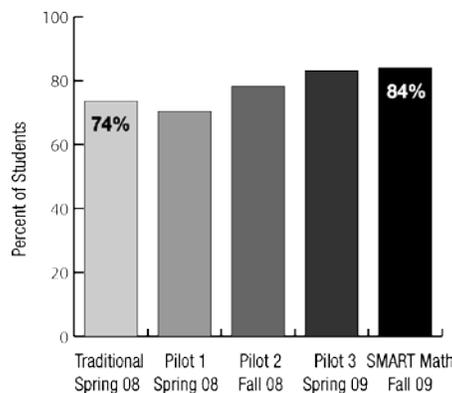


Figure 2. Retention Rates before, during, and after SMART Math Redesign with MyMathLabPlus (n=3,281)

The Student Experience

Corinna Goehring, associate professor, reports that the redesigned format has positively impacted student attitudes toward math. “They exhibit more of an I-can-do-this attitude and much more willingness to persevere through the most difficult topics,” she says. “The self-esteem of these students is soaring.”

The redesigned format also saves students time and money. Students don’t pay for unnecessary course work and may complete any number of extra modules in one semester. Because the courses are self-paced and online, students can adjust their study schedules to suit life changes and can exert more control over travel and child care expenses.

Conclusions

The SMART Math redesign with MyMathLabPlus met all three of JSCC’s redesign goals: (1) improve student success and increase learning; (2) accommodate varying levels of preparation, math anxiety, and diverse learning styles; and (3) prepare students for educational and career goals instead of simply remediating high school deficiencies.

In addition, an institutional cost savings of more than 20 percent was accomplished by increasing class sizes from 24 to 30 students, reducing the total number of

sections by 28 percent, allowing early exit, and utilizing more adjunct faculty and tutors.

JSCC is working on applying the same redesign concepts and MyMathLabPlus to appropriate college-level courses.

*Submitted by Tim Britt, Associate Professor of Mathematics
Betty Frost, Associate Professor of Mathematics
Corinna Goehring, Associate Professor of Mathematics
Linda Pride, Ed.D., Associate Professor of Mathematics
Jackson State Community College*

TWO YEAR • FEWER THAN 10,000 STUDENTS

Product Used MyMathLab
Course Name Basic Math (Prealgebra)
Credit Hours Three



KEY TAKE-AWAY

MyMathLab's interactive features reinforce the direct connection between effort and results. NCC students spend more time practicing math, gain confidence in their abilities, and demonstrate increased mastery because of it.

Textbook in Use

Basic Mathematics, 4e, Geoffrey Akst, Sadie Bragg

Course Implementation

Course Design

Basic Math meets for 80 minutes two times per week. Mary Raddock, professor of developmental mathematics, teaches four sections each semester, totaling eight meetings per week. Some sections meet in specially equipped computer rooms; others meet in rooms equipped only with an instructor's computer and a projector.

Students may work on MyMathLab homework and obtain additional help at the college's tutoring center.

Assessments

- MyMathLab homework 30 percent
- In-class, pencil-and-paper quizzes 40 percent
- Department-wide, pencil-and-paper final exam 30 percent

Use of MyMathLab

Students use MyMathLab to complete required homework, for which they are allowed unlimited tries, and to track their grades. They also can find the syllabus posted in the program. Raddock promotes the use of MyMathLab's online tutor, as well as the videos, specifically for students who miss a class.

During class, Raddock refers students to relevant content in MyMathLab's ebook. Outside class time, Raddock employs the program's e-mail function "constantly."

Use of MyMathLab contributes to 30 percent of a student's final course grade.

Results and Data

Raddock's data indicates an impressive 23 percent increase in pass rates in those Basic Math sections using MyMathLab versus those that are not.

Attributing 30 percent of their final grade to homework provides a significant incentive for students to do the homework and thereby get more practice. Once the homework is complete, MyMathLab's automatically updated Gradebook promotes increased accountability. "They know that I know what work they are doing and how much time they are spending doing it," she says. "What's more, they see the

impact homework has on their grade, and therefore, they know exactly what they can do to make their grade go up. Students feel in control of their grades."

Sections Not Using MyMathLab	Sections Using MyMathLab
58.8%	72.5%

Table 1. Fall 2009 Basic Math Pass Rates

I get much higher homework compliance with MyMathLab than I have in 10 years of teaching this course any other way. It helps my students to make a connection between practicing these skills and being able to demonstrate them on tests.

—Mary Raddock, Ed.D., Professor
Norwalk Community College

The Student Experience

Raddock uses MyMathLab to keep track (“to the second”) of how her students are progressing and, specifically, where they may be having problems. She describes the e-mail function as “crucial”—one that enables her to both intervene and praise in real time. In both cases, remaining in touch and accessible contributes to students’ sense of being connected to her and the class. To encourage students, Raddock e-mails them after reviewing their homework. “I tell them where to find more help in the book or offer reminders from class,” she says. “I also send e-mail to alert students who are falling behind. I encourage these students to use my office hours or to get help at the tutoring center.”

Students in sections using MyMathLab have the added advantage of access to learning tools in a variety of media formats. They can use the Help button, review the book, watch and hear a problem being solved step-by-step, or watch videos in which instructors address specific skill sets. “The program works for left brainers and right brainers, visual learners, kinesthetic learners, and aural learners,” Raddock says. “Everyone gets what they need.”

Conclusions

Over the 10 years Raddock spent teaching Basic Math prior to adopting MyMathLab, she made innumerable attempts at improving student performance. “Nothing worked as well as MyMathLab works,” she says. “It has enabled me to achieve a huge increase in pass rates; students *want* to take my course; and my evaluations are excellent.”

By allowing students unlimited attempts to earn 100 percent on every homework, Raddock finds that students are more likely to work until they have mastered a concept. “Like all people, students gain confidence from attaining mastery,” says Raddock. “This confidence translates into confidence that they can be successful college students and, ultimately, successful outside the classroom environment.”

End-of-semester survey responses indicate that in addition to earning higher grades with MyMathLab, Raddock’s students *like* using the program.

- “I think it’s fun to do my homework online. I wish all my work was like this.”
- “I find in MyMathLab the answers to all the questions I would normally ask the teacher. I love it.”
- “MyMathLab is a great learning tool. It offers help without failure. I feel much more confident in math than I ever have.”

Her success prompted Raddock to press for increased MyMathLab usage throughout NCC’s mathematics department. She presented her results to the division chair, and together they obtained grant money to conduct a Pearson-led, three-day training workshop for both full- and part-time faculty.

Submitted by Mary Raddock, Ed.D., Professor of Developmental Mathematics
Norwalk Community College

Product Used MyMathTest
Course Name Preparation for Accuplacer Student Success (PASS)
Credit Hours Zero



KEY TAKE-AWAY

MyMathTest helps Palo Alto College incoming freshman improve their original placement exam scores and advance more quickly through remedial math courses that would have cost them money, but would not have earned them credit.

Textbook in Use

N/A

Course Implementation

Course Design

Palo Alto College implemented MyMathTest into the college's PASS program in spring 2010. Under the new format, students spend a total of 10 to 15 hours in an on-campus computer lab, working on individualized study plans created by a specially designed MyMathTest course. The goal of the course is to help students improve upon their previous Accuplacer placement scores. An instructor is available in the computer lab at all times to answer questions and provide assistance.

Assessments

Students who complete the MyMathTest remediation may retake the placement exam to determine how far they have advanced.

Use of MyMathTest

Students use the program's individualized study plans and are encouraged to take advantage of its many learning aids, including videos as well as the Help Me Solve This and View an Example features.

Results and Data

Patrick Lee, math department chair and associate professor of mathematics, compared students' spring, summer, and fall 2010 student Accuplacer scores before and after completion of the MyMathTest-enabled PASS program.

The data in table 1 and table 2 provides an analysis of how many students completed the program (meaning, retook the Accuplacer placement test at the end of the course), how many levels they improved after completing the course, and into what courses they were qualified to enter afterward.

Of those students who retook the placement exam, 67.88 percent advanced at least once course level and up to as many as four course levels.

That kind of significant advancement results in both time and cost savings for students because they move more quickly through the developmental math sequence—a sequence of courses that offer vital remediation but no college credit.

MyMathTest is an invaluable asset to our PASS program. It offers my instructors a powerful tool for intervention and offers my students an effective tool for subsequent course success.

—Patrick Lee
Palo Alto College

	Registered	Completed	Advanced 0 Courses	Advanced 1 Course	Advanced 2 Courses	Advanced 3 Courses	Advanced 4 Courses	Total Advanced
Number of students	243	193	112	61	49	19	2	131
Percent of students (based on number registered)			46.09	25.10	20.16	7.82	0.82	53.91
Percent of students (based on number completed)			32.12	31.61	25.39	9.84	1.04	67.88

Table 1. Analysis of PASS Program Student Gains by Level Advancement, Spring 2010, Summer 2010, and Fall 2010 ($n=243$)

	Registered	Completed	Introduction to Algebra	Elementary Algebra	Intermediate Algebra	College Algebra
Number of students	243	193	23	47	51	10
Percent of students (based on number registered)			9.47	19.34	20.99	4.12
Percent of students (based on number completed)			11.92	24.35	26.42	5.18

Table 2. Analysis of PASS Program Student Gains by Course Advancement, Spring 2010, Summer 2010, and Fall 2010 ($n=243$)

The Student Experience

Lee reports that he and the other instructors “receive nothing but praise from our students for MyMathTest’s ease of use and its ability to help them prepare for the placement exam.”

Conclusions

“MyMathTest is an essential part of our PASS sessions,” says Lee. “As a result of their work in MyMathTest, students can pinpoint potential deficiencies and correct such deficiencies quickly and easily.”

By enabling Palo Alto College to more appropriately place its students, MyMathTest helps many students bypass developmental math courses that would have cost them valuable time and money.

Submitted by Patrick Lee, Math Department Chair and Associate Professor
Palo Alto College

Product Used MyStatLab
Course Name Introduction to Statistics
Credit Hours Three



KEY TAKE-AWAY

By fully implementing MyStatLab's many interactive multimedia resources, RACC is able to effectively serve the breadth of student learning styles and thereby significantly positively affect both pass rates and retention rates.

Textbook in Use

Essentials of Statistics, 3e, Mario F. Triola

Course Implementation

Course Design

Introduction to Statistics meets for three hours each week. Students are assigned required homework in MyStatLab, as well as assignments checked using SPSS. Homework may be completed at home, or in one of Reading Area Community College's (RACC's) math or open computer labs, or at the library.

As of spring 2009, students are also offered access to supplemental, in-person instruction and full access to StatCrunch.

Assessments

Students are assigned required homework for each chapter. Homework is completed in MyStatLab and may be worked on until it is correct up to the due date.

Students take a total of six tests, which are administered via MyStatLab.

Use of MyStatLab

Use of MyStatLab has expanded since it was first adopted in spring 2007. Initially used solely for practice and its supplemental resources, the program is now used for the breadth of course activities: study plans, all homework, custom exercises, and tests. Course administrative tasks are also handled within the program: students find the course syllabus in MyStatLab, and handouts and technology assignments are posted under external links.

In addition, MyStatLab's coordinator course feature is used for standardizing assignments, rubrics, and project topics throughout the department.

Use of MyStatLab contributes to 75 to 80 percent of a student's final grade.

Results and Data

After fully implementing MyStatLab in spring 2007, RACC saw significant improvement across a range of student success rubrics: the average grade point increased from 2.76 to 3.06; the percentage of students who enrolled in the class earning an A, B, or C increased from 69.8 to 85.8; the percentage of students who completed the class earning an A, B, or C increased from 81 to 91.8; and the course retention rate increased from 86.4 to 93.6. Table 1 illustrates the improvement by semester.

Diane Hollister, chair, science and mathematics division, describes the impact MyStatLab has had on her students as "very positive."

"MyStatLab has helped improve the course's pass and completion rates," she says. "Despite the variables found in any community college setting, we are confident of the correlation between the program and the improvements. MyStatLab's item analysis feature helps us pinpoint deficiencies and fine-tune what we need to fix them."

Hollister reports that prior to the MyStatLab adoption, her students did not consistently complete homework. MyStatLab's immediate feedback and Gradebook help them make the connection between doing homework—thereby practicing more—and achieving a higher grade.

MyStatLab is easy to use and very convenient. I can sit at home with my three-year-old in my lap and do my homework—repeating similar problems over and over until I get it. I can do a test at 1 a.m. if I need to. And because everything is in one place, I can't lose my homework. That is really helpful.

—Student
Reading Area Community College

	Average Grade Point	Percentage of Students Who Enrolled in the Course and Who Earned an A, B, or C	Percentage of Students Who Completed the Course and Who Earned an A, B, or C	Retention Rate
Summer 2009	2.88	87.8%	94.7%	92.7%
Summer 2008	3.29	93.3%	93.3%	100%
Summer 2007	3.07	83.8%	96.3%	87.1%
Spring 2007	3.01	78.5%	83.0%	94.6%
Fall 2006	2.84	70.8%	77.3%	91.7%
Summer 2006	2.29	69.7%	76.7%	90.9%
Spring 2006	3.24	76.8%	93.5%	82.1%
Winter 2006	2.69	61.9%	76.5%	80.9%

Table 1. Comparison of Success Rates and Retention Rates in Introduction to Statistics from Winter 2006 through Summer 2009

The Student Experience

The best practices enabled by MyStatLab improve the learning experience for Hollister’s students.

- Students who receive immediate feedback are more motivated, work independently for longer periods of time, and are more likely to work until they’ve mastered the material.
- When students need help, they can reach out to Hollister by using the Ask My Instructor feature. Hollister uses MyStatLab to e-mail her students and post messages to them on the discussion board.
- MyStatLab’s multimedia resources and anywhere/anytime-you-need-it availability provide students with all the benefits of a personal tutor and none of the cost.
- MyStatLab offers visual, audio, and kinesthetic learners the help they need in the learning style that suits them best. “Students learn differently,” says Hollister. “It’s nice to have the variety of resources at our fingertips.”

Conclusions

Hollister is pleased with the results she’s seeing with MyStatLab. Any changes she anticipates making in the future are based on item results she tracks using the program itself.

“MyStatLab tracks item results data for us and then is flexible enough for us to make changes based upon it as often as we desire,” says Hollister. “For example, in fall 2009 we found that students continue to procrastinate completing

the final project. So for spring 2010 we are keeping them on track by requiring weekly assignments toward the completion of the project. Plus, by posting all handouts to MyStatLab, we alleviate excuses for not knowing or losing the information.”

*Submitted by Diane Hollister, Chair, Science and Mathematics Division
Reading Area Community College*

Product Used MyMathLab
Course Name Mathematics Review
Credit Hours Zero



KEY TAKE-AWAY

By wrapping underprepared math students in support and encouraging them to be accountable for their learning, RACC helps students quickly and successfully catch up with their peers—and stay in school.

Textbook in Use

Prealgebra and Intermediate Algebra, 2e, Elayn Martin-Gay

Course Implementation

Course Design

Mathematics Review is an optional, self-paced, online program designed to prepare students for Prealgebra. Reading Area Community College (RACC) offers the program at no charge as part of its commitment to respond to the needs of its students and the community.

Students remain in Mathematics Review until they self-select to take the MyMathLab final and move to Prealgebra. Students are encouraged to complete all course assignments and assessments. Proctors screen those wishing to take the final by advising those whose preparation is not complete or of a high enough quality to be successful that more practice would be of benefit. Students obtain extra help by e-mailing the facilitator or visiting the math lab.

Assessments

- 20 Homework assignments
- 19 Quizzes
- 4 Practice tests

1 Final exam

Students, who score 70 percent or more on their final exam may move into Prealgebra.

Use of MyMathLab

One-hundred percent of the program content is presented in MyMathLab. Homework sections cover one topic at a time and each is followed by a short quiz. Practice tests cover groups of topics and contain more problems than the quizzes. A password-protected, final exam becomes available to students once they have completed the second to the last learning module. To ensure test security, final exams are taken in an on-campus math computer lab.

Question pooling enables retakes of quizzes, practice tests, and the final exam without repetition of questions.

Instructors use MyMathLab's Gradebook feature to manage large numbers of students—to keep track of who is being active, find out who is taking the final exam, and see who would benefit from e-mail intervention.

Results and Data

Prior to redesign with MyMathLab, of those students who passed Mathematics Review, 31 percent failed the subsequent course, Prealgebra. The 69 percent who did pass Prealgebra earned an average grade of 2.3 out of 4.0. The first year with the new format showed significant improvement: of the students who passed the Mathematics Review final and enrolled in Prealgebra, 94 percent passed the course with an average grade of 3.26.

Follow-up with summer 2009 students shows continued progress. Twenty of the 21 summer students enrolled in

at least one subsequent math course. Thirteen of the 15 who passed Prealgebra enrolled in the subsequent developmental math course for their sequence.

Results for the fall 2009 students are equally inspiring. Of the 91 percent of students (42) who took the final exam and passed, 33 are currently enrolled in Prealgebra; 5 have completed or tested out of Prealgebra. Of those five, four are enrolled in the subsequent developmental math course for their sequence.

Using MyMathLab [in Mathematics Review] helped me smoothly transition into my next math class, which I knew would be difficult. When I needed to review basic skills, I could easily navigate to the correct section and watch the step-by-step video explanation.

—Student
Reading Area Community College

	Enrolled in Mathematics Review	Took Final	Passed Final	Average Passing Score	Tested Out of Prealgebra	Enrolled in Prealgebra	Passed Prealgebra with an A, B, or C	Withdrew from Prealgebra
Summer 2009	87	21	21	86.1	–	16	15	1
Fall 2009	159	46	42	86.1	5	33	(not yet available)	–

Table 1. Success Rates of MyMathLab-Enabled Mathematics Review and Its Subsequent Course, Prealgebra, Summer and Fall 2009

The Student Experience

Students who are actively engaged in self-paced, online learning develop a sense of accountability for their learning. Supported by the tools in MyMathLab, they quickly and easily discover what they need help with and what they already know. “RACC has open enrollment, which means we see a wide range of abilities and life circumstances,” says Barbara Stoner, cocoordinator of developmental math. “MyMathLab helps the entire continuum of students appropriately scale their goals and sets them up for success.”

Students confirm the positive impact of MyMathLab.

- “The [MyMathLab] online course was very helpful. It taught me all the things I had forgotten from high

school 10 years ago. I’m now in Prealgebra and earning an A. I don’t think it would have been possible without the Mathematics Review program. I definitely recommend it to all students!”

- “Don’t change a thing. This [MyMathLab] program prepared me on things I forgot from high school.”
- “Math was my toughest subject throughout middle and high school. MyMathLab definitely helped prepare me for [Prealgebra]—it refreshed my memory of things that I had forgotten, and it taught me a lot of new things. I’ve learned so much from MyMathLab, I plan to continue using it. It works for me!”

Conclusions

By wrapping Mathematics Review students in support—including MyMathLab’s Ask My Instructor feature, the math tutoring lab, and instructor office hours—RACC sends its students a powerful message: *you are not alone*. Initial results comparing Mathematics Review before and after redesign with MyMathLab indicate that it works: students are succeeding in ways they never did before and in classes beyond the redesigned review program.

Stoner points to a clear connection between skill mastery and use of MyMathLab. “The students who failed the Mathematics Review final exam in fall 2009 had not completed all of the recommended MyMathLab program modules,” she says. “Two of those students returned after completing the modules and passed the exam.”

As of this report, more than 100 students are currently enrolled in the Mathematics Review program. As place-

ment testing resumes for fall 2010, Stoner expects the demand for the program to continue.

Experience with 2009 students indicated a need to further refine program criteria. RACC is now specifically targeting students who have already obtained high school diplomas or GEDs. Other students are referred to the college’s free GED program.

Future plans include the possibility of augmenting this course redesign with a grant from the National Center for Academic Transformation to modularize all of the college’s developmental mathematics courses.

*Submitted by Barbara Stoner, Cocoordinator of Developmental Math
Reading Area Community College*

Product Used MyMathLab
Course Names Elementary Algebra, Intermediate Algebra
Credit Hours Four



KEY TAKE-AWAY

MyMathLab enables nontraditional students to engage directly with math content. UCC students' access interactive resources that promote more practice and thereby increase their confidence in their ability to do math.

Textbook in Use

Introduction and Intermediate Algebra, 3e, Robert F. Blitzer

Course Implementation

Course Design Elementary Algebra and Intermediate Algebra are online courses.	20 percent	Quizzes <i>Students take two quizzes a semester. They may take each quiz twice.</i>
Assessments 10 percent Off-line projects <i>Students complete an average of three assignments per semester using MS Excel.</i>	5 percent 20 percent 20 percent	Practice midterm and final Proctored midterm Proctored final
20 percent Homework		Use of MyMathLab Homework, quizzes, and exams are completed in MyMathLab. Students are encouraged to access the eBook and use the Study Plan. Use of MyMathLab contributes 90 percent to each student's final course grade.
5 percent Prequizzes <i>Students are allowed unlimited attempts at practice questions before quizzes.</i>		

Results and Data

Learning Outcome	Departmental Average	Taught by Hughes with MyMathLab
Use of operations to simplify an algebraic expression	84%	100%
Solve a linear equation	84%	78%
Solve a linear equation with fractions	76%	100%
Solve a literal equation for a given variable	80%	61%
Set up and solve a percent problem	75%	78%
Add polynomials	71%	78%
Simplify an expression with integer exponents	76%	72%
Multiply monomials	82%	83%
Multiply polynomials	66%	44%
Multiply two binomials	49%	39%

Table 1. Comparison of Learning Outcome Achievement in Elementary Algebra during Fall 2008 with and without MyMathLab as Indicated by Final Exam Questions

Learning Outcome	Departmental Average	Taught by Hughes with MyMathLab
Simplify a rational expression	72%	86%
Simplify a rational expression by using factoring trinomials	62%	86%
Multiply rational expressions	86%	86%
Add rational expressions	77%	86%
Solve a rational equation	74%	86%
Simplify using rational exponents	80%	93%
Simplify a radical expression	88%	71%
Solve a radical equation	71%	100%
Determine the vertex of a parabola	50%	57%
Determine the x-intercepts of a parabola	50%	71%

Table 2. Comparison of Learning Outcome Achievement in Intermediate Algebra during Fall 2008 with and without MyMathLab as Indicated by Final Exam Questions

Willy Hughes, adjunct, was the only instructor in the Umpqua Community College mathematics department using MyMathLab when the above data was collected. A comparison of learning outcome achievement between Hughes's students and the rest of the department at that

time indicates a significant learning difference. In 70 percent of the outcomes measured, more MyMathLab-enabled students achieved mastery of the outcome than did students who did not use the program.

The Student Experience

MyMathLab's easy-to-use interface and accessible features enable students at all levels of experience to quickly grasp the program itself and advance confidently through its pedagogical content. The program's breadth of multimedia resources means students may select the tools most appropriate to their individual learning styles.

Students in Hughes's elementary and intermediate algebra classes appreciate the extra help MyMathLab provides.

- "I've been out of school for 40 years. I didn't expect to understand the course material, let alone enjoy it. But MyMathLab was easy to follow and easy to use. I read the book and work through the problems until I have a clear understanding of them. Then I do the online homework. I especially like the Study Plan feature, as it helps keep everything in perspective and keep me on task."

- "MyMathLab made it very easy to understand how to work the problems. I got plenty of practice from the Study Plan, and the practice tests showed me where my weaknesses were. Since I learn better by doing rather than listening or watching, this alone improved my understanding of math more than any other class could have done."
- "I think MyMathLab is great. It's like having a math tutor 24-7, right here on my computer, whenever I need one. I have a better understanding of the material now after doing just 20 problems than I did after doing 100 in other classes. I also really like the convenience of doing homework whenever I want to and submitting it as soon as I'm done with just the click of a button."

Conclusions

Hughes knows MyMathLab works—and so do his students. The program motivates them to persevere, reinforces their belief in their abilities, and promotes increased learning.

Based on positive student feedback about MyMathLab's multimedia features, Hughes's plans for the future include

customizing the program by means of self-produced instructional videos.

*Submitted by Willy Hughes, Adjunct
Umpqua Community College*

Product Used Trigsted MyMathLab

Course Name College Algebra

Credit Hours Three



KEY TAKE-AWAY

The Trigsted eBook + MyMathLab integrated product provides online students with the reinforcement they need to persevere through each step. After just one semester, VSCC College Algebra students' average final exam grades improved by 91 percent.

Textbook in Use

Trigsted College Algebra, 1e, Kirk Trigsted

Course Implementation

Course Design

This College Algebra course is taught solely online. The majority of students complete their work on personal or work computers. Computers are available on campus for those students who need them. The instructor offers individual tutoring via online office hours.

30 percent

Proctored midterm exam
Completed in Trigsted MyMathLab.

30 percent

Proctored final exam
Completed in the school's course management system.

Assessments

15 percent Homework
Three assignments per week, completed in Trigsted MyMathLab; students may take as much time as they need until the deadline to finish.

15 percent Quizzes
One per week, completed in Trigsted MyMathLab; students may take as much time as they need until the deadline to finish.

10 percent Nonproctored tests
Completed in MyMathLab.

Use of Trigsted MyMathLab

Homework, quizzes, nonproctored tests, and the midterm are created using Trigsted MyMathLab's Homework Manager and are taken in Trigsted MyMathLab. Students are encouraged to use the program's discussion board to ask questions, which are answered by the instructor via e-mail or phone or in the online classroom.

According to Rita Sowell, professor, the Trigsted eBook "is the main focus of instruction." Students are encouraged to read and interact, take a reading assessment, practice, and then attempt the homework. For additional homework support, students use Trigsted MyMathLab's View an Example and Help Me Solve This features.

Use of Trigsted MyMathLab contributes 70 percent to a student's final course grade.

Results and Data

Figure 1 shows that College Algebra students who used Trigsted MyMathLab (spring 2010) achieved a significantly higher average final exam score than did students who used another online courseware (spring 2009). The average final exam score improved from 38 out of 100 points to 72.7 out of 100 points—a difference of 34.7 points, or 91 percent. The same final exam was used both semesters.

Figure 2 compares the percentage of students earning a grade of A, B, or C; D; and F before and after Trigsted MyMathLab adoption. Again, the increased student success is significant: 89 percent of the Trigsted MyMathLab students earned an A, B, or C compared with only 68 percent of the students who used the other program. Conversely, before Trigsted MyMathLab was adopted, 11 percent of the students failed. After adopting Trigsted MyMathLab, the fail rate dropped to 4 percent.

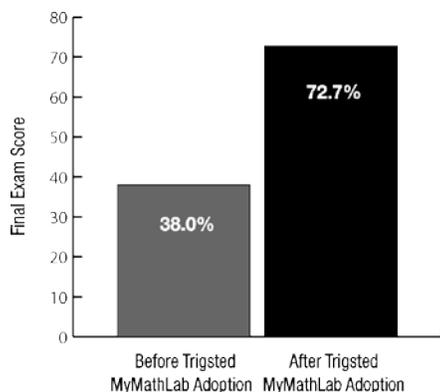


Figure 1. Comparison of Average Final Exam Scores before and after Trigsted MyMathLab Adoption ($n=56$)

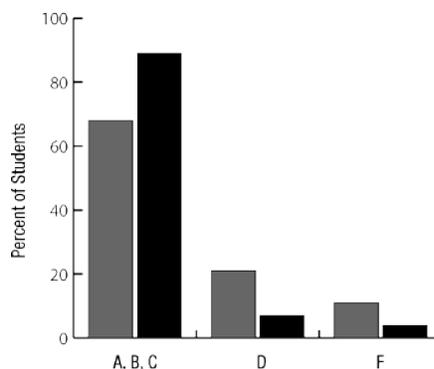


Figure 2. Comparison of Final Exam Grades before and after Trigsted MyMathLab Adoption ($n=56$)

The Student Experience

Sowell's students appreciate the breadth of interactive features and multimedia learning tools found in both the Trigsted eBook and MyMathLab.

- “This text and this course are perfect. I particularly liked the animations in the text. They helped me understand the lessons.”
- “I haven't done any math since 2004. I really expected to fail this class—but I didn't. The eBook's videos showed everything step-by-step.”
- “Trigsted MyMathLab was the shining star of the course—next to the professor, of course. It was easy to navigate and easy to learn from mistakes.”
- “I really enjoyed using Trigsted MyMathLab. The animations were very helpful, as was the Help Me Solve This feature. It was user-friendly and gave me many useful tools to help me learn. I hope to take more online classes using this format.”
- “The item I found most useful was the Help Me Solve This feature. It not only walked me through a problem step-by-step but also gave me the basic rules pertaining to the problem itself.”

Conclusions

Volunteer State Community College first employed Trigsted MyMathLab in its online College Algebra courses. The staggering success of the program + Trigsted eBook combination have since prompted the school

to adopt Trigsted MyMathLab for use in all of its College Algebra delivery formats: online, traditional, hybrid, and dual enrollment.

*Submitted by Rita Sowell, Ed.D., Professor of Mathematics
Volunteer State Community College*

Product Used MyMathLab
Course Name College Algebra
Credit Hours Three



KEY TAKE-AWAY

Weekly, required MyMathLab homework and quizzes ensure that Walsh's online College Algebra students get more practice, remain on track, and complete the course. Walsh's courses consistently report significantly higher pass rates and lower DWF rates.

Textbook in Use

College Algebra, 4e, Mark Dugopolski

Course Implementation

Course Design

College Algebra is an online, 15-week course. MyMathLab is used for every aspect of the course—homework, quizzes, tests, and the final exam—with the exception of five e-mailed discussion questions (one per each chapter assigned). Students develop solutions that must include the equation and the steps used to solve the equation, and they must explain the meaning of the answer.

The instructor is available for individual help during office hours for 10 hours a week and online during virtual hours.

Assessments

18 percent Homework
Students are allowed three attempts at selecting similar exercises to complete homework correctly.

18 percent Quizzes
 35 percent Tests
 20 percent Final exam
 9 percent Off-line discussion questions

Use of MyMathLab

Students use MyMathLab to complete homework and take quizzes, tests, and the final exam. The Study Plan and its practice questions are recommended to students who do not score well on tests. Through the program, students have access to a constantly updated overview of their progress and grade throughout the semester.

Use of MyMathLab contributes 90 percent to each student's final course grade.

Results and Data

Semester/Format	Student Enrollment	Product in Use	Pass Rate	D/W/F Rate
Fall 2009/Sections 1 & 2 Face-to-Face	63	None	65%	35%
Fall 2009 Online	35	MyMathLab	87%	13%
Spring 2010/Sections 1 & 2 Face-to-Face	64	None	50%	50%
Spring 2010 Online	38	MyMathLab	65.8%	34.2%

Table 1. Comparison of Pass and D/W/F Rates in College Algebra with and without the Use of MyMathLab, Fall 2009–Spring 2010 ($n=200$)

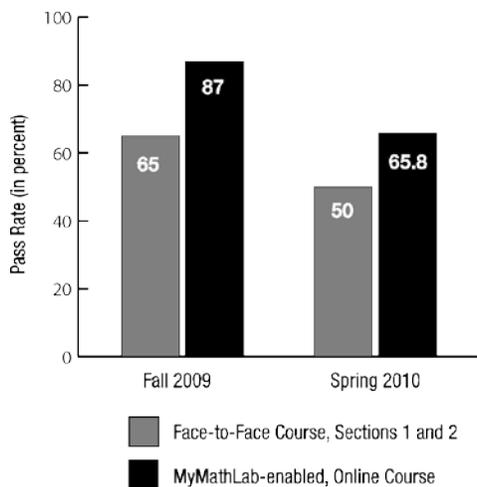


Figure 1. Comparison of Pass Rates in College Algebra with and without the Use of MyMathLab, Fall 2009–Spring 2010 ($n=200$)

Jennifer Walsh, instructor, created the online College Algebra course—then compared it with the school’s two face-to-face versions of the same course. The results validated what she had already suspected was true: the MyMathLab-enabled, online course promoted higher pass rates and lower drop/withdrawal/fail rates than did the traditional on-ground courses.

Table 1 shows Walsh’s data. For both fall 2009 and spring 2010, online course pass rates were significantly higher than on-ground pass rates: 25.3 percent and 31.6 percent higher, respectively. Drop/withdrawal/fail rates were even more significant: 62.8 percent lower in fall 2009 and 31.6 percent lower in spring 2010. Figures 1 and 2 illustrate the side-by-side comparison.

The Student Experience

Walsh is confident that students who complete the MyMathLab-enabled online course are better prepared for subsequent courses. “The amount of work involved in completing an online course is more comprehensive than it is for an on-ground course,” she says. “And the potential for on-time intervention is far greater. MyMathLab enables me to monitor exactly what each student is doing, where the students is having problems, and what concepts need to be addressed. In a face-to-face class, I may not know

Conclusions

“I have been teaching this course since 1995 and have seen tremendous advances in the resources available in the online venue for both students and teachers. MyMathLab makes it easy for me to develop a course and easy for students to access it and succeed in it,” Walsh says.

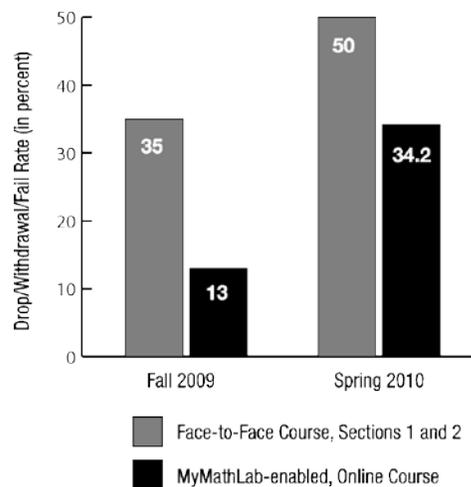


Figure 1. Comparison of D/W/F Rates in College Algebra with and without the Use of MyMathLab, Fall 2009–Spring 2010 ($n=200$)

Walsh attributes the online students’ success to the interactive aspect of MyMathLab. “Many students prefer taking the course online because they’ll receive immediate feedback and tutoring,” she says. “MyMathLab’s Show Me How to Do This, Help Me Do This, and other learning aids address all types of learners and are essential to my students’ success.”

Key curriculum changes also helped increase student success. “One was to include structure via solid deadlines for all assignments,” says Walsh. “In addition, students have both a homework assignment and a quiz due each week on the sections that were covered that week. The combination of structure and increased practice has enabled more students to stay on task and complete the course.”

what an individual student can do until the first test. In class, there are usually a select few who are willing to answer questions and ask questions. Online students are responsible to ask and answer their own questions.

MyMathLab’s Coordinator Course enables Walsh to use the same final exam for all of her courses. She directly ties each question to a learning objective and can assess the success rates on each one.

*Submitted by Jennifer Walsh, Instructor
Daytona State College*

Product Used MyMathLab
Course Name College Algebra
Credit Hours Three



KEY TAKE-AWAY

By enabling consistent, high-quality content delivery and assessments across 47 sections of 40 students each, MyMathLab's Coordinator Course feature makes LSU's already successful lab-based course redesign even more effective.

Textbook in Use

Trigsted College Algebra, 1e, Kirk Trigsted (eBook)

Course Implementation

Course Design

Louisiana State University's (LSU's) redesign model requires active participation and increased technology use by its students. Students are required to spend one hour a week in a traditional classroom of 40 students and a minimum of three flexible hours a week using MyMathLab in a math lab .

The 275-seat Pleasant Hall Math Learning Lab is open 60 hours a week and is staffed with instructors, teaching assistants, and undergraduate tutors. In addition to putting in the minimum required hours in the learning lab, students can work additional hours in the lab or work at their convenience from a Web-accessible computer.

Assessments

All assessments are taken using MyMathLab. The final grade is determined as follows:

- 10 percent Participation (*5 percent for class participation, 5 percent for lab hours*)
- 10 percent Homework (*2 lowest of 29 homework scores are dropped*)

- 10 percent Quizzes (*2 lowest of 14 quiz scores are dropped*)
- 45 percent Tests (*4 tests, lowest is replaced with final exam score if higher*)
- 25 percent Final exam (*departmental, group, cumulative*)

Use of MyMathLab

Homework assignments, quizzes, tests, and the final exam are created in MyMathLab by course coordinators, thereby ensuring quality control and avoiding course drift.

Homework may be repeated an unlimited number of times prior to the due date. Quiz and test questions come directly from the assigned homework problems. Quizzes may be attempted up to 10 times before the due date and are drawn from a pool of questions with similar objectives. Test questions are also pooled. Tests are proctored, password protected, and taken in the university testing center during a three-day period.

Use of MyMathLab contributes 90 percent to a student's final course grade.

Results and Data

A longitudinal view of College Algebra student success data shows that the adoption of MyMathLab has contributed to an increase in overall success rates, an increase in final grades of A and B, and a decrease in the drop/fail/withdrawal (DFW) rate. Note that in fall 2005, LSU instituted a drop policy that limits the number of drops a student

is allowed, thereby producing more Fs and fewer Ws. Also note that fall 2005 data was omitted due to the impact of Hurricane Katrina.

Figure 1 illustrates that for fall students in College Algebra entering the university from 2000 to 2009 with an ACT math score of 19–24, the percentage of students earning Bs

MyMathLab's student-centered approach to learning requires students to put in more time doing mathematics and less time watching mathematics, which is why their learning outcomes are measurably higher.

—Phoebe Rouse, Precalculus Mathematics Director
Louisiana State University–Baton Rouge

increased significantly after MyMathLab was introduced for all assessments, and the number of students earning As increased slightly.

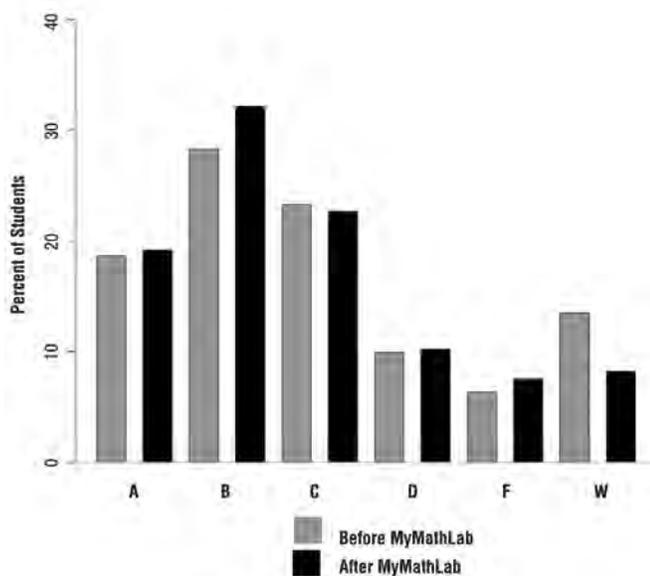


Figure 1. Comparison of College Algebra Final Grades before and after Adoption of MyMathLab, Fall Semesters 2000–2009 ($n=15,457$)

Figure 2 shows that for the same population of students entering the university from 2000 to 2009, the success rate increased significantly since MyMathLab was introduced for all assessments.

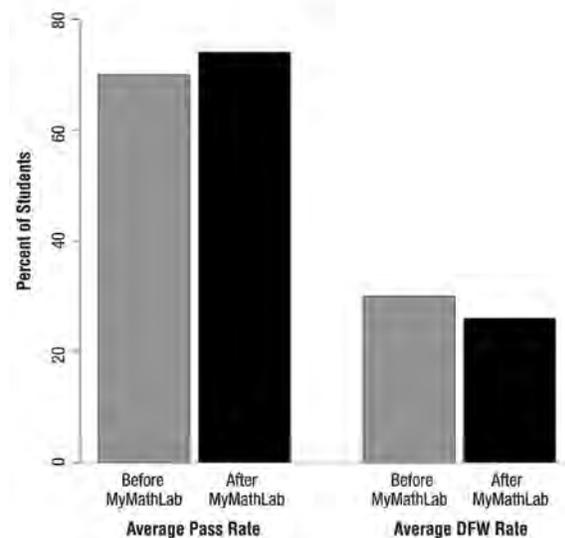


Figure 2. Comparison of Average College Algebra Pass and DFW Rates before and after Adoption of MyMathLab, Fall Semesters 2000–2009 ($n=15,457$)

The Student Experience

Students quickly learn that practice using MyMathLab during lab time reaps positive results.

- “MyMathLab was very helpful. I learned so much this past semester. In my opinion, the math lab is the perfect environment for learning math.”

- “I liked being able to work alone on MyMathLab but also having the reassurance of tutors to help when I needed them.”
- “If I hadn’t been required to spend three hours in math lab each week, I would not have spent as much time on math homework and studying.”

Conclusions

One of the goals of redesign was to retain the high rate of student success in College Algebra. Using the current, redesigned program with MyMathLab, LSU–Baton Rouge has successfully improved on previous success rates. “In addition to more and more students’ passing college math on their first try, students’ time management skills are

improving—two key elements in increasing our students’ odds of graduating within six years,” says Rouse.

Submitted by Phoebe Rouse, Precalculus Mathematics Director
Louisiana State University–Baton Rouge

Product Used MyStatLab
Course Name Introduction to Statistics
Credit Hours Three



KEY TAKE-AWAY

Required use of MyStatLab's online discussion board feature promotes increased communication and collaboration among UT students. This teaching and learning best practice contributes to significantly improved pass rates, D/F/W rates, and final exam scores.

Textbook in Use

Essentials of Statistics, 3e, Mario F. Triola

Course Implementation

Course Design

Introduction to Statistics is a fully online course, in which all work is completed in MyStatLab. Most students work from home. Assignments have set due dates with limited extensions; students are encouraged to work ahead.

Assessments

- | | |
|---|------------|
| • Required discussion postings | 10 percent |
| • Up to eight required homework assignments | 15 percent |
| • Four tests | 40 percent |
| • Final exam | 35 percent |

Students have several opportunities throughout the term to complete bonus assignments for extra points.

All assessments are graded and recorded by MyStatLab. Students review their results and if they think there is an error, may e-mail or phone the instructor for a review.

Use of MyStatLab

Prior to fall 2006, the course was presented using WebCT for homework and tests using the algorithmic capabilities for writing problems, and MyMathLab for videos. Since full adoption of MyStatLab in spring 2007, all work is done in MyStatLab: required homework, tests, and the final exam. Students participate via discussion postings in MyStatLab, and when needed, the instructor creates a virtual classroom.

Use of MyStatLab contributes to 100 percent of a student's final grade.

Results and Data

Prior to 2005, Introduction to Statistics was offered without the benefit of any Pearson MyLab product. According to Gwen Terwilliger, professor emeritus, since the addition first of MyMathLab and then MyStatLab, final exam scores and retention rates for the course have significantly increased. Table 1, which contains data from the time of adoption of MyMathLab in fall 2005 through spring 2009, reflects a consistent increase in both.

"MyMathLab offered my students more tools and more ways to learn," says Terwilliger. "Then MyStatLab provided two more big improvements: Help Me Solve This and the algorithmic function. Help Me Solve This has resulted in a huge upswing in learning. Because questions are specific,

I am able to give the kind of targeted clarification students would receive in a face-to-face classroom setting. It's drastically reduced the number of e-mails I receive looking for help and, more important, has enabled my students to go further on their own and come test time."

Terwilliger attributes the learning increases illustrated in Table 1 to the best practices enabled by MyStatLab.

- Required postings to MyStatLab's online discussion board promote increased communication and collaboration among the students. This kind of peer-to-peer advising is another way students reinforce what they know and gain valuable confidence in themselves as capable learners.

MyStatLab saves me from using class time to explain and reexplain how to solve problems. Because students are more prepared to learn and more proactive in their learning, I can convey more-complicated, robust concepts to them. It makes the course more fun to teach.

—Gwen Terwilliger, Ph.D., Professor Emeritus
University of Toledo

Semester	Enrollment	Percentage of As, Bs, Cs Earned	Drop/Fail Withdrawal Rate	Average Final Exam Score	Standard Deviation
Spring 2009	52	90.4	7.7%	86.3	15.6
Fall 2008	40	90.0	10.0%	89.8	13.5
Spring 2008	59	84.7	0.0%	90.0	8.8
Fall 2007	46	89.1	8.7%	86.1	1.6
Spring 2007	49	93.8	4.1%	84.3	15.2
Fall 2006	26	73.0	23.1%	68.4	9.06
Spring 2006	43	79.0	20.9%	68.5	8.68
Fall 2005	45	73.3	20.0%	66.5	8.05

Table 1. Comparison of Student Success and Drop/Fail/Withdrawal Rates from Fall 2005 through Spring 2009

- MyStatLab’s immediate feedback keeps students informed of their progress in the context of learning. Students can rework problems until they earn

100 percent. Terwilliger reports that nearly all her students “go for the 100.” As a result, students gain more practice and are more prepared for tests.

The Student Experience

Whether used in class or online or as a supplement or a complete course, MyStatLab provides students with everything they need to succeed in one convenient location.

Student feedback on Terwilliger’s online format is positive.

- “I really like the format of our class homework on [MyStatLab], particularly the wide assortment of

tools to help us master the material. I’ve found the Similar Exercise, Help Me Solve This, and View an Example links most helpful. This is my first interactive online course, and I really like it. The more helpful insight and tools, the better!”

Conclusions

By reinforcing proactive learning and teaching students how to study, MyStatLab helps students learn how to apply themselves, effectively problem solve, and skillfully learn.

“I’m so glad I have MyStatLab,” says Terwilliger. “I knew it was helping students, but I didn’t realize its full impact until I averaged the final exams. The correlation between final exam scores and course grades is extremely high.”

Terwilliger plans to further hone her MyStatLab adoption by making more use of its multimedia features—including

more use of the discussion board, animations, and required assignments using StatCrunch. “I suspect that having students become familiar with StatCrunch from the start will help them at the end of the term, when the problems are more complex,” she says. “I’ll assign it as homework with a specific data set.”

Submitted by Gwen Terwilliger, Ph.D., Professor Emeritus
University of Toledo

Product Used MyMathLab
Course Name Essential Mathematics
Credit Hours Three



KEY TAKE-AWAY

Repeated student success plus significant student buy in of the program's unlimited practice opportunities and anytime/anywhere access convinced Algonquin administration to upgrade its use of MyMathLab from optional in one section to required in all Essential Math sections.

Textbook in Use

Basic Technical Mathematics with Calculus SI Version, 9e, Allyn J. Washington

Course Implementation

Course Design

This traditional 15-week precalculus, multidiscipline course meets three hours per week in the form of one 2-hour lecture followed by a 1-hour math workshop in which work on sample problems reinforces the lecture material.

Outside of class, students complete MyMathLab homework and a MyMathLab quiz for each chapter covered in the course syllabus.

Program eligibility requirements for Algonquin College's three-year technology programs traditionally include Mathematics, Grade 12 MCT4C (or Grade 11 MCR3U) or equivalent. However applicants with a Grade 12 MAP4C (or Grade 11 MCF3M) score of at least 60 percent are conditionally accepted with the provision that they take additional preparatory mathematics as part of their program of study.

Assessments

For students who meet the program's traditional eligibility requirements, the grading policy is as follows:

10 percent	Quizzes <i>One per chapter, taken in MyMathLab</i>
20 percent	Paper-based assignments
40 percent	Paper-based term tests and quizzes
30 percent	Paper-based final exam

Conditionally accepted students attend a five-hour-per-week version of the course, which consists of three hours of lecture and a two-hour math workshop, in which a combination of paper-based exercises and MyMathLab exercises is administered. For these students, the grading policy is as follows:

5 percent	Paper-based, in-class exercises
5 percent	Quizzes <i>One per chapter, taken in MyMathLab</i>
20 percent	Paper-based assignments
40 percent	Paper-based term tests and quizzes
30 percent	Paper-based final exam

Note: The final exam is the same in both versions of the course.

Use of MyMathLab

In addition to required MyMathLab quizzes, students are afforded the breadth of MyMathLab's learning features, including Help Me Solve This, View an Example, Instructor Tip, Calculator, and the Study Plan.

Starting in fall 2010, MyMathLab's Coordinator Course feature will be employed to ensure consistent content and assessment integrity across multiple course sections, which are taught by a combination of full- and part-time instructors. The Coordinator Course will be configured with prepopulated quizzes organized by textbook chapter.

Use of MyMathLab contributes 5 to 10 percent to a student's final course grade.

Assignments created within MyMathLab provide students with a rich learning and testing environment in which students can immediately obtain online assistance to enhance their learning.

—David Haley, Mathematics Professor
Algonquin College

Results and Data

In fall 2008, MyMathLab was introduced as an optional component in one section of Essential Mathematics. The results were promising: 49 percent of the students used MyMathLab homework and quizzes, which were counted as a 4 percent bonus to their final grades. The overall student success rate for the course section was 77 percent ($n=89$, $N=373$).

In response to the product's high student-acceptance level, MyMathLab was introduced as a required component of all fall 2009 sections of Essential Mathematics. Although usage

statistics were not collected for that semester, there was an observable increase in student success rates from the pilot course section to follow-on deliveries in the same course section: 78 percent success rate ($n=42$, $N=317$). The repeated positive student success, combined with the experience of faculty and students themselves, resulted in the decision to not only maintain use of MyMathLab in all Essential Mathematics sections but also to expand its implementation to include standardized Coordinator Courses in fall 2010.

The Student Experience

According to David Haley, mathematics professor, "One of the strengths of MyMathLab is its many learning aids. Students have the opportunity to learn and to practice mathematical principles while being tested and can obtain immediate assistance if they have trouble."

MyMathLab's interactive and engaging learning environment supports the "anywhere, anytime, anyplace" learning philosophy of the college's 2008 strategic plan. "Students have demonstrated a very enthusiastic buy in of MyMathLab," says Haley. "While they may not require the extra online assistance all the time, knowing that it

is available for use when needed positively contributes to their learning experience."

Algonquin students know that the key to learning math is doing math, and they recognize the ways that MyMathLab helps them do just that. "I'd say the biggest advantages of MyMathLab are its huge database of practice questions and that it provides correct answers immediately," says an Essential Mathematics student. "I can practice problems over and over again until I'm comfortable with the content. This helps decrease my anxiety, and I end up getting better grades as a result."

Conclusions

"MyMathLab's anywhere/anytime convenience, its wealth of learning aids, and its immediate feedback not only promote increased student learning but also build students' confidence in their ability to succeed in this course and beyond," says Haley.

Future plans include the use of member courses copied from a prepopulated Coordinator Course to promote the consistency of the learning and testing environment.

Submitted by David Haley, Mathematics Professor
School of Advanced Technology, Algonquin College

Product Used MyMathLab
Course Name College Algebra
Credit Hours Three



KEY TAKE-AWAY

MyMathLab's automatic grading means instructors can assign more homework. MSU students get more practice earn higher grades and acquire the study skills and confidence they need to perform better in subsequent math courses.

Textbook in Use

College Algebra, 5e, Robert F. Blitzer

Course Implementation

Course Design

Students spend two hours each week in a lecture-format class and at least two additional hours each week in a math lab. Tutors are available in the computer lab to help with homework and quiz/test preparation.

MyMathLab was implemented in fall 2004 in all sections for homework and quizzes. In fall 2005, its use was broadened to include tests and the final exam.

Assessments

10 percent	Homework (required) <i>Students may complete MyMathLab homework from any location. They are offered unlimited attempts over the span of one week to complete it and are encouraged to use available study aids.</i>
12 percent	Quizzes <i>Students take 12–16 proctored quizzes each semester (about one each week) in the math lab using MyMathLab.</i>
40 percent	Tests <i>Students take four proctored tests each semester in the math lab using MyMathLab.</i>

30 percent

Final exam

The final exam is proctored and taken in the math lab using MyMathLab.

8 percent

Other

Non-MyMathLab work

Use of MyMathLab

MyMathLab is used for creating and completing homework assignments, quizzes, proctored tests, and the final exam. Homework questions are both drawn from MyMathLab's bank of problems—which directly correlate to the textbook—and created with MyMathLab's custom exercise builder. The majority of quiz and test questions are custom-built.

Students are encouraged to use the Gradebook to review their homework assignments before taking quizzes and tests and to use the Study Plan after taking them.

The coordinator course function ensures consistent grading and delivery of course objectives across up to 14 sections a semester.

Use of MyMathLab contributes 92 percent to each student's final course grade.

Results and Data

Figures 1–3 indicate that Mississippi State University College Algebra students have been significantly more successful since full MyMathLab adoption in fall 2005: the average success rate has increased by 14 percentage points; the average exam score has increased by 12 points; and the average withdrawal rate has decreased by half.

Kimberly Walters, math instructor, reports that students who earn a C or better in College Algebra are more successful in subsequent courses. Based on a longitudinal study and using a four-point scale, College Algebra students who used MyMathLab earned average grade points of 2.49 in trigonometry, 2.34 in business calculus, and 2.51 in elementary statistics.

MyMathLab enables me to easily identify students who need help, as well as those who are doing well. This is so important when my sections have over 150 students in them.

*—Kimberly Walters, Instructor
Mississippi State University*

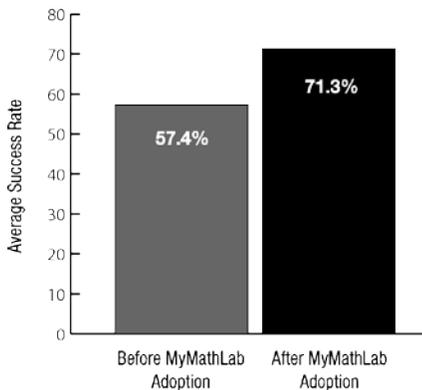


Figure 1. Comparison of Average Success Rates before and after MyMathLab Adoption ($n=7,272$) “Success” is an overall course grade of A, B, or C. “Before” figures are from fall 2002 to spring 2004; “After” figures are from fall 2005 to fall 2009.

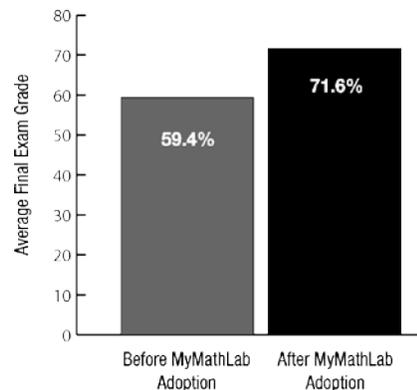


Figure 2. Comparison of Average Final Exam Scores before and after MyMathLab Adoption ($n=7,272$) “Before” figures are from fall 2002–spring 2004; “After” figures are from spring 2006–fall 2009.

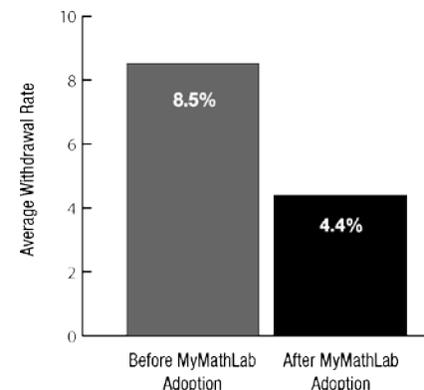


Figure 3. Comparison of Average Withdrawal Rates before and after MyMathLab Adoption ($n=7,918$) “Before” figures are from fall 2002–spring 2004; “After” figures are from fall 2005–fall 2009.

The Student Experience

MyMathLab’s automatic grading enables Mississippi State University (MSU) to increase homework requirements without taxing instructor time and resources. Walters reports that assigning homework in MyMathLab has resulted in the following student benefits:

- Students discover early on whether they need help rather than just before or during test time.
- Students who want or need additional practice can repeat problems over and over again.
- Students can access assistance—in the moment they need it and in the context of learning.
- Nontraditional students can work—and receive help—when and where their schedule allows it.

Conclusions

Walters has seen firsthand the positive impact MyMathLab has on her students. “My students are more successful,” she says. “They have more confidence in their math abilities because they are able to practice more than they ever could in the past.”

Fall 2008 and fall 2009 student survey responses indicate that Walters’ students make the connection between use of MyMathLab and increased success.

- “MyMathLab helped me stay interested in algebra and not dread homework as much.”
- “The interactivity helped a lot. It was like having the teacher there with me.”
- “MyMathLab is awesome. The program was the most help to me when I had trouble understanding the material. I used the Study Plan to study for tests, and I could work problems as much as I wanted.”

Walters’ future plans include exploring the correlation between time spent using the program and final grades. If the correlation is positive, she may use the data to justify an increase in required time on task.

*Submitted by Kimberly Walters, Instructor
Mississippi State University*

Product Used MyMathLab
Course Name College Algebra
Credit Hours Three



KEY TAKE-AWAY

Increased engagement in course content through required homework, required lab hours, and MyMathLab-enabled assessments has increased Southeastern Louisiana University's College Algebra success rates—despite increased course rigor and no more partial credit.

Textbook in Use

College Algebra, 8e, Michael Sullivan

Course Implementation

Course Design

In spring 2008 Southeastern Louisiana University adopted MyMathLab for its three-credit College Algebra course. The program is used for all course assessments: homework, quizzes, and tests. Students spend two hours a week in technology-enhanced in-class instruction and at least three additional hours a week in a math lab. Peer tutors and faculty are available in the lab for one-on-one instruction for homework and for review of mistakes on quizzes.

In fall 2008, the school implemented a National Center for Academic Transformation redesign with its first large contingent of College Algebra students and in 2009 expanded use of the program to include a five-credit College Algebra course and a three-credit Intermediate Algebra course.

Assessments

- 10 percent Required MyMathLab homework
May be completed from any location, unlimited attempts until due date, use of study aids is encouraged.
- 10 percent MyMathLab quizzes (14 per semester)
Not proctored, may be attempted up to 10 times.

- 10 percent Lab participation
- 40 percent MyMathLab tests (4 per semester)
Proctored and taken in the math lab.
- 30 percent MyMathLab final exam
Proctored and taken in the math lab.

Use of MyMathLab

MyMathLab is used for creating and completing homework assignments, quizzes, proctored tests, and the final exam. Homework questions are drawn from MyMathLab's bank of problems. Quiz and test problems serve as a subset of the assigned homework problems.

Students are required to use the eBook and are encouraged to take advantage of the program's study aids and interactive features. The Coordinator Course function standardizes assignments across 25 sections of 42 students during each fall semester.

Use of MyMathLab contributes 100 percent to a student's final course grade.

Results and Data

Table 1 compares student achievement in fall semesters before and after NCAT redesign. The most significant impacts of the redesign include an increase in retention and progression rates while simultaneously reducing costs by means of larger class sizes and fewer faculty.

- Note the change in the entrance criteria over the five-year span.
- The traditional format offered partial credit and contained little consistency across sections.

Fall Semester	Delivery Format	College Algebra Course	ACT Score	Number of Students	ABCD	ABC	F	W	F/W
2005	Traditional	160/161	≥ 18	1,909	51.5%	40%	20%	29%	48.5%
2006	Traditional	160/161	≥ 18	2,020	50%	38%	24%	26%	50%
2007	Traditional	161	≥ 21	1,006	60%	48%	17%	23.4%	40%
2008	Traditional	155 repeaters/remediated	18–20	554	59.4%	45.5%	17.3%	23.3%	40.6%
		155A new freshmen	18–20	861	65.6%	53.4%	21.8%	12.5%	34.4%
	Redesign	161	≥ 21	1,056	63.5%	53.5%	16.5%	20%	36.5%
2009	Redesign	155 repeaters/remediated	19 or 20	558	35.1%	21%	32%	33%	64.9%
		155A new freshmen	19 or 20	515	52.2%	35%	32%	15%	47.8%
		161	≥ 21	950	61.4%	48.3%	19%	19.8%	38.9%

Table 1. Comparison of Student Achievement in College Algebra before and after NCAT Redesign, Fall Semesters 2005–2009 ($n=9,429$)

Math 155: Students are repeating the course or taking the course following successful completion of a remedial course in intermediate algebra.

Math 155A: Students are in College Algebra for the first time, but Math ACT scores are 19 or 20.

Math 161: Students have Math ACT scores of 21 or above.

- Both Math 160 and Math 161 were college algebra courses. Math 161 is required of business, technology, and science majors.
- The fall 2008 redesign included the elimination of partial credit and absolute consistency across all sections of Math 161.
- Math 155 and Math 155A are five-credit college algebra courses designed to provide more in-class instruction for students with weaker backgrounds.
- Math 155, Math 155A, and Math 161 now cover exactly the same material and have exactly the same standardized assessments via MyMathLab. Placement depends on Math ACT scores.

The Student Experience

“One thing I hear over and over again is that MyMathLab is actually making students complete their homework, a habit that’s uncommon in introductory math classes,” says Rebecca Muller, mathematics instructor. “Prior to the program, most of my students wouldn’t ask questions about their homework because they either hadn’t done it or

because they were embarrassed to ask in front of their peers. With MyMathLab, students are required to take the time to properly complete their homework and are given the opportunity to ask questions in the math lab.”

Conclusions

“For probably the first time, all students are engaged in working on homework on a regular basis,” says Muller. “The rigor of the homework assigned has increased, and even as we’ve implemented grading with no partial credit, success rates have increased in the course. Students become more-independent learners by using the program.”

*Submitted by Rebecca Muller, Mathematics Instructor
Southeastern Louisiana University*

Product Used MyStatLab
Course Name Elementary Statistics
Credit Hours Three



KEY TAKE-AWAY

More statistics homework needn't mean more instructor time. By requiring UA students to complete MyStatLab homework and use its Study Plan, they get the hands-on practice they need to master beginning statistics concepts without taxing instructor resources.

Textbook in Use

Introductory Statistics, 3e, Richard D. De Veaux, Paul F. Velleman, David E. Bock

Course Implementation

Course Design

Courses may run either three days per week for 55 minutes each day or two days per week for 80 minutes each day. Smaller classes meet in traditional classrooms; larger classes meet in the university's Lecture Center.

MyStatLab was introduced in spring 2007. At that point, it was used solely for homework. In spring 2008, the school starting using the program to create and complete quizzes.

Assessments

20 percent	Homework <i>Homework is assigned on MyStatLab after two chapters have been covered. Students have a week to complete homework assignments</i>
17.5 percent	Quizzes <i>Quizzes are given on MyStatLab every other Friday for a total of five per semester. Students are allowed up to three attempts and must complete them within a week.</i>

62.5 percent

Exams

Exams are taken once a month (chapter unit exams) and at the end of the course (final exam). Exams are taken in class; students must complete exams during class time.

Use of MyStatLab

Students are introduced to MyStatLab on the first day of class. How to use the program for homework assignments, quizzes, and study plans is explained to them. After the first day, questions about the program may be addressed with the instructor after class or during office hours.

MyStatLab homework assignments and quizzes are mandatory. In addition, students are assigned required Study Plan questions and chapter exercises prior to exams.

Exam grades and grades from some homework assignments are imported into MyStatLab.

As of fall 2009, use of MyStatLab contributes 37.5 percent of the final course grade.

Results and Data

Table 1 compares a variety of student achievement metrics before and after implementation of MyStatLab and shows how those figures are impacted by the percentage contribution of MyStatLab use.

Homework scores dramatically increased from an average of 79.2 before the use of MyStatLab to an average of 89.9 with MyStatLab.

Although not noted in table 1, James Lamatina, lecturer for the course, reported that those students who used the

Study Plan received higher examination grades than those who did not.

Of particular interest to Lamatina is how the program promotes students' taking responsibility for their learning. MyStatLab's Gradebook feature enables both Lamatina and his students to see how students' work habits influence their achievement, and features like the Study Plan and Ask My Instructor make obtaining help convenient and easy. To further assist those students who desire it, Lamatina offers

I couldn't handle big lecture classes without MyStatLab. Collecting and grading homework assignments would be too time-consuming and stressful. I'd have to grade students on examinations alone.

—James Lamatina, Lecturer
University at Albany

Semester	Homework Format	# of Students Enrolled	Dropout Rate	Homework Average	Quiz Average	Exam Average	Percentage of As	Percentage of A/B/Cs	Percentage MSL Contribution
Spring 2006	Textbook only	87	5.7%	76.6	–	84.8	38.6	84.7	–
Fall 2006	Textbook only	128	2.2%	80.8	–	86.5	51.2	88.7	–
Spring 2007	MyStatLab	149	2.8%	91.5	–	89.3	54.7	91.1	35.2
Fall 2007	No Records Available								
Spring 2008	MyStatLab	400	7.8%	91.1	87.6	87.2	44.7	84.0	41.8
Fall 2008	MyStatLab	577	4.5%	88.5	77.8	73.6	17.0	84.0	40.0
Spring 2009	MyStatLab	364	6.1%	89.8	86.3	75.6	25.1	80.4	40.0
Fall 2009	MyStatLab	275	3.2%	87.9	78.9	75.7	16.9	77.4	37.5

Table 1. Comparison of MyStatLab Usage and Student Achievement Data, Spring 2006–Fall 2009 Semester Averages across All Class sections ($n=1,980$)

office hours, plus in 2009 added an optional day for review before tests. Given the opportunities available to students, when asked what might contribute to the decreased success reflected in table 1, Lamatina replied that while efforts are designed to reach all at-risk students, he finds that only those willing to take responsibility for themselves step up.

In this way, MyStatLab can help students identify earlier whether they have been appropriately placed. Lamatina suggests that this explains the increased drop rates: students, particularly freshman nonmajors, learn right away whether or not this is the course for them, and they can therefore drop the course before they fail it.

The Student Experience

Lamatina has received the following comments from students using MyStatLab in Elementary Statistics.

- “Even though the professor doesn’t assign all the questions, the Study Plan allows us to see other problems that can be worked on. These problems help me on future quizzes and tests.”
- “I’ve used other Web sites to work on assignments for the course. Of all of them, MyStatLab is the best.”
- “The Help Me Solve This feature is a very useful application. Its step-by-step process helps me get a detailed understanding of the problem.”
- “I like that when I input a wrong answer, the program doesn’t just reply that the answer is incorrect. It gives me feedback on how to correctly do the problem.”

Conclusions

“I really like this product,” says Lamatina. “My teaching is streamlined and more effective, and the students benefit from it.”

Future plans include offering tools for success to promote mastery of statistical computations on a TI calculator and further exploring how weighting the use of MyStatLab

impacts student success. Lamatina reports that due to what he’s seen thus far, he expects to increase the percentage contribution in future semesters.

Submitted by James Lamatina, Lecturer
University at Albany

Product Used MyMathLab
Course Name Fundamentals of Calculus with Applications
Credit Hours Three



KEY TAKE-AWAY

By requiring MyMathLab homework assignments and steadily increasing course rigor, faculty at University of Houston–Downtown encourage students to practice math skills until mastery. Students earn consistently high homework scores, final exam scores, and final course grades.

Textbook in Use

College Mathematics, 11e, Raymond A. Barnett, Karl E. Byleen, Michael R. Ziegler

Course Implementation

Course Design

Students meet twice a week in a traditional classroom for 75 minutes of lecture each class period. MyMathLab is required for homework; students are also required to complete additional activities that supplement the lectures and otherwise enhance the learning environment. Students may complete MyMathLab homework on campus in the math lab, library, or any other computer lab; or at home.

Assessments

5 percent	Classwork activities/participation
25 percent	Homework <i>Completed in MyMathLab</i>
45 percent	Three in-class exams <i>15 percent each exam</i>
25 percent	Comprehensive final exam

Students are assigned MyMathLab homework for each textbook section covered in class. They can make an unlimited number of attempts for each MyMathLab exercise in an assignment until the due date for that assignment. All MyMathLab homework assignments are due by the day of the exam on which that material is covered.

If a student's MyMathLab homework average is 80 percent or higher at the end of the semester, the lowest in-class exam grade may be replaced by the final exam grade, if doing so increases that student's course average.

Use of MyMathLab

MyMathLab is used for homework. Students are encouraged to see the appropriate section of the eBook before beginning homework assignments.

Use of MyMathLab contributes 25 percent to a student's final course grade

Results and Data

Timothy Redl, assistant professor, is confident that MyMathLab has contributed to student success in his course. "Students seem to enjoy MyMathLab online homework more than traditional paper-and-pencil homework," he says, "and good performance on homework generally translates into improved success."

To further challenge his students to access all of the MyMathLab resources at their fingertips, Redl has incrementally increased over time the rigor and demands of the course. Changes include increasing the amount of homework assigned and being more strict regarding due dates.

As illustrated in table 1, since implementation of MyMathLab in fall 2007, Redl's classes have enjoyed consistently high homework and exam scores.

- An average ABC rate of 78.2 percent
- An average mean homework score of 85.5
- An average mean final exam score of 73.5
- An average mean course grade of 71.2

Term	Enrollment	Grade Distribution						Mean Homework Score	Mean Final Exam Score	Mean Course Grade
		A	B	C	D	F	W			
Fall 2007	40	15	12	5	2	2	4	91.0	75.0	82.5
Spring 2008	40	19	16	4	0	0	1	94.6	83.6	88.5
Fall 2008 (Section 1)	40	20	6	8	1	2	3	94.1	82.1	86.3
Fall 2008 (Section 2)	41	13	11	6	4	6	1	83.8	69.8	76.3
Spring 2009	38	17	11	3	6	0	1	91.3	77.8	85.8
Fall 2009 (Section 1)	39	10	12	11	1	3	2	88.8	73.7	80.8
Fall 2009 (Section 2)	39	10	12	5	4	4	4	87.4	68.8	78.5
Spring 2010 (Section 1)	39	9	11	9	4	6	0	81.4	66.1	73.1
Spring 2010 (Section 2)*	39	9	6	5	8	4	6	86.9	64.8	75.6

Table 1. Comparison of Fundamentals of Calculus Grade Distribution, Homework Scores, Final Exam Scores, and Course Grades from Fall 2007–Spring 2010 ($n=355$)

*Plus one grade of Incomplete.

The Student Experience

Some of Redl’s students also take advantage of other online resources available in MyMathLab, including the Video Tutor and Student Solutions Manual.

Student survey responses indicate that students appreciate the immediate feedback that they receive upon completing an exercise, as well as the help offered via the Help Me Solve This and View an Example features.

Following is a sample of student responses to the survey questions: Did you find using MyMathLab helpful in learning the material? Why or why not?

- “Yes. It helped me continue working on the skills I learned in class.”
- “Yes, I did. It helped to have step-by-step examples.”

- “Yes, I did find MyMathLab very helpful, because there is a lot of help. There are examples and similar exercises, and I could practice and then see how I was doing.”
- “Yes. The software allowed me to review the exercises and pointed out errors, and the digital textbook allowed faster navigation and contained hyperlinks to videos and animations.”
- “Yes, because like with anything else, the more I practice, the better I get!”
- “Yes, I did find it very helpful because of the instant feedback. The examples were also helpful.”

Conclusions

Redl elected to implement MyMathLab in Fundamentals of Calculus with Applications after experiencing firsthand the program’s success in his courses. “I strongly believe that better results on MyMathLab homework assignments have led to better overall performance in the course and better understanding of the material taught,” says Redl.

Redl’s future plans include increasing the number of exercises in each MyMathLab assignment—so as to further emphasize the importance of homework in learning mathematics—and possibly standardizing course delivery over sections by instituting use of the coordinator course feature.

*Submitted by Timothy Redl, Ph.D., Assistant Professor
University of Houston–Downtown*

Product Used Trigsted MyMathLab
Course Names Intermediate Algebra, College Algebra
Credit Hours Three



KEY TAKE-AWAY

Adoption of the highly interactive and more structured Trigsted MyMathLab helped U of Idaho Intermediate Algebra and College Algebra students increase their final exam scores despite massive departmental budget cuts and class-size expansion from 45 to 250 students.

Textbooks in Use

Intermediate Algebra, 1e, Kirk Trigsted, Randall Gallaher, Kevin Bodden; *College Algebra*, 1e, Kirk Trigsted

Course Implementation

Course Design

In fall 2001, the University of Idaho's Department of Mathematics redesigned its Intermediate Algebra and College Algebra courses using the National Center for Academic Transformation's emporium model. Students attend class one day a week for 50 minutes and spend 2.5 hours a week in a computer lab staffed by faculty, graduate students, and trained undergraduate students.

Over the past 10 years, a variety of pedagogical improvements have been made: In 2004, MyMathLab was introduced in the College Algebra course. In 2007, MyMathLab became required for all homework, and MyMathLab quizzes were introduced. In 2008, TestGen midterm exams were replaced by MyMathLab tests. In 2009, to offset an enormous budget cut, class sizes were increased to 250 students each. The Trigsted *College Algebra* eText was adopted, and course notebooks were created to enhance course structure.

Assessments

6 percent	Notebook quiz <i>A weekly, in-class quiz on notes.</i>
5.5 percent	Attendance at Polya math center
10.9 percent/ Intermediate	MyMathLab homework <i>Students complete homework from any location, have unlimited attempts, and are encouraged to use study aids.</i>
13.6 percent/ College	
10.9 percent/ Intermediate	MyMathLab quizzes <i>Students have 10 attempts at each quiz.</i>
13.6 percent/ College	<i>They may use any resource except tutors and teachers until the quiz is graded.</i>

48.5 percent/
Intermediate
40.9 percent/
College

Exams

Exams are proctored and taken in the math center with no study aids. Eighty percent of the grade is from a MyMathLab test, 20 percent is from an in-class test. Up to three versions of the MyMathLab test may be taken.

18.2 percent/
Intermediate
20.4 percent/
College

Final exam

The common final exam is taken in class, using paper and pencil.

Use of Trigsted MyMathLab

MyMathLab is used for creating and completing homework assignments, quizzes, and proctored tests. Students use the eBook and its associated videos and animations. Homework, quiz, and test questions are drawn from the MyMathLab bank and are created via its custom exercise builder. The Coordinator Course function is used for delivering material across multiple sections and for exporting data for use in an on-campus database that tracks student performance.

Use of Trigsted MyMathLab contributes 80 percent to a student's final course grade.

Results and Data

Since the change from traditional courses to lab-based courses, pass rates and final exam scores for both courses have increased significantly.

Figure 1 illustrates how the changes have positively impacted College Algebra median final exam scores. Note that throughout all of the pedagogical changes, the common final exam remained constant.

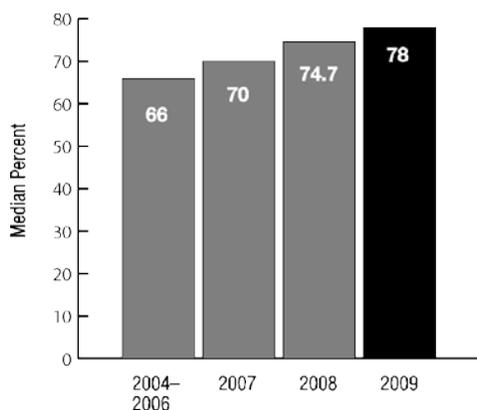


Figure 1. College Algebra Final Exam Scores, 2004–2009

- In 2004, MyMathLab was introduced into both courses. Students had the option of completing a portion of their homework assignments using MyMathLab. TestGen was used for administering multiple-choice midterm exams and the average class size was 40 students. The median final exam score from 2004 through 2006 was 66 percent.
- In 2007, MyMathLab was required for all homework, and MyMathLab quizzes were introduced. Students were required to score at least 75 percent on homework before taking its corresponding quiz. TestGen was used for administering multiple-choice midterm exams, and the average class size was 40 students. The median final exam score in 2007 rose to 70 percent.
- In 2008, MyMathLab replaced TestGen as administrator of midterm exams, and the average class size increased slightly to 45 students. The median final exam score in 2008 rose more, to 74.7 percent.
- In 2009, to offset a drastic cut to the Mathematics Department’s annual budget, the Trigsted *College Algebra* eText was adopted, and class sizes were increased to 250 students. Course notebooks were created to add more structure to the course; the 75 percent minimum homework score prerequisite was increased to 80 percent; and a 50 percent minimum practice test score prerequisite was required before a student was permitted to take each midterm exam. These changes continued the positive trend, and in 2009 the median final exam score rose yet again, to 78 percent.

The Student Experience

Theresa Allen, mathematics instructor, reports that despite the unprecedented 455 percent increase in class size, use of Trigsted MyMathLab has positively impacted her students—beyond increased pass rates and final exam scores. “My students are confident in their mathematics

abilities,” she says. “By allowing them to work ahead when they’re ready, this robust, interactive program encourages them to be both self-aware and accountable. Students are comfortable using it; I hear a lot of positive feedback about it!”

Conclusions

“The common finals represent the most objective basis of comparison from semester to semester,” says Allen. “We continue to adapt and improve our lab-based delivery and find that students experience greater success every time we do. I’m really excited to see how the upward trend continues with ongoing use of Trigsted MyMathLab. Preliminary data in the forms of anecdotal information and final exam

scores is very positive. And we look forward to reporting back next year with even better data.”

Submitted by Theresa Allen, Instructor
University of Idaho

Product Used Trigsted MyMathLab

Course Name College Algebra

Credit Hours Three



KEY TAKE-AWAY

In a comparison of homework managers, Trigsted MyMathLab emerges as more beneficial than the competition. Both ABC rates and average final exam scores were higher among Ole Miss students who used Trigsted MyMathLab; D/F/W rates were significantly lower.

Textbook in Use

Trigsted College Algebra, 1e, Kirk Trigsted

Course Implementation

Course Design

Each week, College Algebra students meet for 100 minutes in a classroom and 50 minutes in the mathematics computer lab. Students complete their work either in the lab during the 50 minutes required each week or on their own computers on their own time. Students have access to tutors while in the lab; those working on their own rely on online tutorials and help features for assistance.

50 percent

Tests

Four paper-and-pencil tests, each worth 100 points and covering 5 or 6 sections of material

33 percent

Final exam

Comprehensive and departmental

Assessments

17 percent

Homework

15–20 problems per assignment for each section covered

Use of MyMathLab

Homework assignments (some customized) are completed in Trigsted MyMathLab, and students are encouraged to use the program's student help aids, including Ask My Instructor, Show an Example, tutorials, and videos.

Trigsted MyMathLab contributes 17 percent to a student's final course grade.

Results and Data

Table 1 and figures 1–3 show grade distributions, ABC rates, D/F/W rates, and average final exam scores collected during a spring 2010 pilot in which Brian Zimmerman, instructor, used Trigsted MyMathLab in one on-ground and one online College Algebra class. All other sections of College Algebra used Hawkes Learning Systems.

Homework assignments mirrored each other as much as possible, no changes were made to the course during the pilot, and the final exam is departmental and does not vary. The only difference was the online program in use for homework.

The results are clear and, across a variety of metrics, fall positively in favor of Trigsted MyMathLab.

- Seventy-three percent of the students using Trigsted MyMathLab in the on-ground course earned an A, B, or C, compared with 64 percent of the students using Hawkes Learning Systems.
- Classes using Trigsted MyMathLab had significantly lower D/F/W rates than did the classes using Hawkes: 27.2 percent compared with 34.7 percent.
- The average final exam score was higher in classes using Trigsted MyMathLab than it was in classes using Hawkes Learning Systems. The average score of students using Trigsted MyMathLab was 61.5 percent (123.2 points out of a possible 200 points), compared with 57 percent (114.1 points) in those classes using Hawkes Learning Systems.

Grade	Using Hawkes	Using MyMathLab
A	14.3%	18.2%
B	30.6%	29.1%
C	20.4%	25.5%
D	10.2%	14.5%
F	24.5%	12.7%

Table 2. Comparison of Spring 2010 College Algebra Course Grades ($n=104$)

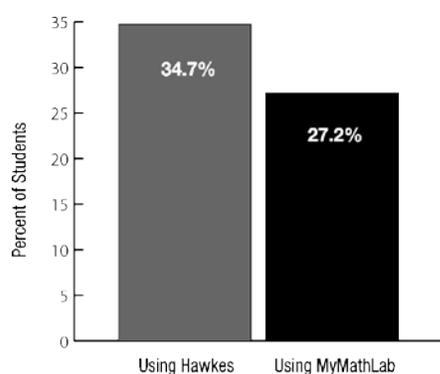


Figure 2. Comparison of Spring 2010 College Algebra D/F/W Rates ($n=104$)

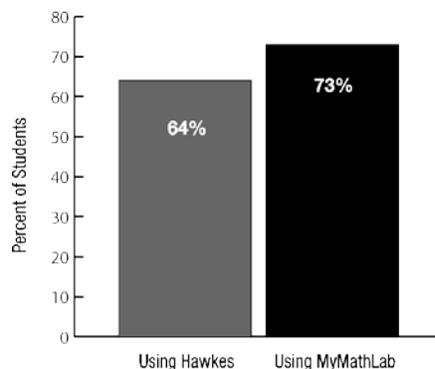


Figure 1. Comparison of Spring 2010 On-ground College Algebra ABC Rates ($n=104$)

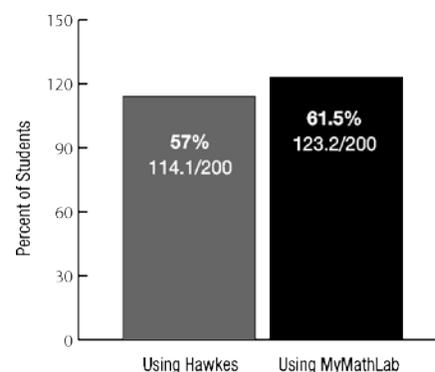


Figure 3. Comparison of Spring 2010 College Algebra Average Final Exam Scores ($n=104$)

The Student Experience

Students using Trigsted MyMathLab benefited from the program's wealth of learning aids and interactive tools. Students were supported exactly when and where they needed it—in the context of learning.

“Communication was really good with the students using Trigsted MyMathLab,” says Zimmerman. “Not many students had issues, but those who did were able to send me an e-mail through the program and I was able to answer their questions within a few minutes, which was much faster and easier than with the other software.”

Conclusions

“Using Trigsted MyMathLab solely as a homework manager resulted in higher ABC rates than our other software did—in both the spring semester [when it was piloted] and the fall 2009 semester,” says Zimmerman.

The entire department is impressed. Plans are under way to adopt Trigsted MyMathLab in all College Algebra sections—on ground and online, starting in fall 2010.

Faculty will take advantage of Trigsted MyMathLab's coordinator course feature to ensure standardized delivery throughout the department, and Zimmerman plans to more fully utilize the program's assessment capabilities to further increase pass rates and decrease D/F/W rates.

*Submitted by Brian Zimmerman, Instructor
University of Mississippi*

Product Used MyMathLab
Course Name College Algebra
Credit Hours Three



KEY TAKE-AWAY

Both on-ground and online ASU students benefit from MyMathLab's active learning activities. By accommodating different learning styles and varied levels of preparedness, the program eases math anxiety and enables students to take control of their learning.

Textbook in Use

College Algebra, 7e and 8e, Michael Sullivan

Course Implementation

Course Design

College Algebra is delivered both on ground and fully online. The on-ground course includes three hours of lecture per week in a traditional classroom and required MyMathLab homework. The online course includes required discussions via the university's course management system and MyMathLab homework, quizzes, and tests. Both courses employ a departmental paper-and-pencil final exam.

Assessments

On-ground College Algebra

- 20 percent Required MyMathLab homework
- 50 percent Tests
There are five tests each semester. Tests are paper and pencil and are graded by the instructor.
- 30 percent Departmental final exam
The exam is paper and pencil and is graded by the instructor.

Online College Algebra

- 5 percent Discussion
- 10 percent Required MyMathLab homework
- 10 percent MyMathLab quizzes
- 15 percent MyMathLab tests
- 60 percent Departmental final exam
The exam is paper and pencil, is taken on campus in a proctored classroom, and is graded by the instructor.

Use of MyMathLab

Students in the on-ground College Algebra course use MyMathLab for homework and are encouraged to use its Study Plan and other online resources. Students in the online course use the full breadth of the program: homework, quizzes, tests, Study Plan, videos, and the eBook.

Use of MyMathLab contributes 20 percent to each on-ground student's final course grade and 35 percent to each online student's final course grade.

Results and Data

Table 1 and figure 1 compare grade distribution, ABC grades, and drop/fail/withdrawal (D/F/W) rates before and after MyMathLab implementation in on-ground College Algebra courses. Table 2 shows grade distribution after MyMathLab implementation in online College Algebra courses. For both course formats, data indicates significant

success in both ABC rates and D/F/W rates. On-ground pass rates increased from 55 percent to 61 percent; and D/F/W rates decreased nearly 25 percent: from 40 percent to 31 percent.

Grade	Before MyMathLab Adoption				After MyMathLab Adoption				
	Summer 2005	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Summer 2008	Fall 2008	Spring 2009	Fall 2009
A	28%	20%	12%	12%	21%	28%	19%	08%	20%
B	03%	14%	20%	17.5%	11%	36%	22%	35%	17%
C	28%	17%	23.5%	25%	21%	12%	25%	15%	17%
D	03%	00%	03%	9%	07%	08%	06%	08%	10%
D/F/W	38%	49%	41.5%	36.5%	39%	16%	28%	35%	37%

Table 1. On-Ground College Algebra Grade Distribution and D/F/W Rates before and after MyMathLab Implementation (n=333)

Grade	After MyMathLab Adoption			
	Summer 2007	Fall 2008	Summer 2009	Fall 2009
A	0%	8%	14%	14%
B	20%	0%	21%	14%
C	20%	8%	14%	21%
D	13%	12%	4%	7%
D/F/W	47%	72%	46%	43%

Table 2. Online College Algebra Grade Distribution and D/F/W Rates after MyMathLab Implementation (n=96)

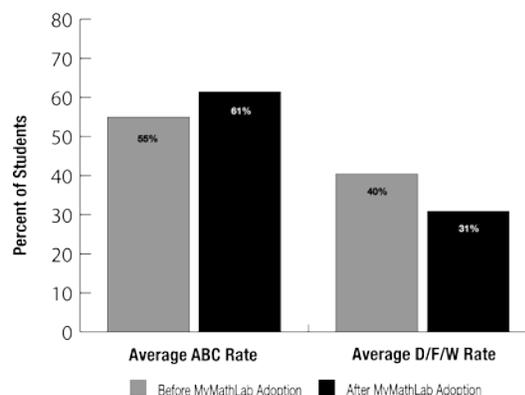


Figure 1. Average ABC and D/F/W Rates before and after MyMathLab Adoption in On-Ground College Algebra

The Student Experience

According to Deltrye Eagle Holt, assistant professor, implementing MyMathLab in on-ground College Algebra shifted the course from the traditional sage-on-the-stage format to one that is more active and student centered. “MyMathLab provides students with immediate feedback and assistance,” she says. “As a result, they get more practice, complete more homework, and appear to experience less math anxiety and frustration.

“My students are more willing to ask questions in class than they were before using MyMathLab, and the questions are better phrased and more specific,” says Holt. “They

need less review and are willing to discuss the more challenging problems.”

MyMathLab gives Holt’s students more control over their learning. Because they can review as much as they need to, they better understand the concepts presented in class and are more prepared to move ahead. The program’s multimedia learning aids accommodate every learning style and level of preparedness: fast learners can progress quickly, and those who need additional help can move at a slower pace. Some students may even complete the entire course online.

Conclusions

Holt and other mathematics faculty are pleased with the progress MyMathLab has helped them make across delivery formats. By adding required MyMathLab homework as well as making available the program’s breadth of learning resources, Holt and other faculty are finding that their students are taking control of their learning and experiencing more academic success.

- More students complete homework.
- Students are better prepared for class.
- Pass rates have increased.
- D/F/W rates have decreased.

*Submitted by Deltrye Eagle Holt, Assistant Professor
Augusta State University*

Product Used MyMathLab
Course Name Introduction to Contemporary Mathematics
Credit Hours Zero



KEY TAKE-AWAY

By redesigning a gateway course into self-paced, mastery-learning modules using MyMathLab, Cabrini College helps students both persevere and pass the course. Acquired study skills and gained confidence support students throughout their college careers.

Textbook in Use

Basic Mathematics, 10e, Marvin L. Bittenger

Course Implementation

Course Design

Faculty at Cabrini College sought a way to address varying levels of course preparedness among developmental math students. In spring 2007, Cabrini College piloted MyMathLab in one section of Introduction to Contemporary Mathematics, a self-paced class for students placed in the lowest track of the school's three math sequences. By fall 2007, a MyMathLab-enabled, lab-based model of the course had been fully implemented in all four course sections, taught by three instructors.

Students meet three times per week for a total of 3.75 hours and complete MyMathLab assignments both in and outside the classroom. Chapter pre- and posttests are taken in class or in a proctored testing center. Classroom coaches provide tutoring during class, and students are urged to visit Cabrini's Math Resource Center for additional tutoring outside of class.

Assessments

Homework is assigned for each section of covered material. Students may complete homework in class or at home. They are given unlimited attempts and must earn at least 75 percent before they may advance to the next assignment.

To pass the course, students must earn at least 75 percent on each of the seven chapter tests and on the final exam. Students have three chances to pass the final exam. All assessments are conducted in MyMathLab either in the classroom or in a proctored exam center.

Use of MyMathLab

MyMathLab is used for homework assignments as well as tests. Homework assignments use MyMathLab's Help Me Solve This, View an Example, and Ask My Instructor features. When available, students also access videos. The coordinator course feature is also used.

Use of MyMathLab contributes 78 percent to a student's final course grade.

Results and Data

Redesigning the Introduction to Contemporary Mathematics with MyMathLab had an immediate and positive impact on both retention and student success rates—and over time, the gains have continued to increase.

Table 1 shows that the average pass rate in 2006 (before implementation) was 64 percent; in 2007, the first year of implementation, the average pass rate rose to 77 percent; and by 2009, it had increased again, to 79 percent.

Academic Year	Pass Rate
2006	64.3%
2007	77.1%
2008	76.3%
2009	79.4%

Table 1. Pass Rates by Academic Year (*n*=155)

MyMathLab teaches students to learn independently. The confidence they gain by learning fundamental math skills in this manner not only helps them in the Introduction to Contemporary Mathematics course but transitions with them to future, more advanced math classes as well.

—Darla Nagy, Instructor
Cabrini College

The Student Experience

MyMathLab's many interactive features enable students who need them the most to get immediate feedback and step-by-step assistance and support during the learning process.

- “I have never felt more comfortable in a math class. I can go at my own pace, and no one knows what mistakes I'm making and how long it's taking me to do each section.”
- “If I don't understand the sums I'm working on, I can put the problems in an e-mail to my professor. I also like the examples that show me how the problems are done.”
- “MyMathLab was extremely beneficial for me. I was able to rework problems as many times as I needed to, whenever I wanted, and get immediate feedback. The Help Me Solve This feature was also very useful. It was like having a teacher with me, ready to answer any questions, 24-7.”
- “Taking Introduction to Contemporary Mathematics was the first time I ever felt happy about math. Finally, I could approach math the way I wanted to: without experiencing intimidation by other students who understood the material. I could go as slow or as fast as I wanted and had multiple chances to take a test. For the first time ever, I felt supported in a math class and that I had the potential to do well.”
- “Until taking this course, I never thought I had really mastered all of the skills I needed to succeed in math classes to come. But after this class, I feel I have the building blocks I need to achieve in math courses to come. I would definitely recommend this course.”

Conclusions

Because Introduction to Contemporary Mathematics serves as a bridge to higher-level math classes, the skills and habits learned within it lay the foundation for the rest of a student's college career. In addition to improving students' math skills, using MyMathLab in this self-paced environment helps students learn time management skills, build self-confidence, and draw the connection between time on task and achievement.

Submitted by Diane Devanney, Math Specialist
Cabrini College

Product Used MyMathTest
Course Name Math Placement Reassessment Program (PReP)
Credit Hours Zero



KEY TAKE-AWAY

By leveraging MyMathTest's individualized study plans, students in Roosevelt University's Math PReP program focused on the exact skills they needed to learn. As a result, the majority of students placed into higher-level courses and experienced success once there.

Textbook in Use

N/A

Course Implementation

Course Design

Math PReP is a fully online placement program designed to enable students to challenge their math placement scores. For a small fee, students who feel they have been placed incorrectly take an exit exam in MyMathTest and then, on their own time, follow an individualized MyMathTest study plan. Upon completion of the study plan, students take a final test. All tests take place on campus, are proctored, and are completed before the onset of the next semester.

Roosevelt University used MyMathTest for the first time in summer 2009.

Assessments

Students must earn 75 percent or higher on their exit exam to register for the next-level math class. They are allowed three attempts at the exam.

Use of MyMathTest

Math PReP uses tests that are created from MyMathTest's bank of problems. Students use the study plan and are encouraged to use the practice tests.

MyMathTest is the only item used for determining whether the student will move to a higher-level math class.

Results and Data

Using data from MyMathTest's Gradebook, instructors Mary Williams and Cathy Evins tracked and compared the MyMathTest-enabled Math PReP's success across a variety

of metrics. Table 1 cross-references the program from the first semester it was implemented on each of the school's two campuses with students' placement gains and

	Number of Students Enrolled	Number of Active Students	Number of Students Placing 2 Levels Higher	Number of Students Placing 1 Level Higher	Number of Students with No Change	First Subsequent Course Grade	Second Subsequent Course Grade
Summer 2009	22 Chicago 15 Schaumburg*	9 Chicago 8 Schaumburg	0 Chicago 1 Schaumburg	5 Chicago 4 Schaumburg	4 Chicago 3 Schaumburg	6 A, 5 B	3 A, 3 B, 1 D, 1 W
Fall 2009/ Spring 2010	26 Chicago 9 Schaumburg	19 Chicago 5 Schaumburg	1 Chicago 1 Schaumburg	14 Chicago 2 Schaumburg	4 Chicago 2 Schaumburg	3 A, 4 B, 10 C 1 Pass, 1 F, 1 W	–
Spring/ Summer 2010	35 Chicago**† 25 Schaumburg*	20 Chicago 17 Schaumburg	0 Chicago 0 Schaumburg	7 Chicago 14 Schaumburg	13 Chicago 3 Schaumburg	–	–

Table 1. Comparison of the Number of Math PReP Students Enrolled, Active Participation, Placement Results, and Subsequent Success for Roosevelt University's Chicago and Schaumburg Campuses, Summer 2009–Summer 2010

subsequent course grades. It is worthy to note that the Chicago campus comprises primarily traditional students, while the Schaumburg campus comprises primarily adult, returning students.

The data indicates that of those students who actively participate in Math PReP with MyMathTest, the majority both place into higher-level courses and do well in those courses. Table 2 illustrates that over the course of three semesters, an average of 63.7 percent of students successfully completed the program.

Table 3 breaks down the success rates in each of the three math courses and shows that Math PReP students succeed in the next math course whether they pass to a higher level or stay in the originally recommended course.

Williams and Evins report that the program has had a positive impact on retention. “So far, most are continuing their math courses with success and staying in the university,” says Williams.

	Number of Students Enrolled	Percent of Students Who Actively Participated	Percent of Students Who Passed
Summer 2009	37*	46	59
Fall 2009/ Spring 2010	35	69	75
Spring/ Summer 2010	60*, **,†	63	57

Table 2. Number of Students Enrolled in Math PReP, Active Participation and Pass Rates, Summer 2009–Summer 2010.

* Includes one refresher student.

** Includes two refresher students.

† Includes two students who were still working.

	Percent Who Placed into Prealgebra	Percent Who Passed Prealgebra	Percent Who Placed into Took Beg Algebra	Percent Who Passed Beg Algebra	Percent Who Placed into Took Int Algebra	Percent Who Passed Int Algebra
Summer 2009	16.2	66.7	51.5	62.5	32.4	57.0
Fall 2009/Spring 2010	16.2	66.7	54.1	66.7	29.7	90.9
Spring/Summer 2010	20.7	33.3	51.7	66.7	27.6	60.0

Table 3. Comparison of Enrollment and Success Rates for Math PReP Students, Summer 2009–Summer 2010

Beg=Beginning, Int=Intermediate

The Student Experience

Students who actively participate in the program move ahead in the math sequence with good grades and increased confidence in themselves and their ability to achieve—regardless of whether or not they advance to a higher-level course.

In addition, students who successfully complete Math PReP save money by reducing the number of developmental math courses they must take.

Conclusions

Roosevelt University’s MyMathTest-enabled Math PReP empowers students by providing them with an interactive, user-friendly way to brush up on their math skills and more quickly advance through the developmental math sequence. MyMathTest’s individual student plans enable students to focus solely on what they need to learn. No time is wasted on irrelevant lessons, and students are kept interested and engaged.

“By offering this program, we are helping students build their self-confidence, encouraging them to be accountable for their placement, and helping them discover that they really can learn math,” says Williams.

*Submitted by Mary Williams, Math Instructor
Cathy Evins, Math Instructor
Roosevelt University*

Product Used MathXL
Course Name College Algebra
Credit Hours Three



KEY TAKE-AWAY

MyMathLab enables students to work at their own pace, thereby reinforcing personal accountability and increasing self-confidence. The support of SIU's tutoring lab ensures students achieve the learning mastery that will prepare them for subsequent success.

Textbook in Use

Algebra and Trigonometry, 3e, Judith A. Beecher, Judith A. Penna, Marvin L. Bittinger

Course Implementation

Course Design

MathXL serves as the linchpin of Southern Illinois University Carbondale's (SIUC's) multiphase, seven-year redesign of College Algebra. Program implementation began in fall 2006 and comprised homework assignments and optional multimedia learning aids. Sections met three times per week, there was one section, and there was no required lab time.

By spring 2009, there were five sections, all of which met three times per week (two lectures, one lab), and use of MathXL features was expanded. Unlike in traditional courses, where content may vary by instructor, all redesign sections have similar course content, lecture notes, and assignments.

Students may receive help via open labs (five days a week, 6–9 p.m.), department Help Sessions, and instructor office hours. MathXL provides multimedia learning support from students' own computers, from any computer on campus, and online help around the clock.

Assessments

Students complete a total of 44 assignments: 32 homeworks, 6 quizzes, and 6 tests. Approximately 80 percent of all assignments are graded by MathXL: all homework, all quizzes, and about one-third of the tests.

Use of MathXL

MathXL is used for homework, quizzes, and grading. In addition, Dan Mussa, assistant instructor, uses MathXL's e-mail announcements, individual and course assignment settings, and study plan features. Grades are kept in the MathXL Gradebook, allowing students daily access to their progress.

Customizing MathXL's study plan enables Mussa to retain control of course content while enhancing his teaching style with technology. Students are presented with exactly the practice problems and concepts he covered in class.

Use of MathXL contributes 80 percent to each student's final course grade.

Results and Data

As indicated in Tables 1–8, student success levels in MathXL-enabled sections consistently and significantly surpassed those of traditionally instructed sections. Final exam grades were higher; withdrawal rates were lower.

Mussa notes that by using the departmentally common final exam as a comparative measure, he avoids any discrepancy that might arise due to variations among instructors' grading methods or testing standards.

A MathXL-enabled section of Trigonometry was taught in spring 2009. There was no required lab; however; assignments, testing, and course management were similar to the MathXL-enabled College Algebra sections described in this report. The class median on the common final exam was 140/200 compared with the overall median of 108/200.

Semester	MathXL	Traditional
Spring 2009	75.2%	40.3%
Fall 2008	71.4%	29.7%
Spring 2008	53.1%	38.7%
Fall 2007	55.9%	37.4%
Average	65.2%	35.9%

Table 1. Final Exam Grade of A, B, or C, Fall 2007 to Spring 2009 ($n=1,028$)

Grade	MathXL	Traditional
A	15.6%	8.2%
B	21.1%	10.8%
C	21.7%	16.1%
D	15.4%	19.0%
F	26.2%	45.9%

Table 2. Average Final Exam Grades, Fall 2007 to Spring 2010 ($n=1,671$)

Grade	MathXL	Traditional
A	27.9%	9.6%
B	11.8%	9.1%
C	16.2%	18.7%
D	16.2%	22.5%
F	27.9%	40.1%

Table 3. Average Final Exam Grades, Fall 2007 ($n=334$)

Grade	MathXL	Traditional
A	16.7%	10.4%
B	18.2%	10.4%
C	18.2%	17.9%
D	21.2%	17.9%
F	25.7%	44.4%

Table 4. Average Final Exam Grades, Spring 2008 ($n=242$)

Grade	MathXL	Traditional
A	16.3%	6.4%
B	32.7%	9.5%
C	22.4%	13.8%
D	12.3%	15.1%
F	16.3%	55.2%

Table 5. Average Final Exam Grades, Fall 2008 ($n=502$)

Grade	MathXL	Traditional
A	17.6%	9.1%
B	18.8%	9.7%
C	38.8%	21.5%
D	7.2%	19.9%
F	17.6%	39.8%

Table 6. Average Final Exam Grades, Spring 2009 ($n=318$)

Grade	MathXL	Traditional
A	13%	5.4%
B	26%	13.0%
C	20%	14.0%
D	15%	23.0%
F	26%	44.3%

Table 7. Average Final Exam Grades, Fall 2009 ($n=353$)

Semester	MathXL	Traditional
Spring 2009	92.4%	82.3%
Fall 2008	71.5%	63.5%
Spring 2008	85.7%	64.2%
Fall 2007	79.0%	75.0%
Average	82.2%	71.3%

Table 8. Retention, Fall 2007 to Spring 2009 ($n=1,028$)

The Student Experience

In a spring 2009 survey conducted in the mathematics lab and via e-mail, 100 percent of those students who had used MathXL responded that it was helpful to them; 95 percent responded that they would use the program again and that they would recommend it to others.

In a spring 2009 report, the manager of SIUC's Trueblood Tutoring Lab stated that since fall 2008, attendance had more than doubled—a comment supported by the spring

2009 survey, in which 73 percent of those responding had visited the lab three or more times.

In the same report, the lab manager noted that those students using MathXL had asked fewer questions and had a better understanding of what they needed help with when they did have questions. She recommended that more professors implement MathXL into their curricula.

Conclusions

As a result of MathXL's success, departmental plans include expanding the use of the hybrid model using MathXL from six College Algebra sections to all College Algebra sections and investigating the potential implementation of this model in the following courses: Intermediate Algebra, Trigonometry, Precalculus, Finite Math, and Business Calculus. Such expanded use of MathXL would mean an exponential increase in the number of students using MathXL per semester—from about 180 to more than 700.

To handle the increased number of students seeking lab time, plans are also in development for a dedicated math lab containing up to 100 stations. "When I started this journey I had no idea how far it would take us," says Mussa. "While I hoped for a dedicated math lab, I could only imagine it would become a reality."

*Submitted by Dan Mussa, Assistant Instructor
Southern Illinois University Carbondale*

Product Used MyMathLab
Course Name Essential Math Concepts
Credit Hours Four



KEY TAKE-AWAY

By requiring MyMathLab homework, creating consistent assessments across its 10-campus system, and requiring concept competency at every stage of the learning process, Baker College has increased its Essential Math Concepts pass rate by 16 percent.

Textbook in Use

Basic College Mathematics, custom edition, John Tobey, Jeffrey Slater, Jamie Blair

Course Implementation

Course Design

After initial piloting of MyMathLab in several sections, Baker College System implemented the program—combined with a new delivery method—in all sections for five campuses across its 10-campus system in fall 2008 and in all sections for all ten campuses in fall 2009.

Classes generally meet either once or twice a week for a total of four hours per week for 10 weeks. Some campuses employ an all-computer-lab format, others have a 50 percent computer lab/50 percent classroom format, and others have an all-classroom format supplemented with MyMathLab outside the classroom. In all cases, students are required to complete MyMathLab assignments. Trained tutors are available to help. All assignments (both off line and online) and including the exit exam are standard systemwide.

Assessments

All students complete six MyMathLab quizzes, two MyMathLab tests, and one paper-and-pencil exit exam. Students must score at least 85 percent on practice quizzes and practice tests in order to take the corresponding quizzes and tests. Students must pass the cumulative exit exam in order to pass the course.

Use of MyMathLab

Students use MyMathLab for homework, preassessments, quizzes, and tests. All MyMathLab features are turned on for homework assignments, as well as after students submit both practice and actual quizzes and tests.

All courses are copied from a coordinator course.

Use of MyMathLab contributes 15 percent to a student's final course grade.

Results and Data

Table 1 compares Essential Math Concepts pass rates before MyMathLab implementation, during sporadic use, and after full and consistent use across Baker College System's 10-campus. Faculty are pleased with the consistent gains: a seven-percentage-point, or 16 percent, increase over preimplementation rates.

Term	Total Number of Students	Level of MyMathLab Implementation	Pass Rate
Fall 2006	3,965	MyMathLab pilot in a handful of sections only.	44%
Fall 2007*	5,062	MyMathLab in some sections. Tracking error resulted in all sections' being reported together.	33%
Fall 2008	3,796	MyMathLab sections: some use new delivery model.	47%
Fall 2008	1,098	Traditional sections: no MyMathLab use.	37%
Fall 2009	6,376	All sections use MyMathLab in new delivery model.	51%

Table 1. Essential Math Concepts Pass Rates before and after MyMathLab and New Delivery Model Implementation ($n=20,297$)

*Students had the option to continue the course in the next quarter.

Most students appreciate the tools that MyMathLab provides. The instant feedback and help features often lessen the anxiety level that many students in a remedial math class experience.

—Mark Chapman, System Math Coordinator
Baker College System

In addition, System Math Coordinator Mark Chapman reports an increase in subsequent success since adopting MyMathLab. Of those students who passed Essential Math Concepts in fall 2009 and took Prealgebra in winter 2010,

70 percent passed Prealgebra. Similarly, over the past two academic years, of those students who passed Prealgebra in a given quarter and took Introductory Algebra in the following quarter, 76 percent passed Introductory Algebra.

The Student Experience

Essential Math Concepts students at Baker College System benefit from the proven pedagogy behind MyMathLab.

- Students are also encouraged to explore all of MyMathLab's multimedia features to learn which resources best suit their learning styles.
- Students communicate with each other through the discussion board and with the instructor through MyMathLab's Ask My Instructor feature.
- MyMathLab's Gradebook enables instructors to identify and quickly intervene at the first sign that

a student is struggling. As a result, fewer students fall through the cracks.

- MyMathLab's item analysis feature enables instructors to identify common mistakes made within the class or by individual students and then tailor their teaching so as to globally or individually address any confusion.
- Enrollment in Essential Math Concepts continues to increase. MyMathLab is critical in enabling the college to logistically handle the influx.

Conclusions

MyMathLab is one of a variety of factors that have contributed to the significant gains experienced in Essential Math Concepts since 2006. Chapman notes that MyMathLab has facilitated these gains in several ways.

- By enabling the course to be consistent across the system
- By enabling instructors to focus individual attention on those who need it, while not holding back those capable of moving ahead
- By providing instructors with multiple ways to reach students

- By providing students with instant feedback
- By providing students with unlimited practice

“As we continue to improve the quality of Essential Math Concepts,” says Chapman, “we will continue drawing from the resources of MyMathLab to support increased student learning and more-effective teaching.”

Submitted by Mark Chapman, System Math Coordinator
Baker College System

Product Used MyMathLab
Course Name College Algebra
Credit Hours Four



KEY TAKE-AWAY

Motivating students to complete homework is the linchpin of a successful math program. MyMathLab's interactive features keep AIH students engaged and persevering when they might otherwise quit. As a result, students are more prepared and do better at test time.

Textbook in Use

Intermediate Algebra, 6e, John Tobey, Jeffrey Slater

Course Implementation

Course Design

Initially a traditional class that met for 4 hours and 20 minutes a week, College Algebra was redesigned in 2006 to comprise 2 hours and 10 minutes of lecture and 2 hours and 10 minutes of mandatory lab time using MyMathLab. The instructor monitors students in the lab and is available to assist them.

20 percent

Quizzes

Completed on MyMathLab.

30 percent

Tests

Completed on MyMathLab.

10 percent

Online final exam

10 percent

Departmental, paper-and-pencil final exam

Assessments

Seven quizzes and two tests are given using MyMathLab.

30 percent

Homework

Homework on MyMathLab is required.

It covers problems from the sections taught in class and is due the next class period.

Use of MyMathLab

MyMathLab is used for homework, quizzes, tests, and a portion of the final exam. Students are encouraged to use all available help features.

Use of MyMathLab contributes 90 percent to each student's final course grade.

Results and Data

Figures 1–4 show significant improvement across a variety of metrics after the adoption of MyMathLab.

- The ABC rate increased from 69.6 percent to 90.3 percent.
- The drop/fail/withdrawal rate decreased from 13.9 percent to 5.6 percent.
- Final exam grades improved from an average of 69.8 percent to an average of 82 percent.

The Art Institute of Houston operates on a quarterly system. “Before” figures are from the summer and fall quarters of 2005; “After” figures are from the winter and spring quarters of 2009.

Dana Hagen, math instructor, attributes the improved metrics to MyMathLab's immediate feedback and other interactive features. Because students are more engaged with the material, they complete their homework and are more prepared for quizzes and tests. Students are earning higher grades and experiencing less frustration with math.

“Prior to adopting MyMathLab, students weren't always completing homework; most hated attending class; and most were performing poorly on tests,” Hagen says. “Now, those students who arrive hating math leave feeling like it isn't so bad after all. They love that there are help features they can use from home. Knowing help is a click away helps increase their confidence and enables them to persevere through difficult problems.”

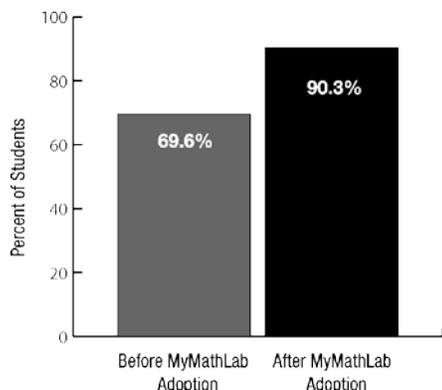


Figure 1. Comparison of ABC Rates before and after MyMathLab Adoption ($n=323$)

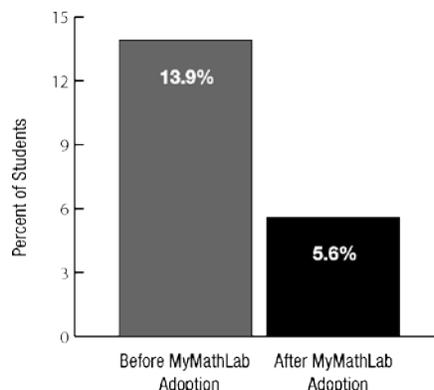


Figure 2. Comparison of D/F/W Rates before and after MyMathLab Adoption ($n=323$)

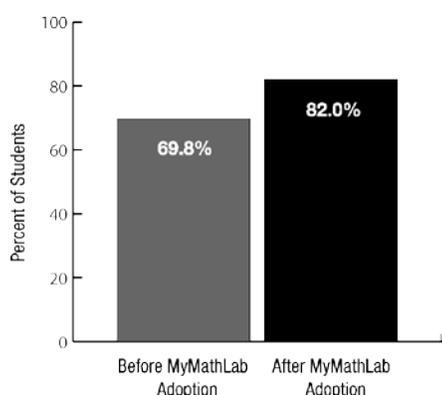


Figure 3. Comparison of Final Exam Grades before and after MyMathLab Adoption ($n=323$)

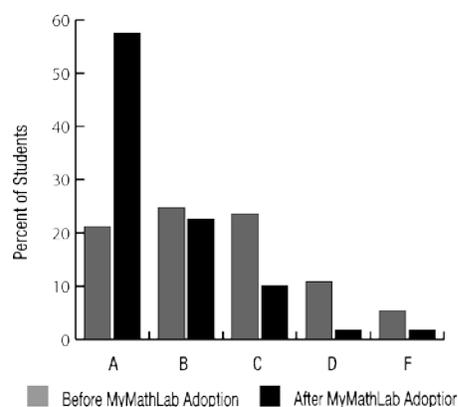


Figure 4. Comparison of Final Course Grades before and after MyMathLab Adoption ($n=323$)

The Student Experience

Hagen reports that use of MyMathLab has helped increase communication among her students and between her students and herself. “Students talk about their homework problems during lab time,” she says. “In addition, they use the Ask My Instructor button to contact me after and between classes. Prior to adopting MyMathLab, students would bolt to the door and not be heard from again until next class period.”

For Hagen’s learning-disabled students, MyMathLab provides the personalized modifications and extra help they need to succeed side-by-side with their peers.

Conclusions

When asked about possible changes to her use of MyMathLab, Hagen was emphatic: “I have no plans to change my use of MyMathLab. I’m having better success with student learning and retention than ever before.

Art Institute of Houston students not only do better using MyMathLab; they also enjoy using it.

- “Having access to the textbook, homework, and tests online is a great idea. It really made class fun and easy!”
- “This online program is the best!”
- “I really like this program. It’s like having an instructor by my side.”
- “I thought doing math on a computer would be difficult, but it turned out to be great.”

Adopting MyMathLab was one of the best decisions our math department has ever made.”

*Submitted by Dana Hagen, Instructor
Art Institute of Houston*

Efficacy Studies

SAIT Polytechnic, Alberta, Canada

Two Year • More than 20,000 Students • MyMathLab for Calculus

A pilot project was conducted in fall 2008 to test the MyMathLab program prior to the school's adoption of Allyn J. Washington's *Basic Technical Mathematics with Calculus* for fall 2009. Faculty was specifically interested in the new algorithmically-generated testbank and new utilities such as custom instructor-built algorithmically-generated questions, as well as the program's ability to determine at-risk students, save marking time for assigned work, and act as a motivational tool for the course. A hypothesis test of linear correlation between the student grades obtained through MyMathLab and those obtained via testing in the course was conducted.

Study Methods

A sample of 80 students in three academic sections was required to complete online examinations related to the learning objectives covered in the course and contributing 10 percent of the overall grade. Students were allowed three attempts on a quiz-type exercise using MyMathLab; each attempt had different algorithmically-generated values and a randomized question order. Students could use the Help Me Solve This and See an Example features in Review Mode only after each attempt. Since MyMathLab does not allow for rounding or other minor errors, a decision was made at the outset of the course to alter student grades from MyMathLab in the following ways:

1. If a student submitted a correct answer but had a small rounding error or number of decimals error, then the grade for that question would be altered to give partial credit.
2. If a student submitted a functional solution and only had minor errors or the answer was correct but merely unreduced, then the grade for that question would be altered to give partial credit.

MyMathLab results were obtained from the average of eight quizzes of 6 to 15 questions. Course grades were obtained from written exams marked primarily on the basis of methodology of solution (a midterm, final, and six handwritten quizzes throughout the term).

Data was analyzed with MS Excel. A linear regression line and linear correlation coefficient was calculated for the bivariate set. Data for the overall student course grade has had the 10 percent online testing component removed to keep the variables independent and not artificially inflate any resulting correlation.

Data and Analysis

A traditional two-tailed hypothesis test for linear correlation was conducted; the Pearson moment correlation coefficient r was determined from the data and compared to the critical values for this test statistic. See figure 1.

Claim: There is a linear correlation between MyMathLab scores and course grades.

Claim: $\rho \neq 0$ (a significant linear correlation exists)

$$\begin{array}{l} H_0: \rho = 0 \\ H_1: \rho \neq 0 \\ \text{sample } r^2 = 0.6678 \\ \text{then } r = 0.817 \end{array}$$

For $n = 80$, the critical value for a 0.05 level of significance is $r_{crit} = 0.220$

The sample value is in the right-hand critical region, therefore the null hypothesis H_0 is rejected, so there is sufficient evidence to support the alternative hypothesis H_1 , the original claim that a significant linear correlation exists.

The 95% confidence interval for the linear correlation coefficient is $0.60 \leq r \leq 0.85$, which illustrates that the positive linear correlation is likely real.

Conclusion

The results show that a significant positive linear correlation exists between grades obtained using MyMathLab and those derived from class tests. It is important to state that this test only illustrates a correlation between the MyMathLab grades obtained with this particular method of evaluation and the specific methodology-focused marking of handwritten examinations.

The results also gave the instructor an additional tool to identify at-risk students prior to in-class examinations. MyMathLab exercises were useful to students in that they

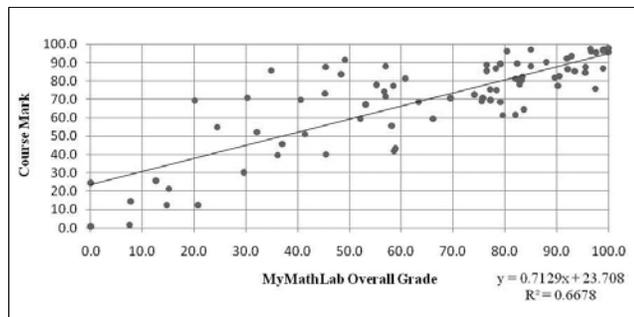


Figure 1. Correlation between Course Mark and MyMathLab Grade for Calculus Pilot Project, Fall 2009

offered the types of questions students were likely to see on subsequent examinations. The ability to administer individual algorithmically-generated tests motivated students to participate in assignments. The observed correlation at the very minimum shows that MyMathLab is a valid assessment tool for calculus, at least under the conditions and methodology outlined in this paper.

—Submitted by Kerry E. Kijewski, Instructor, Mathematics and Physics

Sherwood Middle School, LA

Middle School • Fewer than 10,000 Students • MathXL for School

Sherwood Middle School is a magnet school. Any student from the parish who has a minimum 2.5 GPA may apply; selections are made by lottery.

Study Implementation

During academic year 2008/09, teacher Darlene Ford taught two of her four sections of Algebra 1 using Pearson's MathXL for School, and two sections using another online learning program. A total of 81 students participated in a study. Student demographics in both groups were the same, and students were randomly assigned to groups. Class instruction—including group activities, peer-instruction assignments, lecture, and homework review—was identical in both sections. Classes met for 90 minutes every other day, such that during some weeks, students met two days a week, and during other weeks, three days a week. Students worked on in-class computers to begin homework assignments, which enabled them to share strategies and to peer-tutor when necessary.

Students in groups using MathXL could complete their homework at school or at home. Those in groups using the other program completed their homework either in class or on a school computer during a free period.

MathXL Implementation

MathXL was used both in class and outside of class for homework and quizzes. For emphasis on the connection

between completing homework assignments and scoring well on tests, the overall course point value for homework was valued at just slightly less than that for tests. Every MathXL assignment was followed by a 5- to 10-question quiz. Additional use of MathXL included optional use of the Study Plan and videos. Students were encouraged to practice math on those days that class did not meet.

Results

Both groups showed significant improvements from pretest scores to posttest scores: from 60.37 percent to 92.62 percent in the group using another learning program, and from 65.54 percent to 94.34 percent in the group using MathXL for School. (See figure 1.)

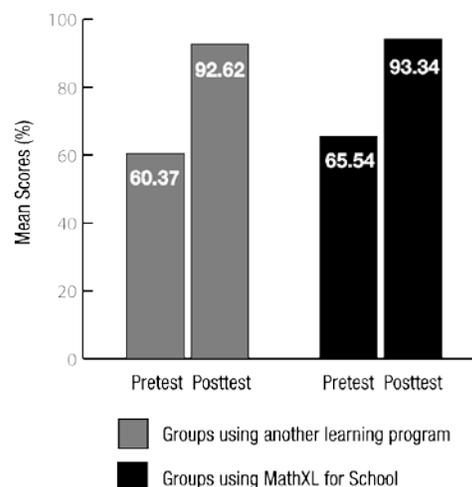


Figure 1. Comparison of Algebra 1 Pre- and Posttest Scores for Groups Using Another Learning Program and Groups Using MathXL for School

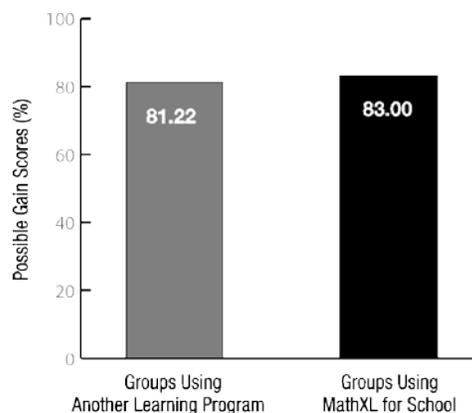


Figure 2. Comparison of Pre- and Posttest Possible Gain Scores for Groups Using Another Learning Program and Groups Using MathXL for School

The possible gain scores from the pretest to the posttest in each group were calculated in order to measure the amount of improvement throughout the course. In both groups, a significant amount of improvement was found. The amount of improvement in the group using MathXL for School was slightly larger than the amount of improvement in the other group. For the group using another learning program there was a gain score of 81.22 percent; for the group using MathXL for School there was a gain score of 83 percent. (See figure 2.)

Parish and Statewide Comparisons

All of Louisiana’s middle school students are required to take a standardized, online mathematics test at the end of the school year. Scores are rated as Excellent, Good, Fair, and Needs Improvement. A comparison of 2009/10 Sherwood Middle School results with the results of East Baton Rouge parish and the state shows a significantly higher percent of Sherwood students earning a score of Excellent (59 percent) and Good (38 percent)—and 0 percent of Sherwood students earning Needs Improvement. (See figure 3.)

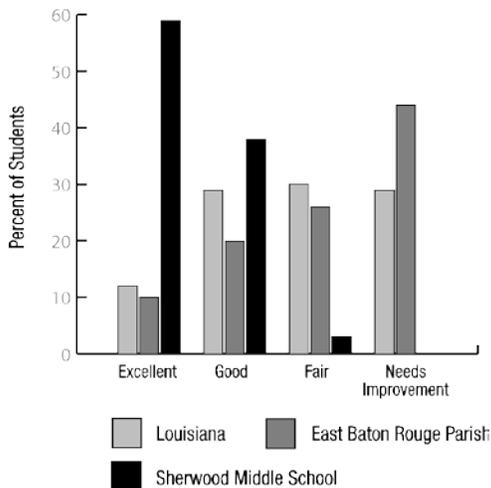


Figure 3. Comparison of Statewide, Parishwide, and Sherwood Middle School End-of-Year Exam Results, 2009/10

Unexpected Benefits of MathXL

“Middle school students are still learning the ropes,” says Ford. “Not only are they learning their individual course materials, but also they’re getting a foundation of solid study habits: how to be responsible, work independently, effectively manage time, and so on.” Most of the middle school students are not yet equipped to accomplish those tasks without the assistance of tools and procedures.

MathXL offers students the structure they need for monitoring their learning and developing their sense of responsibility—on their own and in their own time. “This aspect alone makes MathXL superior to the other learning program,” says Ford. “It enables students to work on math homework at the time and in the place that they’re ready to do so. Students learn to be more thorough and more careful and to think critically, thereby preparing them for both online testing and their future academic careers.”

Conclusion

Sherwood Middle School administration selected MathXL for all of its Algebra I students. The administration reported that MathXL offered more benefits, including accessibility from home, accessibility by parents, insights into student behavior, and defensible grading.

Ford is confident that MathXL for School is educationally effective. She reports that for the years prior to MathXL, student scores on standardized tests were lower, frequently at a basic-learning level. Scores by students using MathXL regularly indicate learning at mastery and advanced levels.

—Submitted by Darlene Ford, Teacher
Phoebe Rouse, Louisiana State University College Readiness Director

University of Memphis, TN

Four Year • 10,000 to 20,000 Students • MyMathLab

In 2008, the University of Memphis (UM) Department of Mathematical Sciences implemented a new teaching method in several sections of College Algebra, Foundations of Mathematics, and Elementary Calculus. The primary motivation of the new teaching method was to address low retention and success rates in these large-enrollment, lower-division general education courses.

Called the Memphis Mathematics Method (MMM), the new method was developed according to National Center for Academic Transformation guidelines and incorporates

Course/Student Type	Total	Traditional Method	MMM
College Algebra	4,777	3,668	1,109
<i>DSPM students</i>		157	1,010
<i>Regular students</i>		3,511	99
Foundations of Mathematics	3,986	3,525	461
<i>DSPM students</i>		264	115
<i>Regular students</i>		3,261	346
Elementary Calculus	3,207	2,729	478
<i>Regular students</i>		2,729	478

Table 1. Pilot Enrollment by Course, Student Type, and Method

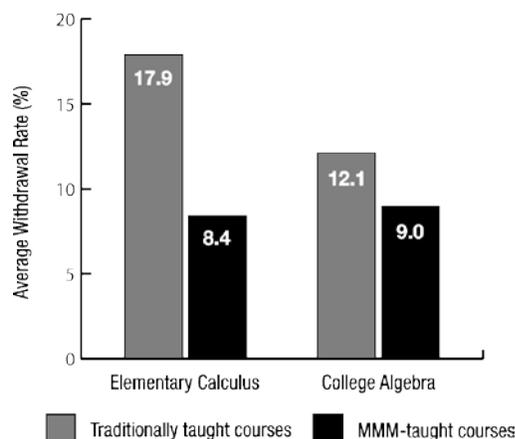


Figure 1. Comparison of Withdrawal Rates in Traditionally Taught and MMM-Taught Elementary Calculus and College Algebra Courses

the effective use of technology in the teaching of mathematics. The MMM closely follows the approach used by both Louisiana State University and the University of Alabama and is delivered via MyMathLab.

During every class session, University of Memphis students are required to solve problems in a laboratory environment: they listen to a 20-minute, instructor-led lecture that introduces basic concepts and spend the remaining 65 minutes of class solving MyMathLab problems. Students also complete proctored tests and the final exam in the instructional lab by using MyMathLab. Instructors control access to MyMathLab's multimedia learning tools on an assignment-by-assignment basis. And tutors are always available to answer questions.

Study Methods

An MMM intervention was piloted at UM in spring 2008 in a specialized Developmental Studies Program in Mathematics (DSPM) College Algebra course, which combined a developmental Intermediate Algebra course with a regular College Algebra course. Students were eligible for the DSPM course only if their ACT scores would have required them to take remedial Intermediate Algebra. The university expanded MMM in 2008 to regular sections of College Algebra, regular and DSPM sections of Foundations of Mathematics, and regular sections of Elementary Calculus.

This study includes data from fall and spring semesters beginning with fall 2007 and through spring 2010. There were 11,970 enrollments in the sections across the three courses: 10,424 in regular sections, and 1,546 in DSPM sections. Passing and retention rates were used as measurements of success.

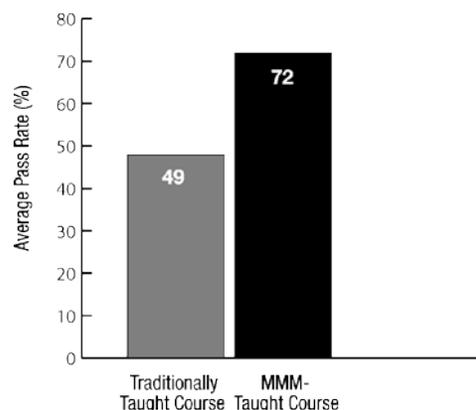


Figure 2. Comparison of Pass Rates in All Three Traditionally Taught and MMM-Taught Courses

Results

An examination of the passing and retention rates in MMM and traditional classrooms indicates that overall, students in MMM classrooms withdrew less and performed better. Of the study's 11,970 enrolled students, 5,530 earned a passing grade, reflecting a combined 54 percent success rate for the three courses. Of the 11,970 enrollments, 1,596 withdrew from their courses.

For every course, the withdrawal rate in the MMM classes was lower than that in the traditional classes. For example, 17.9 percent of students in traditional Elementary Calculus withdrew, whereas only 8.4 percent withdrew from the equivalent MMM courses. In College Algebra, students in MMM classes dropped out at a rate of approximately 9 percent. The equivalent traditionally taught courses had dropout rates of 12.8 percent for regular students and 11.4 percent for DSPM students (an average of 12.1 percent). (See figure 1.)

More students passed in MMM classes than in traditionally taught classes. For example, approximately 49 percent of students in traditional courses passed, whereas about 72 percent passed when exposed to the MMM teaching methodology. (See figure 2.)

Performance and dropout disparities between Black and White students were reduced in MMM-taught classes. For example, across all three regular courses, Black students passed at a rate of 39.9 percent when taught using traditional pedagogy compared with a rate of 56.2 percent when taught using MMM. Also, in DSPM courses, Black students dropped out at a rate of 10 percent from the MMM-taught classes compared with a rate of 14 percent from those that were traditionally taught. (See figure 3.)

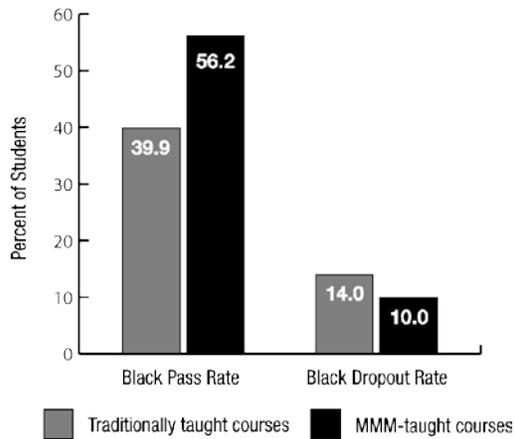


Figure 3. Comparison of Pass and Dropout Rate Disparity between Blacks and Whites in Traditionally Taught and MMM-Taught Courses

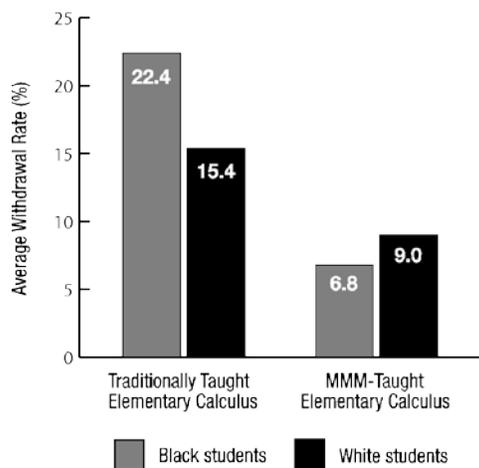


Figure 4. Comparison of Withdrawal Rates for Black and White Students in Traditionally Taught and MMM-Taught Elementary Calculus Courses

Within each course, the pattern of improvement persisted. For example, in traditional DSPM College Algebra, there was a 14.7 percent differential between Black and White students. In the equivalent MMM courses, the differential was 7.7 percent. In traditional Elementary Calculus, the racial disparity between Blacks and Whites was completely erased, with 75.7 percent of Black students and 68.9 percent of White students receiving passing grades.

Racial withdrawal rate disparities decrease with the use of MMM. In traditional Elementary Calculus, 22.4 percent of Black students dropped out compared with 15.4 percent of White students; in the MMM calculus courses, 6.8 percent of Blacks withdrew compared with 9 percent of Whites. (See figure 4.)

Regression results indicate that the MyMathLab-enabled MMM model was significantly effective in increasing the odds of student success in Elementary Calculus: students exposed to the MMM had 78 percent higher odds of succeeding than those in traditional classes had.

Similar to the regular students, Black DSPM students in College Algebra who were taught in MMM classes were more successful than Black students taught traditionally. Study data indicated a 45 percent increase in odds for success among Blacks taught with MMM.

Race differentials persisted in comparisons of the probabilities of dropping out. Black students in MyMathLab-enabled MMM College Algebra classes had 31 percent lower odds of dropping out compared with White students. The MMM model also showed positive and significant gains for students taking Calculus as well. Overall, Calculus students in the MMM had 48 percent lower odds of dropping out than traditionally taught students had.

Conclusion

Overall, the MyMathLab-enabled Memphis Mathematics Model resulted in increased success and decreased dropout rates for students in College Algebra, Foundations of Mathematics, and Elementary Calculus courses. The results point particularly to MMM as a vehicle for closing the achievement gap between Black and White students in Elementary Calculus. The positive results may be attributed to the structure and interactive nature of the MMM, which forces a daily involvement on the part of the student. This type of active engagement along with the use of technology is in line with reform pedagogy.

Overall, MMM resulted in increased success rates and decreased drop rates in College Algebra, Foundations of Mathematics, and Elementary Calculus. Because students were required to work problems using MyMathLab, they were able to benefit from the program’s many learning tools, and they better grasped the subject matter.

From an institutional cost standpoint—after the initial start-up costs of computer labs—the MyMathLab-enabled MMM model distributes department resources more cost-effectively than does the traditional instruction model.

Undergraduate students may be employed as lab assistants; advanced graduate students may be employed as course instructors; and MyMathLab’s automated grading system enables instructors to spend less time on administrative tasks and more time monitoring and guiding students through the learning process.

Summarized by Michelle Speckler from “The Effectiveness of Blended Instruction in Postsecondary General Education Mathematics Courses,” by Anna Bargagliotti, Fernanda Botelho, Jim Gleason, John Haddock, and Alistair Windsor.

Thumbnails

While not all schools have the rigorous data necessary to support a two-page case study, many have stories that are nonetheless significant. Following is a series of such schools—and brief summaries of how they’ve used MyMathLab to gain previously unheard-of academic ground.

Bossier Parish Community College, LA

Two Year • Fewer than 10,000 Students • Trigsted MyMathLab

A veteran user of MyMathLab, Professor Donna Densmore took the program further for her College Algebra students by adding the *Trigsted’s College Algebra* textbook in January 2009 and implementing Trigsted MyMathLab in spring 2010. As a result of the revamped course—in which all assignments are completed in Trigsted MyMathLab, video assignments are prerequisites to homework, and students complete a larger quantity of smaller assignments—both student engagement and success have increased. “Those students who put in the time and effort usually complete the course with a grade of C or better,” says Densmore.

—Submitted by Donna Densmore, Professor

Coastline Community College, CA

Two Year • 10,000–20,000 Students • MyMathLab/MyStatLab

Like most departments in the college, the math department has a largely nontraditional student population consisting mostly of returning adults with family and work obligations. To accommodate this demographic, the department offers a wide variety of classes for students in evening face-to-face courses and online courses and uses either MyMathLab or MyStatLab, as appropriate.

The department is clearly doing something right. Data from the State Chancellor’s Office Data Mart for Spring 2009 indicates that the overall retention and success rates for Coastline’s General Math classes are significantly higher than the statewide average for general math. Coastline’s retention and success in online math classes also surpass the statewide average in general math, with success in Coastline’s online classes almost 40 percent better than the statewide average.

Based on survey responses, students are very satisfied with the quality of instruction, the overall quality of the program, and their own success in the program.

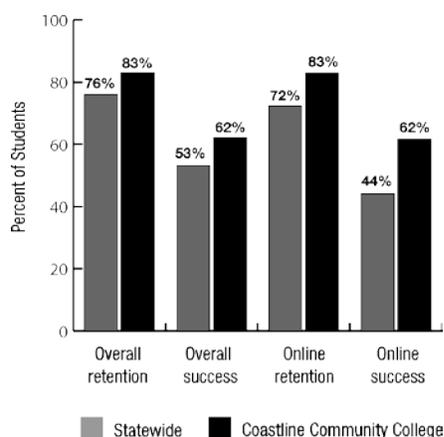


Figure 1. Comparison of Spring 2009 Statewide and Coastline Community College Retention and Success Rates

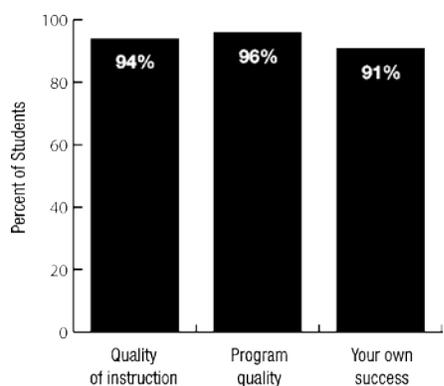


Figure 2. Results from a Fall 2009 Student Satisfaction Survey

Math Department chair Fred Feldon attributes the department’s success to a variety of factors, including the aforementioned older-student demographic, a collegial department culture, and the intensive and long-term use of technology, such as graphing calculators, teacher computers, tablet PCs, and of course, the MyLab programs.

—Submitted by Fred Feldon, Math Department Chair

Dallas Community College District—El Centro College, TX

Two Year • Fewer than 10,000 Students • MyMathLab

El Centro College was faced with a student population that was not performing at the level it should have been; drop and failure rates were very high. Faculty were using software for basic math and prealgebra that was being funded through a grant. While the software was instrumental in helping students pass these courses, when the students advanced to the next sequence of courses the passing rates decreased rapidly.

After initially testing MyMathLab on a small group of students and then piloting the program with another instructor for several semesters, Sandy Wyche, instructor, saw how user-friendly and effective MyMathLab was for both students and instructors. The school adopted MyMathLab for Intermediate Algebra and College-Level Mathematics courses in spring 2003—to immediate success.

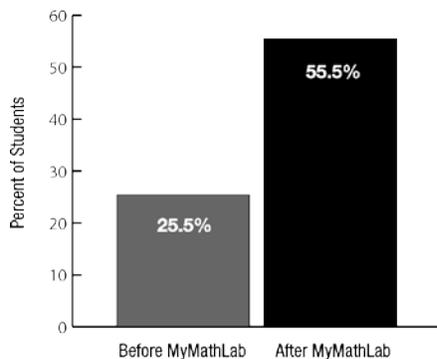


Figure 1. Average College-Level Mathematics Pass Rates before and after MyMathLab Adoption

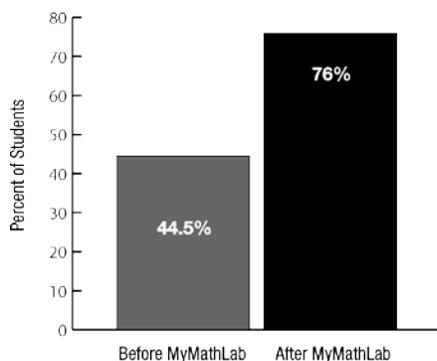


Figure 2. Average College-Level Mathematics Completion Rates before and after MyMathLab Adoption

Since its adoption, MyMathLab has revolutionized the way El Centro students learn mathematics.

—Submitted by Sandy Wyche, Executive Dean, Business Studies Division
(Dallas Community College District—Brookhaven College)

Florida State College at Jacksonville, FL

Four Year • More than 20,000 Students • MyMathLab

Professor Lyn Noble has watched student engagement and retention increase since introducing MyMathLab for homework in her College Algebra course. She credits students' ability to get the practice they need via the learning styles that work best for them as a critical driver of these important student gains.

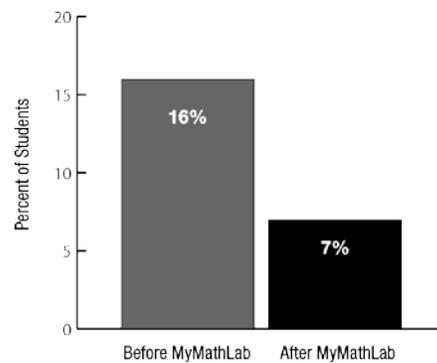


Figure 1. Comparison of College Algebra Drop/Fail/Withdrawal Rates before and after MyMathLab Adoption

During the first year of MyMathLab use, withdrawal rates decreased by more than half: from 16 percent before adoption to 7 percent after. Noble also lauds the predictive ability of the program, citing that significantly more students passed the MyMathLab-enabled course if they had a passing quiz average: 83.3 percent of students who earned an A, B, or C on the quizzes also earned an A, B, or C in the course.

—Submitted by Lyn Noble, Professor

Henry Ford Community College, MI

Two Year • Between 10,000–20,000 Students • MyMathLab

Mathematics faculty were concerned that students were not doing homework. After a MyMathLab presentation to the division and after unanimous agreement that the program could possibly encourage students to do homework and thus improve their skills, the department required the use of MyMathLab in all Intermediate Algebra and College Algebra sections starting in fall 2007.

Since implementation of MyMathLab, communication has greatly improved. MyMathLab provides students with immediate feedback on their assignments, and instructors use the program's tools—including announcements, the Gradebook, and the search/e-mail-by-criteria option, to provide students with ongoing feedback on their progress. Most important, students are doing their homework. As a result, instructors are spending less time collecting and grading assignments and more time teaching.

According to a winter 2008 survey, the majority of students credit MyMathLab with helping them improve their skills and increase their success rates. Data provided by instructors for that same semester backed up the students' claims: courses using MyMathLab had an average of approximately 10 percent higher pass rates than those not using it.

Surveys also reflect that students like MyMathLab and want to continue using it. Henry Ford Community College has since decided to expand its use of the program to all Precalculus and Beginning Algebra courses.

—Submitted by Sam Bazzi, Instructor

Indiana University Southeast, IN

Four Year • Fewer than 10,000 Students • MyMathLab

Supported by the National Center for Academic Transformation, in fall 2010 Indiana University Southeast piloted an Elementary Algebra course redesign whereby students met one day a week in a classroom and one day a week in a lab. As students became more familiar with MyMathLab, the course transitioned into a fully lab-based course, in which all work except the final exam—amounting to 80 percent of the final course grade—is completed using MyMathLab.

As of midterm, 54.5 percent of students in the pilot courses are earning As or Bs—which is approximately 15 percent more than the percent of students in the traditionally delivered, lecture-only courses.

As of midterm, 54.5 percent of students in the pilot courses are earning As or Bs—which is approximately 15 percent more than the percent of students in the traditionally delivered, lecture-only courses. Delaine Cochran, senior lecturer at the school, predicts that the numbers may go up—but won't go down—as more and more students complete the work.

In addition to increased levels of student success, Cochran reports that requiring use of MyMathLab in a lab setting has improved students' self-confidence and their attitudes about math. "Students who have never before gotten a good math grade now are," she says. "As an instructor, these are the stories I previously only dreamed of."

—Submitted by Delaine Cochran, Senior Lecturer

Iowa State University, IA

Four Year • More than 20,000 Students • MyMathLab

Chris Schultz, Math 10 coordinator, reports that MyMathLab has improved communication between her and her Introductory Algebra and Intermediate Algebra students. The increased communication, plus the program's immediate feedback and interactive features, are invaluable for students who need to build confidence in their mathematical abilities. "Students use the help buttons to aid in their practice," says Schultz. "The immediate feedback keeps students from learning incorrectly and coincides with the way they learn today."

The failure rate across all sections of Introductory Algebra and Intermediate Algebra decreased 1.6 percent from 2008 to 2009. In addition, 72 percent of the original enrollments in the fall 2009 Introductory Algebra and Intermediate Algebra courses successfully completed the course.

—Submitted by Chris Schultz, Math 10 Coordinator

Massachusetts Bay Community College, MA

Two Year • Fewer than 10,000 Students • MyMathLab

In summer 2010, Meredith Watts taught a six-week developmental math course designed specifically for students new to MassBay. As if the shortened timeline weren't intense enough, all of Watts's students were simultaneously taking a six-week developmental writing course. Watts recognized that the overlapping course schedule meant that her math students needed all the support they could get—both in and outside the classroom.

Watts turned to MyMathLab. While her students' schedule was still grueling, the program's round-the-clock access to homework and quizzes, videos, PowerPoint slides, animations, and individualized study plans enabled her students to obtain help whenever and wherever they needed it.

Students who took advantage of MyMathLab's learning tools found that their hard work paid off. Seventy-three percent of Watts's students passed the course. And after retaking the math placement test, of those who passed the course, 64 percent placed into a higher-level, skipping either one or two math levels.

The strong connection between developmental math success and college graduation makes this story more than just a tale about increased student self-confidence, learning how to learn, or saving time and money. Thanks to MyMathLab, a six-week course that had been originally designed simply to jump-start students' freshman year ended up propelling them toward graduation.

—Submitted by Meredith Watts, Assistant Professor of Mathematics

Northeastern Illinois University, IL

Four Year • 10,000–20,000 Students • MyMathLab

Ivan Temesvari, mathematics instructor, used MyMathLab in his six-week summer prealgebra course. The course met for three hours twice a week in a lecture/lab room that provided each student with access to a computer. In addition, students were required to attend a three-hour peer-led group/individual activity after each lecture/lab session.

MyMathLab was used for homework, weekly quizzes, practice exercises, and practice tests. After each quiz, students could practice the problems found in their Study Plans until they had obtained mastery. Quizzes could be retaken as many times as necessary until a score of 100 percent was achieved.

I found a strong linear correlation between students' course grades and their cumulative MyMathLab homework scores. I believe that the addition of the program was the primary contributor to this summer's increased levels of performance and higher success rates.

—Ivan Temesvari, Mathematics Instructor
Northeastern Illinois University

Temesvari was particularly interested in observing the correlation between homework completion and student success in the course. When he compared his data at the end of the course, he liked what he saw. "I found a strong linear correlation between students' course grades and their cumulative MyMathLab homework scores," he says. "I believe that the addition of the program was the primary contributor to this summer's increased levels of performance and higher success rates. Not only did the program enable us to identify struggling students before they fell too far behind, but also the increased amount of practice enabled some students to jump ahead one level in developmental mathematics."

Student surveys indicate that in addition to doing well in the class, Temesvari's students "all really enjoyed it." "Sometimes [students] would beg for more work in order to practice," he says. "We saw a huge increase in their confidence through the six weeks of the course."

As a result of MyMathLab's positive impact, Temesvari plans to introduce more of the program's practice exercises during lab time and is exploring generating homework directly from the mastery-level prequizzes.

—Submitted by Ivan Temesvari, Mathematics Instructor

Rio Hondo College, CA

Two Year • More than 20,000 Students • MyMathLab

MyMathLab has been used in Rio Hondo College's Prealgebra course since spring 2000. Students spend four hours a week in a traditional, lecture-format class and complete required MyMathLab homework drawn from MyMathLab's bank of problems.

Students are encouraged to use the program's many supplemental help features and to contact the instructor through the program's e-mail function regarding any course difficulties. In addition, Prof. Jan LaTurno creates optional sample chapter tests for review prior to exams and encourages students to treat them like actual exams by completing them without assistance.

LaTurno cites the increased communication between instructor and students as one of the major benefits of MyMathLab. "Students who don't ask questions during class are more likely to contact me via the e-mail feature within homework problems," she says. "But the biggest impact the program has had is on the students' attitudes toward submitting homework online—specifically, the immediate, round-the-clock feedback they can get," says LaTurno. "Instead of waiting until the next class meeting to ask questions, students receive assistance right away. They appreciate not having to wait to learn whether they gave the correct answers, and they say unanimously that they don't want to return to submitting paper homework to subsequent professors once this course is over."

—Submitted by Jan LaTurno, Professor of Mathematics

Seton Hall University, NJ

Four Year • Fewer than 10,000 Students • MyMathLab

Seton Hall University adopted MyMathLab in its Developmental Mathematics courses during fall 2004 as part of the National Center for Academic Transformation's Roadmap to Redesign program. Today, students meet twice a week in a lab environment for 75 minutes each time: 20 to 25

minutes are spent in a short lecture, and the remaining 40 to 45 minutes are spent working on MyMathLab.

Homework, quizzes, and tests (but not the final exam) are completed using MyMathLab, which accounts for a total of 75 percent of a student's course grade. Students are offered unlimited attempts at homework, and both homework and quizzes are started in the lab environment, where the instructor and an undergraduate learning assistant are available for help. The homework and quizzes are then completed outside of class.

In addition to using MyMathLab for assessments, Wendiann Sethi, director of developmental mathematics, draws from MyMathLab's banks of examples, questions, and sample tests to create the assessments. She encourages use of the program's interactive learning aids and requires use of its eBook. MyMathLab's Coordinator Course feature is also "a big plus," says Sethi. "It maintains the integrity of the assignments across the entire mathematics program. If I didn't have the Coordinator Course feature, I'd have had to create assignments for each of the 17 sections individually."

Redesign with MyMathLab has resulted in increased levels of student success. "Students complete more homework than they did before," says Sethi. "They like the individualized attention they receive in the lab setting. And the support and increased amounts of practice they receive there boost their self-confidence. As a result, they're more willing to ask questions, and their scores are higher."

Sethi also reports that students who take the Developmental Math course with MyMathLab apply better study skills in subsequent courses. "They're already in the habit of doing homework," she says.

Seton Hall's developmental math students like the MyMathLab program—so much so that many request it in courses that don't yet offer the program. More important, MyMathLab works: pass rates have increased, and Sethi sees changes in students' accountability and study habits that benefit those students throughout their college careers. "MyMathLab works well for our students," she says. "We don't plan on changing a thing."

—Submitted by Wendiann Sethi, Director of Developmental Mathematics

South Suburban College, IL

Two Year • More than 20,000 Students • MyMathLab

Students in Instructor Amy Kelley's on-ground Prealgebra and Beginning Algebra classes use MyMathLab for homework; online students in both courses use the program for homework, quizzes, and exams. "MyMathLab offers students the opportunity to practice concepts and visualize

how concepts build on each other," says Kelley. "It gives them a more realistic idea of the amount of practice it takes to master a mathematical concept."

Kelley has seen increased student success with her use of MyMathLab in both on-ground and online environments. "Pass rates in classes that required MyMathLab were higher than those in classes that did not require it," she says.

Due to the increased achievement she's observed, Kelley plans to require MyMathLab in all future courses, and she looks forward to using more of MyMathLab's features, including chats and review sessions.

—Submitted by Amy Kelley, Instructor

Texas Woman's University, TX

Four Year • 10,000–20,000 Students • MyMathLab

The Fundamentals of Algebra course provides developmental math students with needed support in mathematical building blocks and prepares them for college-level mathematics courses. MyMathLab was first implemented in the course in fall 2008 for homework and practice tutorials. Due to significantly increased student gains, including impressively high pass rates and low fail rates, in fall 2009 the program's use was expanded to include homework, chapter tests, remediation, and the final exam. Students are required to use MyMathLab outside of class in addition to meeting in the math lab a minimum of one hour a week. For spring 2010, the university employed MyMathLab's Coordinator Course function to standardize delivery of the course and thereby facilitate consistency of course content and quick comparisons between assessments among the course's sections.

Assistant Professor Christina Gawlik is pleased with the consistently high pass rates achieved with MyMathLab: an average of 75 percent from fall 2008 through spring 2010. The average failure rate is equally inspiring, at an average of 25 percent over the same two academic years.

Gawlik attributes the success of the course to MyMathLab's interactive features. "Students enjoy the help options," she says. "Assignments are easily accessible and include numerous online tools for intervention and remediation. When students are working on their own, they can find help via videos and tutorials, the eBook, and the Ask My Instructor feature. Perhaps most important, students can rework similar homework problems until they obtain a correct answer, which not only offers them the opportunity to earn 100 percent on every homework assignment but also promotes increased time on task—a proven best practice."

—Submitted by Christina Gawlik, Ph.D., Assistant Professor

The University of Alabama in Huntsville, AL

Four Year • Fewer than 10,000 Students • MyMathLab

Most of Instructor Shelley Lenahan's Beginning Algebra students have gaps in their math knowledge. While they may have been exposed to certain concepts, they did not learn them well enough to master them. MyMathLab helps Lenahan identify those gaps, remediate student deficiencies, and prepare students for subsequent math courses.

Students are required to attend the Math Learning Center for four hours a week during scheduled class times. The course is mastery paced with an advancement requirement of 100 percent on homework and 85 percent or more on all quizzes and tests, including the final exam.

MyMathLab is there for students at their moment of learning. They need no longer wait for office hours, or wait until the learning center opens to ask questions. Real learning happens when and where the student is ready.

—Shelley Lenahan, Instructor
and Director of the Math Learning Center

“MyMathLab is there for students at their moment of learning,” says Lenahan. “They need no longer wait for office hours, or wait until the learning center opens to ask questions. Real learning happens when and where the student is ready.”

Instructors who teach subsequent courses report that students who pass Beginning Algebra with MyMathLab can follow lectures more easily than other students can and they typically do very well.

—Submitted by Shelley Lenahan, Instructor
and Director of the Math Learning Center

University of Central Florida

Four Year • More than 20,000 Students • MyMathLabPlus

The University of Central Florida (UCF) adopted MyMathLab in 2005 for its College Algebra course. At that time, all sections of the course used the program for common homework and quiz assignments. In spring 2008, as part of a grant from the National Center for Academic

Transformation, the school redesigned the course as a modified emporium model using MyMathLabPlus.

All assessments are completed using MyMathLabPlus. Students are required to complete weekly homework assignments, for which they are offered an unlimited number of attempts. Once students have scored at least 70 percent on a homework assignment, they are permitted to take the assignment's associated quiz, which may be attempted up to seven times. Tests and the final exam are taken in a dedicated testing lab. Coordination of course assessments is facilitated by MyMathLabPlus's Coordinator Course feature.

Students attend one lecture a week and spend at least three hours in a computer lab working on MyMathLabPlus—on homework, quizzes, practice tests, the Study Plan, virtual assignments, or test scheduling—or watching other course-related multimedia content. The lab is open 60 to 70 hours a week and is staffed by instructors, graduate teaching assistants, undergraduate teaching assistants, and peer tutors.

Tammy Muhs, mathematics coordinator, reports that redesigning UCF's already successful adoption to include MyMathLabPlus, required lab time, and homework mastery resulted in an additional 56 percent increase in the fall semester success rate since fall 2007—from 50 percent to 78 percent.

Muhs attributes the data gains to both the convenience and effectiveness of MyMathLabPlus's interactive features and the commitment and vision of both the mathematics faculty and the support team. “College Algebra was restructured to provide our largest course enrollment with a small-within-large environment,” says Muhs. “Students receive all of the benefits of an interactive and individualized online learning program plus one-on-one instruction from a faculty cohort that is focused, trained, and committed to providing its students with consistent, coordinated instruction. Students choose (1) when to access course materials based on their individual schedules and (2) which of the available instructional resources to use based on their individual academic needs.”

Based on the success of its College Algebra course redesign, UCF plans to redesign Intermediate Algebra and Precalculus by using the same model and MyMathLabPlus.

—Submitted by Tammy Muhs, Mathematics Coordinator

What Students Are Saying

Pearson Surveys

Combined results from fall 2009 and spring 2010 Pearson-generated surveys completed by 3,863 students representing 674 individual schools

80% of students strongly agree or agree that MyMathLab helped them achieve a higher grade than they would have without it.

81% of students strongly agree or agree that MyMathLab helped them understand the subject matter better regardless of whether or not they got a higher grade in their course.

85% of students were very satisfied or satisfied with MyMathLab.

What aspects of MyMathLab would you say you used on a regular basis?

- 81% Do homework
- 43% Take a test
- 43% Review Gradebook
- 29% Practice tutorial exercises
- 25% Review Study Plan

How many times a week did you log on to MyMathLab?

- 24% 1–2 times a week
- 42% 3–4 times a week
- 19% 5–6 times a week
- 16% More than 6 times a week

Describe how you used MyMathLab.

- 52% My instructor required me to do all of my homework online.
- 27% I was in an online class.
- 27% My class had lectures and lab.
- 24% My instructor required me to do all of my tests and quizzes online.
- 18% I did some homework online and some homework on paper, where I did it by hand and turned it in to my instructor.
- 18% My instructor had me do some tests and quizzes online, but I also had quizzes and tests that I took by hand and turned in to my instructor.

- 14% My class was lecture only. Any computer work that I did was on my own.
- 5% I chose to use MathXL to practice on my own; it was not required of me by an instructor.
- 4% Other

Did your instructor assign the orientation questions or recommend them, or did you do these on your own? (Asked only on the 2010 survey.)

- 46% Assigned questions.
- 18% Recommended questions.
- 13% I did the orientation questions on my own.
- 24% None of the above

Bossier Parish Community College

From a spring 2010 survey of College Algebra students

87% of students surveyed responded that they preferred math classes with MyMathLab to classes without.

Henry Ford Community College

From a winter 2008 survey of Intermediate Algebra and College Algebra students

62% of students spent 1–4 hours a week using MyMathLab.

75% of students were very satisfied or satisfied with MyMathLab.

79% of students said MyMathLab helped them understand the subject matter better regardless of the grade they earned.

The most commonly used components of MyMathLab were the following:

- 87% Do Homework
- 76% View an Example

To see videos of MyMathLab in action, visit the MyMathLab Web site: www.mymathlab.com.

MyMathLab Motivates Me to Be Accountable for My Learning

“MyMathLab allows me to work problems and use examples until I understand what I did wrong. I made better grades using MyMathLab than I did in a regular lecture class.”

—Student, Meridian Community College

“What I liked most about MyMathLab is that I could check my grade whenever I wanted to. I was able to keep up with my progress daily instead of waiting until half the course was over.”

—Student, University of Colorado at Boulder

“MyMathLab is great. I can keep up with my grade average without any worries, because I always know where I stand in the course.”

—Student, Richard J. Daley College

“I would go through my eBook, read over the lessons, and then do my homework. Sometimes I would do the practice homework, and before my exams I would always take the practice test at least three times.”

—Student, Louisiana State University

“I like MyStatLab a lot, especially the View an Example button. I use that whenever I need help instead of sending an e-mail to my instructor every time I’m stuck.”

—Student, Reading Area Community College

“MyMathLab helped me stay interested in algebra and not dread homework as much.”

—Student, Mississippi State University

MyMathLab Is Convenient to My Lifestyle

“I work. I liked that I could study at home at my own pace and choice of time. Most nights, I worked on my homework after work at 9:30 p.m.”

—Student, Meridian Community College

“I can log in any time of the day and learn at my own pace—without any concerns about how long I’m taking or when the lab closes.”

—Student, Arizona State University

“I really like MyMathLab. It’s easy to use and very convenient. I can sit at home with my three-year-old in my lap and do my homework. I can do a test at 1 a.m. if I need to!”

—Student, Reading Area Community College

“MyMathLab makes it easy for a full-time employee and dad like me to get classwork done in the small amount of downtime that I have.”

—Student, Tidewater Community College, Virginia Beach Campus

“Thanks to eBooks, I have the equivalent of 40 pounds of textbooks in my 3-pound laptop. The future is here.”

—Student, American Intercontinental University

MyMathLab Is Easy for Me to Use

“The practice problems are extremely helpful, and the user interface is fast and easy to understand.”

—Student, Santa Fe Community College

“I was very apprehensive about doing math online, but this program is very user-friendly. It made learning easier.”

—Student, Lansing Community College

MyMathLab's Immediate Feedback Encourages Me to Be Engaged

“I liked the positive reinforcement. I also liked that when I got a problem wrong, it helped me figure out exactly what I did wrong. I was able to learn from my mistakes.”

—Student, Craven Community College

“MyMathLab gave me my results right away. As soon as I did my homework, I knew what I needed more practice on and was able to move ahead.”

—Student, Jones County Junior College

Increased Practice with MyMathLab Promotes Increased Achievement

“I really enjoyed MyMathLab. Practicing with homework problems and quizzes made it easier for me on test day.”

—Student, Indiana University–East

“I used the Study Plan to study for upcoming tests. I could work problems as much as I wanted. Awesome!”

—Student, Mississippi State University

“I like that I could review the lesson 8 or 10 times, if that’s what I needed. I couldn’t do that in a classroom setting. At 33 years old, I felt like I was actually learning math. For the first time in my life, I just may be on track.”

—Student, University of Texas at San Antonio

“MyMathLab’s unlimited homework got me through the course. I did similar problems until I mastered the content and moved on to something else.”

—Student, Yavapai College

MyMathLab's Learning Aids Help Me Persevere

"I liked how the videos answered all of my questions. I was never left in the dark."

—Student, Meridian Community College

"I liked that when I was doing my homework, I could view a step-by-step demonstration of how to do a similar problem. If I had been doing homework at home on paper, I would not have those kinds of resources."

—Student, Rio Salado Community College

"Clicking on View an Example and Help Me Solve This helped me a lot. When I got an answer wrong, I kept trying similar problems until I got them right."

—Student, Amarillo College

MyMathLab Accommodates My Learning Style

"The option to Help Me Solve This when working on a problem is phenomenal. As an active learner, listening to a monotone instructor is torture; I'd rather have hands-on help that's quick and effective."

—Student, Kentucky Community and Technical College System—Bluegrass, Leestown

"I am hearing impaired, and math is my worst subject. With the Show an Example button, I was able to learn exactly how to do the work, and it was so easy to comprehend."

—Student, American Intercontinental University

"MyMathLab made math hands-on."

—Student, Florence-Darlington Technical College

"Math has never before been explained to me in a way that my brain could understand. Somehow MyMathLab did! I give it five out of five stars."

—Student, Reading Area Community College

"I took College Algebra in fall 2001 and got a D. I retook it two times and withdrew both times. MyMathLab helped me finally pass it. It is almost as though it is designed to meet each student's needs."

—Student, Louisiana State University

"MyMathLab allowed me to figure out the connections among the chapters and put it all together at the end. I could critically think about what one lesson had to do with another and figure out other ways to solve problems based on that connective knowledge—instead of just memorizing formulas."

—Student, Louisiana State University

"I liked that there were alternative ways of learning the material, such as videos and study guides."

—Student, San Francisco State University

"I've always hated asking questions. Having everything I could need at the tips of my fingers was really wonderful."

—Student, Louisiana State University

MyMathLab Works at Whatever Pace Is Best for Me

"I struggled with algebra. MyMathLab made it easier to understand. I loved being able to go at my own pace and not feel rushed."

—Student, Sierra College

"Most classes are designed for students to sit through a lecture and learn later. With MyMathLab, I was able to learn on my own as early as I wanted to. I prefer that."

—Student, Louisiana State University

"I don't feel stupid if it takes me longer in a certain area. I can work at my own pace."

—Student, Bossier Parish Community College

MyMathLab Makes the Difference

"This was the first time I have gotten an A on a test in a long time. I love MyMathLab."

—Student, Temple University

"MyMathLab is one of the reasons that I am doing so well in this course. I probably haven't done this well in a math course since the first grade."

—Student, University of Pittsburgh

"I came to the class with a real hatred for math, probably because I wasn't good at it. Now that I'm learning more, I find myself enjoying it."

—Student, Seton Hall University

"I hope I never have to take another math class without MyMathLab."

—Student, Iowa State University

"Last semester I took college algebra and got an F. This semester, MyMathLab is helping me average an A."

—Student, Bossier Parish Community College

Read more student testimonials on the
MyMathLab Web site:
<http://www.mymathlab.com/testimonials.html>

What Instructors Are Saying

Pearson Survey

Combined results from fall 2008 and fall 2009 Pearson-generated MyMathLab product surveys completed by 136 instructors representing 77 unique schools

76% of instructors replied yes when asked whether MyMathLab produced the teaching and learning results they had anticipated.

Which of these best describes the way in which you use MyMathLab?

41%	Traditional
21%	Lab setting
07%	Hybrid
14%	Distance learning
17%	Other

How often do your students use the following MyMathLab features?

Very Often or Often:

95%	Homework
55%	Tests
58%	Practice Tests
55%	Learning Aids (e.g., animations and video clips)
45%	Video Lectures
76%	Gradebook
49%	Online Help and Online Documentation

What MyMathLab features help students succeed the most?

74%	Homework
36%	Learning Aids
36%	Practice Tests
26%	Video Lectures
21%	Tests
18%	Study Plan
14%	Gradebook
09%	eBook (multimedia textbook)
07%	PowerPoint Lectures

How has student performance changed or improved?

MathXL's excellent tool set has allowed richer interactions with my students and improved student completion rates than I experienced with other platforms.

—Martin Buck, Camosun College

Performance improved after using MyMathLab. The grade average of the classes that used MyMathLab was higher than those that did not use MyMathLab. The class that was required to complete homework assignments and the Study Plan performed higher than the class that was required to use only the Study Plan. Several students reported watching the videos and using the Show Me an Example feature and that those features were a great help.

—Kerry Lookabill, Mountain State University

Students actually do homework in order to be able to take quizzes, and thus they perform better on the exam.

—Nancy Rivers, Wake Technical Community College

The students who spend the time on MyMathLab and do the work get much better grades.”

—Debra Johnsen, Orangeburg Technical College

“Students seem to be more persistent in the class. They spend more time doing math.”

—Cheryl Coppin, College of the Siskiyous

“I definitely see more students in the lab nowadays than during our first semester. Student opinion has improved.”

—Sylvia Wright, East Central Community College

“Success rates are better in almost all courses using MyMathLab.”

—Warrene Ferry, Jones County Junior College

“Students do better as a result of the lab. MyMathLab is a good complement for classroom work and the text.”

—Rudy Losoya, South Texas College

“Far more students are doing homework—and to mastery level—than before.”

—Connie Richardson, Midwestern State University

“Students who complete the homework average above 90 percent on it, and they score higher on tests than other students do.”

—Michael Karelius, American River College

“Students are doing more homework.”

—Sylvia Wright, East Central Community College

“MyMathLab creates greater accountability for students to complete all homework assignments and helps students better manage their study time. It’s also a wonderful vehicle for communicating with students outside the classroom.”

—Barbara Burke, Hawaii Pacific University

“Making MyMathLab mandatory is resulting in students practicing the concepts taught in class, which results in their being more successful on tests.”

—Donna Norman, East Central Technical College

“Students who choose to do so can go further with more learning experiences because I can adjust to the needs of individual students. It is much easier for me to adapt MathXL or MyMathLab to individual needs than it would have been using traditional methods. As a result, I’m able to take more time with those who require more time and offer more learning opportunities to those who advance quickly.”

—M. J. Beckett, Lincoln Trail College

“Students are doing their homework for the first time.”

—David Lung, South Texas College

“Students are more actively involved in working problems.”

—Timothy Miller, Missouri Western State University

“Students who regularly use MyMathLab as assigned are more successful at understanding the concepts and completing the problems.”

—Elaine Fitt, Bucks County Community College

“I’ve viewed students trying to work a problem, using the help buttons, and then getting excited when they solve the problem. The success rate on the first test was higher than previous quarters when MyMathLab was not mandatory!”

—Donna Norman, East Central Technical College

MyMathLab offers students immediate feedback and the tools to improve. When students take advantage of those tools, their performance improves.

—Cathy Parker, Meridian Community College

Jackson State Community College

“The redesign model using MyMathLab has made all the difference. Results are still improving, and the morale of both students and faculty is much more positive.”

—Corinna Goehring

Southern Illinois University Carbondale

“MathXL places the responsibility for learning back onto the student. Once students learn how being proactive can benefit them, they can proceed to their next class and succeed, no matter what the teaching scenario.”

“MathXL helps students establish a foundation for how to work and learn effectively. It’s a benefit that lasts long after they’ve ceased using the product.”

“I can’t imagine ever going back to how we taught before.”

—Dan Mussa

Triton College

“My students prefer doing homework on MyMathLab. It offers them unlimited practice opportunities, and they like the ability to e-mail the instructor when they’re confused.”

—Ellen O’Connell

University at Albany

“MyMathLab enables me to strategically select questions to assign by cross-referencing which questions are stored, which have been covered by the book, and which haven’t. It helps me ensure that every question counts.”

“I also like the defensible grading. Because MyMathLab tracks student usage, I know immediately what the ‘real’ story is when students come to office hours.”

—James Lamatina

University of Toledo

“I was one of MyMathLab’s initial beta testers, I was the program’s first faculty advocate, and I heavily use both it and MyStatLab. I couldn’t promote a product I didn’t fully believe in. MyMathLab and MyStatLab are phenomenal products, and the people behind them really care.”

“Students who use MyMathLab recognize themselves—and instructors recognize them—as better-skilled students at what it takes and what it means to learn.”

—Gwen Terwilliger

Conclusion

Challenged by both the current economic environment and legislative calls to action, U.S. two-year, four-year, and private-sector institutions are determined to improve their completion and graduation rates. Many are turning to Pearson's MyMathLab solutions for help. As the 55 success stories included here attest, MyMathLab solutions effectively accelerate the learning process and transform the learning experience into personalized instruction that makes a positive difference. The results: enhanced instructor effectiveness, increased student achievement, and improved learning outcomes—often at reduced costs to both institutions and students.

Some learning companies would be satisfied with those results, but not Pearson. Pearson is committed to scaling those results by providing teachers and institutions with more information, better learning tools, and the kinds of innovative practices that will take to the next levels already dramatic performance gains and cost savings.

Many of the courses in the Making the Grade series started as traditionally delivered courses. Upon the addition of MyMathLab—and, thereby, increased communication between students and faculty, a focus on active learning, immediate feedback, emphasis on time on task, and respect for a variety of learning styles—every course experienced almost immediate improvements across a range of student performance metrics.

Those courses whose outcomes continued improving—including the majority of those selected for inclusion in Making the Grade: Version 4.1—did so because faculty took the MyMathLab implementations further. By combining MyMathLab with redesign characteristics and proven best practices, instructors see students' results continuing to rise.

As part of the Pearson mission to support the education community and help students succeed both during their college careers and beyond, we've included here a wealth of resources to get you started. There are also a variety of indices (pages 97–104) that can connect you with colleagues whose MyMathLab implementations can be replicated on your campus.

Course Redesign

Course redesign is the process of redesigning an entire course by taking advantage of the capabilities of technology. Its primary purpose of a course redesign is to achieve better learning outcomes and to lower costs. More than simply posting courses online, course redesign is a fundamental rethinking of the way instruction is delivered in light of the possibilities offered by technology. Proven time and time again, course redesign works particularly well for mathematics and statistics courses and can be accomplished via a variety of models. The following sites can help get you started.

- **What Is Course Redesign?**
www.pearsonhighered.com/course redesign/whatis.html
Information about course redesign and the organizations that provide direction and support
- **Getting Started**
www.pearsonhighered.com/course redesign/gettings-started.html
Questions to ask yourself and your department as your institution considers redesign
- **National Center for Academic Transformation**
www.thenocat.org
Comprehensive Web site for the National Center for Academic Transformation
- **Course Redesign Case Studies**
http://media.pearsoncmg.com/cmgi/pmmg_mml-shared/MML_site_files/redesign/redesign.html
PowerPoint presentations from instructors who have redesigned their courses through the use of MyMathLab products
- **Grant Help Site**
<http://www.pearsonhighered.com/granthelp/math>
A rich source of information on grant proposal writing, funding, and procurement
- **Course Redesign Events**
www.pearsonhighered.com/course redesign/events.html
Annual Pearson/NCAT workshops highlighting successful course redesigns and featuring the NCAT's proven research-based methodology

Proven Best Practices

Within any redesign, there's room for instructor creativity and instructor adaptation to the specific needs of the course. Best practices offer both. Employed in tandem with required MyMathLab use, proven best practices such as the ones described below make a great adoption even better.

Establishing goals and tracking data over time

After five years of collecting case studies for Making the Grade reports, one undeniable fact jumps out: what you don't track, you can't measure. And what you haven't measured, you can't prove has happened. When a school successfully—and consistently—tracks and measures student gains, it is able to make informed decisions about programmatic shifts and can increase its ability to earn accreditation, obtain state funds, and help instructors get merit raises.

- In 2005, the mathematics department at Florence-Darlington Technical College created a dedicated math lab, implemented MyMathLab, and set four goals by which to track and measure the success of a new remedial math teaching and learning model. By rigorously and consistently tracking four key metrics, Math Instructor Susan Haley can see the impact made by even the tiniest adjustments to the program. Early data indicated that students learn more with MyMathLab when it is required than when it is optional. Later data offered objective results to substantiate the program's positive impact on subsequent success. In 2007, armed with statistical proof of its positive impact on students, faculty were able to obtain funding to expand the math lab and the use of MyMathLab across all remedial math sections.
- In fall 2001, the University of Idaho's Department of Mathematics redesigned its Intermediate Algebra and College Algebra courses. Over the past 10 years, detailed tracking of student success data has enabled the school's instructors to measure exactly what impact course changes are having on the redesign and to strategically decide what changes to enact in the future. This systematic oversight and analysis of student data is the driving force behind all of the school's pedagogical improvements: requirement of MyMathLab homework; use of MyMathLab quizzes and tests; and most recently, adoption of Trigsted MyMathLab and the innovative use of course notebooks. An examination of College Algebra final exam scores from shows that their method works—scores have steadily increased, from an average of 66 percent during 2004–2006 to 78 percent in 2009.

Required mastery learning before advancement

Students who advance without full competence in skills are doomed to struggle—if not fail. A successful strategy to address preparedness for college-level math, mastery learning ensures that skills are solidly understood and that they build one upon another, thereby reinforcing previous knowledge and increasing confidence.

- In 2009, the Baker College System implemented MyMathLab in all sections of its Essential Math Concepts course. Students are required to complete MyMathLab homework assignments and must score at least 85 percent on practice quizzes and practice tests to qualify for taking the corresponding quizzes and tests and advancing to the next unit. After the course design was changed to both include MyMathLab and require competency at every stage of the learning process, course pass rates skyrocketed: 2009 pass rates were 38 percent higher than 2008 pass rates in sections taught traditionally.

Modularized, self-paced learning units

Creating modules of individual learning concepts offers struggling students a less intimidating way to establish track records of success while reinforcing the connection between time on task and achievement. This best practice is often paired with required mastery learning before advancement.

- By redesigning its math program into modular units—with each unit requiring MyMathLabPlus for homework and assessments—Cleveland State Community College increased its completion and pass rates and positively affected subsequent success. Students complete at least one module a week, and because they must score at least 70 percent to advance to the next module, they learn more and they understand more. Data from a fall 2009 report indicates that students who took developmental math courses before advancing in the math sequence outperformed students who placed directly into College Algebra, Statistics, and Finite Math. What's more, the redesigned, modular format has also resulted in a 20 percent decrease in instructor costs.
- By redesigning three courses—Basic Algebra, Elementary Algebra, and Intermediate Algebra—into one self-paced, 12-module developmental mathematics course, Jackson State Community College better accommodates varied levels of preparedness and diverse learning styles. Able students move quickly through the material and exit early; students who need more time proceed more slowly. In combination with MyMathLabPlus and mastery learning, the Jackson State's redesign has resulted

in double the percentage of As and Bs, a 40 percent decrease in the fail/withdrawal rate, and a 13.5 percent increase in retention. In addition, the institution realized a cost savings of more than 20 percent.

College readiness: Mathematics review, refresher courses

Nationwide statistics indicate that up to 80 percent of incoming college freshmen place into developmental or remedial mathematics courses. That lack of preparedness for college-level math courses is perhaps the foremost barrier to success in college. Students who repeatedly fail those courses take a beating academically, financially, and in terms of self-esteem. Zero-credit, MyMathLab- and MyMathTest-enabled refresher courses offer such students the kinds of wraparound support and individualized attention they need for college-level math courses and college graduation itself.

- Kapi'olani Community College uses MyMathTest to support its 10-day Math Compass Brush Up Sessions, a free refresher course designed to help high school students improve their Math Compass Placement Test scores. By allowing students to address their fears about math and offering them the tools they need to succeed, Kapi'olani enabled 34 out of 37 students who retested in summer 2009 to improve their raw scores—19 students by one course level and 4 by two course levels.
- Palo Alto College implemented MyMathTest into the college's PASS program in spring 2010. Under the new format, students spend a total of 10–15 hours in an on-campus computer lab staffed by an instructor to provide assistance. Combined spring, summer, and fall 2010 data indicate that of those PASS students who retook the placement exam, 67.88 percent advanced at least once course level and up to as many as four course levels.
- Reading Area Community College's Mathematics Review is an optional, self-paced, online program designed to prepare students for Prealgebra. Students are offered everything they need to succeed, including MyMathLab, a math tutoring lab, and instructor office hours. Prior to redesign, of those students who passed Mathematics Review, 69 percent passed Prealgebra. The first year with the new MyMathLab-enabled format, 94 percent passed. Follow-up with both summer and fall 2009 students shows that those results sustain over time.

Exploring new product models: Trigsted MyMathLab

Proving that it is possible to improve on a good thing, Pearson recently introduced Trigsted MyMathLab courses.

A powerhouse of best practices, these interactive, eText-driven courses emphasize guided video-based activities where the student needs them, when the student needs them, and in the context of learning. Built on the mastery-learning philosophy, the program ensures that students fully comprehend one concept before moving on to the next.

- The Trigsted MyMathLab College Algebra course provides Volunteer State Community College's online students with the reinforcement they need to persevere through each step of the course. After just one semester, students' average final exam grades improved by 91 percent.
- Professor Donna Densmore of Bossier Parish Community College added the *Trigsted's College Algebra* textbook to her College Algebra course in spring 2009 and implemented Trigsted MyMathLab into the course in spring 2010. As a result, both student engagement and student success have increased: students who put in the time and effort complete the course with a grade of C or better.
- The University of Mississippi also experienced success using Trigsted MyMathLab. In the first semester after switching from Hawkes Learning Systems, both on-ground and online College Algebra courses experienced higher ABC rates, higher final exam scores, and lower drop/failure/withdrawal rates.

Personalized Solutions

The challenges facing higher education—from both within and outside the industry—are real, and so are the solutions available to address them. Pearson's family of math learning products offers solutions for all kinds of educational needs, for all of the types of courses instructors teach and in the ways they want to teach them. Redesign offers a variety of proven-successful delivery models to choose from. And instructors like the ones included in *Making the Grade, Version 4.1*, offer myriad field-tested best practices—with the data to back them up.

There's no single right answer. And with the right elements in play, there's no end to the possible configurations of targeted, effective implementations. Instructors can accelerate the learning process and transform the learning experience into personalized instruction that makes a positive difference. By providing teachers and institutions with outstanding content and assessment, creating better learning tools, and facilitating the open sharing of innovative practices, Pearson is committed to helping teachers and their students succeed. We look forward to hearing about your students' achievements.

Instructor Spotlight

Each of the instructors included in this report has gone above and beyond the traditional requirements of mathematic instruction. By adopting one of Pearson's MyMathLab suite of products into their teaching and learning environments, each of these instructors has made a commitment to implement proven best practices, to meet their students in the interactive Web 2.0 world in which they operate best, and to provide the kind of learning opportunities that develop the whole of the student, thereby enabling their students to succeed not only within the classroom but also beyond it.

Starting in this version of Making the Grade, we're introducing a section dedicated to calling out those instructors whose pedagogical vision and course implementations are so cutting edge, so truly innovative or inspirational, that we couldn't help but take notice—and applaud.

George Woodbury: Student Contracts

George Woodbury is a math instructor at College of the Sequoias in Visalia, California. His groundbreaking use of student contracts has been reaping rewards in the areas of student success and retention since fall 2007.

Woodbury's student contracts encourage students to be more responsible for their own learning. By selecting the student behaviors that he values most and rewarding his students for demonstrating those behaviors, Woodbury's students are more engaged in the material—and in turn, more likely to learn and understand mathematics.

Contract requirements are based upon attendance, persistence, and performance. Woodbury sets the maximum number of absences at two per semester. He requires that his students score 100 percent on every MyMathLab homework. And requires that students score a combined average of at least 80 percent on unlimited-attempt quizzes to promote remediation. Students who meet contract criteria are rewarded with 10 points added to their test score.

From the very first semester, Woodbury saw significant student gains in those courses in which the contract was applied. Since then, his pass and retention rates have consistently—and overwhelmingly—surpassed campus-wide rates. More important, his students learn to connect success with their own efforts, and their confidence in their ability to learn math soars.

Learn more about Woodbury's success with summer 2010 Prealgebra students on page 10 of this report. To read more about his contracts and other insights into teaching math, visit his blog at <http://georgewoodbury.wordpress.com>.

Kirk Trigsted: Course Notebooks

The brainchild of a team of University of Idaho instructors—Kirk Trigsted, Theresa Allen, Ben Baker, Julie Brown, and Holly Dickin—course notebooks were designed to offset the negative impact of an unprecedented 455 percent increase in class sizes. By enhancing course structure and upping the ante on student accountability, the notebooks lay the foundation for study skills that will serve students throughout their college careers.

The highly detailed course notebooks create the kind of learning environment students need to stay organized, stay on task, and take responsibility for their learning. Via course notebooks, every MathXL homework problem is connected both to a specific objective within the course eText and to a designated space to take notes. Prior to attempting homework problems, students are guided to exactly the video, animation, definition, or theorem required to master the objective and successfully complete the assignment.

Mathematics department faculty are trained not to answer questions until students have adequately completed the relevant portion of their notebook. To further motivate students to do so, students are given brief, in-class notebook quizzes every week. Quiz questions come directly from the previous week's notebook pages and students are allowed to use their notebooks to complete the quiz.

The notebooks work. Faculty report that nearly 100 percent of the students in the lab take notes and study the content prior to attempting homework exercises. See page 60 to read how course notebooks contributed to University of Idaho's increased College Algebra final exam scores.

Glossary of Terms Used in This Report

To ensure clear and consistent understanding of the terms used in this report, we have taken the liberty of defining several of them here. Please note that these definitions are simply for the purposes of this report and do not necessarily reflect either official or dictionary-true versions.

Completion rate is the percentage of students who registered for a course and completed the course through the final exam, excluding those students who officially dropped (withdrew from) the course. This is also called the retention rate.

Course redesign is the process of restructuring the way the content of a course is delivered. It generally involves redesigning a whole course (rather than individual classes or sections) usually to achieve better learning outcomes often at a lower cost. This usually is done by taking advantage of the capabilities of technology. Course redesign is most effective in large-enrollment courses.

Distance-learning course is a course where students do not have regular face-to-face class meetings and do not have to maintain a regular presence on the particular campus that is granting the credit. Most if not all learning activities are conducted online. This type of course is also called an online course.

Drop/fail/withdraw (DFW) rate is the percentage of students who register for a course and at the end earn a grade of D, F, or W (drop, fail, or withdraw) in the course.

Hybrid course is a course that has some face-to-face classroom activities and some online activities.

Integrated use refers to the fact that an instructor makes a MyMathLab product a part of the syllabus and assigns work to be completed by the student.

Lab-based course is a course where much if not all of the student learning takes place in a computer lab where students work independently and use technology to enhance learning. This type of course is called the emporium model when there is no face-to-face meeting in a traditional classroom setting.

Online course is a course where students do not have regular face-to-face class meetings and do not have to maintain a regular presence on the particular campus

that is granting the credit. Most if not all learning activities are conducted online. This type of course is also called a distance-learning course.

Pass rate is the percentage of students whose final grade is A, B, C, or D. This is not the same as the success rate, because the grade of D is included in the pass rate.

Required use means an instructor mandates the use of a MyMathLab product by students for an individual grade that is part of the final course grade. It is the opposite of optional use.

Retained students are those students who registered for and completed the course through the final exam. This excludes those students who officially dropped (withdrew from) the course.

Retention rate is the percentage of students who registered for a course and completed the course through the final exam, excluding those students who officially dropped (withdrew from) the course. This is also called the completion rate.

Subsequent success (in this report) refers to the success that students experience in higher-level courses due in part to their having first successfully completed other, lower-level MyMathLab courses.

Success rate is the percentage of students who registered for a course and earned a final course grade of A, B, or C. Note that a final grade of D is not included in the success rate.

Traditional course is a course that continues being taught the same way it has been for many, many years. This usually involves the lecture format where students sit passively, and usually there is no technology component.

Various formats refers to institutions' using varied implementation models to teach with a MyMathLab product.

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Enrollment of more than 20,000 students

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Enrollment of 10,000–20,000 students

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<i>Midwest</i>	Henry Ford Community College	82
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<i>Southwest</i>	* Blinn College, Bryan Campus	6
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Enrollment of fewer than 10,000 students

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	Reading Area Community College (<i>Hollister</i>)	36
	Reading Area Community College (<i>Stoner</i>)	38
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	Florence-Darlington Technical College	28
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	Volunteer State Community College	42
<i>Southwest</i>	Bossier Parish Community College	81
	Central Texas College.....	24
	Dallas Community College District– El Centro College	82
	* Palo Alto College	34
<i>West</i>	Umpqua Community College	40

Four-Year Colleges

Enrollment of more than 20,000 students

<i>Northeast</i>	* Seton Hall University	84
<i>Midwest</i>	Iowa State University	83
	South Suburban College	85
	University of Toledo.....	48
<i>Southeast</i>	* Daytona State College	44
	Florida State College at Jacksonville	82
	* University of Central Florida	86
<i>Southwest</i>	* Louisiana State University	46

Enrollment of 10,000–20,000 students

<i>Northeast</i>	University at Albany.....	56
<i>Midwest</i>	* Northeastern Illinois University	84
<i>Southeast</i>	Mississippi State University	52
	* University of Memphis	78
	University of Mississippi (Ole Miss).....	62
<i>Southwest</i>	* Southeastern Louisiana University	54
	* Texas Woman's University	85
	University of Houston–Downtown	58
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Enrollment of fewer than 10,000 students

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<i>Midwest</i>	* Indiana University Southeast.....	83
	* Roosevelt University.....	68
	Southern Illinois University Carbondale	70
<i>Southeast</i>	Augusta State University	64
	The University of Alabama in Huntsville	86
<i>Canada</i>	* Algonquin College (1–4 year)	50

Private-Sector Colleges

Enrollment of more than 20,000

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Enrollment of fewer than 10,000 students

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Midwest

Baker College System	72
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Southeast

Augusta State University	64
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Southwest

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Fully Online

Augusta State University	64
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* Front Range Community College	12
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Lab Based

Cleveland State Community College.....	26
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Management of Large Enrollment Courses

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