



Active Learning Implementation Strategies for High Impact

Emporium/Lab-Based Model

Blended/Hybrid Model

Flipped-Classroom Model

Fully Online Model

Efficacy Report 2015

Active Learning: Implementation Strategies for High Impact

Edited by Michelle D. Speckler

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Welcome Letter

At Pearson, we define *efficacy* as a measurable impact on improving someone's life through learning. We are embarking on a global education initiative and dedicating ourselves to the pursuit of efficacy and improved learner outcomes.

In the pages that follow, you'll find compelling examples of how active learning was deployed at both two- and four-year institutions, inside and outside the classroom, and across a variety of disciplines. Grounded in research and supported by discipline-specific, data-driven implementation models, these case studies illustrate how to successfully translate those same active-learning strategies for use in your classrooms.

Looking for more case studies? Visit Pearson's Results Library, an online repository of more than 600 data-driven case studies quantifying the positive impact of MyLab & Mastering programs on learning outcomes, retention, and subsequent success. This comprehensive database is cross-referenced by institution type, course format, state/province, and more; and it's easy to access at www.pearsonmylabandmastering.com/results.

We extend our deepest gratitude to each contributing instructor. Each case study was submitted voluntarily and without compensation; each instructor submitted a study and remained available for follow-up interviews. Their efforts are invaluable.

We invite you to contact us with any questions about this report, as well as to share your ideas, your best practices, or your results in our next edition. Pearson is happy to provide both consultation and data collection tools to help you measure the impact of a MyLab & Mastering product in your course.

We look forward to hearing from you.

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Pearson's Efficacy Program and Standards for Efficacy Research

At Pearson, we believe that learning is a life-changing opportunity and that education should have a measurable, proven impact on learners' lives. It's what Pearson's efficacy program and tools are all about. They're how we measure and improve our likelihood of impact on learners and ensure we're doing all we can do to equip learners for success.

What Pearson Means by *Efficacy* and *Effectiveness*

- *Efficacy* describes whether a product or intervention has a positive effect on learning, such as reducing wrong answers, increasing retention rates, or raising final exam scores.
- *Effectiveness* measures the size of the educational improvement from a product or educational intervention.

Why Pearson Is Interested in Efficacy Studies

To deliver the best educational experience for students, we need to understand how Pearson's content is performing and to verify the learning gains associated with the use of our products. Toward that goal, we actively seek out educators who wish to explore educational research questions and investigate the efficacy of MyLab & Mastering products.

Pearson's Efficacy Research Team

Our research team includes PhD-level statisticians who provide practical advice about tracking and analyzing student data after the redesign of a course to incorporate technology. Our research team also includes experts in psychometrics, educational statistics, and journal publications. These individuals support instructors who want to (1) conduct efficacy studies, (2) provide our editorial staff with detailed reports on the quality of our online content, and (3) advise our software engineers of new methodologies for collecting and processing student learning data within MyLab & Mastering products.

How Pearson and Instructors Work Together

Every research project is unique. The process takes time—generally a semester or longer. Instructors interested in conducting studies should expect an interactive and rewarding partnership.

How Pearson Can Help Instructors Get Started

Pearson can provide templates, guidelines, checklists, and samples on course redesign, efficacy studies, data collection, and more. To maintain objectivity, Pearson does not offer compensation for participation in efficacy studies.

Research Standards

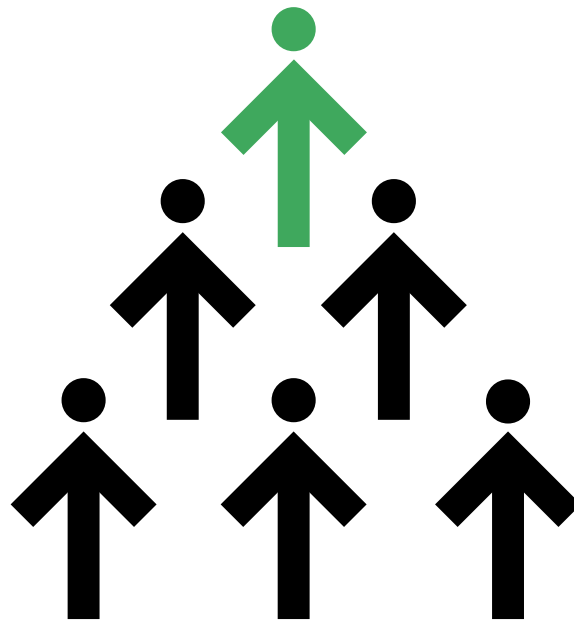
Pearson adheres to Software & Information Industry Association guidelines for evaluation of educational technology products. The key guidelines are:

- Ask the right question
- Support the implementation of the product or service
- Plan a study of sufficient size and duration to demonstrate an effect
- Plan for plausible causal claims
- Avoid (the appearance of) conflicts of interest
- Provide a comprehensive and detailed research report
- Make the research findings widely available
- Accurately translate research for customers

Contact maryjo.lawless@pearson.com for more information.

Research indicates that active-learning models yield greater gains in learner outcomes because they help students become more engaged in and accountable for their learning.¹

Students in classes with on-ground, stand-and-deliver lectures are 1.5 times more likely to fail than students in classes that use more-stimulating, active-learning methods.²



¹S. Freeman (2014). Active learning increases student performance in science, engineering, and mathematics. <http://www.pnas.org/>, vol. 111 no. 23.

²Ibid.

Emporium/Lab-Based Model

A LARGE BODY OF EVIDENCE DEMONSTRATES THAT TECHNOLOGY-ENHANCED instruction can both increase student learning outcomes and lead to efficiencies in costs. Alongside that evidence is growing demand to identify best practices in the implementation of such learning technologies so as to achieve the results that students, educators, and institutions seek. Our experience—which spans thousands of institutions, tens of thousands of educators, and millions of students—has shown that the way educators integrate a learning technology is the single, most significant element that affects resultant outcomes.

Course redesign—typically used for describing a formal rethinking of instruction delivery in large-enrollment, core courses with the goals of improving outcomes and reducing costs—can take many shapes: On one end of the continuum, it can reflect one instructor’s modification of a course to shift instruction online so as to enable more interactive learning during class. On the other end, course redesign can represent departmentwide, institutionwide, or even statewide changes.

Redesign can be accomplished via a variety of models. The emporium, or lab-based, model has proved most successful with large-scale developmental mathematics, reading, and writing courses, as well as college-level mathematics and statistics courses. This model is set primarily in a computer lab and maximizes the benefits of technology to diagnose individual strengths and weaknesses, thereby personalizing students’ learning experiences so they remediate only in the areas where they need improvement. Another benefit of the model is its potential to help students move more quickly through the developmental sequence so they can get to credit-bearing courses sooner. Chattanooga State Technical Community College combined an emporium-style mathematics department redesign with MyLabsPlus and its U Do the Math modularized learning program. Students receive individual help in both lab and classroom settings, and a low-stakes, mastery approach to learning encourages students to take responsibility for their learning. The college’s results include dramatically improved success rates across every metric (page 6).

Guilford Technical Community College used the emporium model to redesign its developmental math sequence starting in fall 2010. Seeking to improve pass rates and help students move more quickly through the developmental courses, the school also modularized its curriculum with MyLabsPlus and applied a variety of best practices, including frequent assessments, flexible pacing, and personalized and mastery learning. Pass rates have increased, and perhaps even more inspiring, students are experiencing increased success in their subsequent courses (page 8).

In response to unacceptably low pass and retention rates, St. Petersburg College used the emporium model and MyReadingLab and MyWritingLab to redesign its upper-level developmental reading and writing courses. The school integrates state competencies with MyLab diagnostic Path Builders and opens mastery-learning and individual-learning paths so students can focus only on areas that need remediation. Success rates have risen, and more students are advancing from developmental to credit-level courses “swiftly, cost-effectively, and with a level of mastery that fosters success in subsequent courses” (page 10).

Emporium/Lab-Based Model

Product Name MyLabsPlus

School Name Chattanooga State Community College, Chattanooga, TN

Course Names Elementary Algebra, Intermediate Algebra, other college math courses

Key Results The U Do the Math modified emporium model increased pass rates and closed the achievement gap between the college's low-income and other students.

Submitted by

John Squires, U Do the Math Program Director and Math Department Head

Course materials

MyLabsPlus and *Developmental Math*, Squires and Wyrick

Background

Chattanooga State Community College, also known as Chattanooga State, is a public, comprehensive community college located in suburban Chattanooga, Tennessee. A member of the Tennessee Board of Regents System, the college serves more than 10,000 students a year and is accredited by the Southern Association of Colleges and Schools.

Challenges and Goals

For the past decade, the Tennessee Board of Regents has acted to improve remedial and developmental education across the state's community colleges and public universities. In 2007, Chattanooga State was selected to participate in C²R,¹ a three-year program conducted by the National Center for Academic Transformation with support from the Fund for the Improvement of Postsecondary Education in order to redesign the school's developmental math courses with the goal of improving effectiveness and serving more students better at less cost.

Implementation

Chattanooga State's math department uses U Do the Math, a nationally acclaimed program and winner of the 2009 Bellwether Award and 2014 Bellwether Legacy Award conceived by John Squires, math department head.

Classes are limited to 24 students; most classes have 15–20 students. There is one tutor or faculty member for each 15–20 students in the lab. Students receive individual help in both the lab and the classroom.

The math curriculum is organized into modules of one to five sections and 50 problems of homework per week. Students watch videos of the material and complete the module homework on MyLabsPlus. Students are required to show their notes to the faculty and tutors when testing and as part of their attendance grade. After watching the videos and completing the homework, students take a module quiz comprising 10 problems from the module homework. Each course includes a midterm and a final exam consisting of 15 problems each. Quizzes and exams are taken in the classroom or the lab.

Students must score at least 90 percent on homework, 80 percent on quizzes, and 75 percent on exams. They may take quizzes multiple times, and only their best scores count. Students who fail quizzes receive help, are assigned more work, and may attempt the quizzes again. Once they pass their quizzes, they may retake them for even higher scores.

Chattanooga State also implements a continuous-enrollment system in which students who complete one course—developmental or college level—can start their next course immediately. Students who complete multiple courses in one semester may add the second course and receive credit for the course that semester. Students who start in a course and complete only part of the course may take the course the next semester, and the work they complete will transfer in. The effects of the continuous-enrollment system are that it encourages students to keep working and it rewards them for doing so.

Assessments

60 percent MyLabsPlus unit exams

15 percent MyLabsPlus quizzes

15 percent MyLabsPlus homework

10 percent Work ethic (weekly class and lab attendance, plus demonstrated progress in the course)

¹<http://www.thencat.org/RedesignAlliance/DissemProgram.htm>.

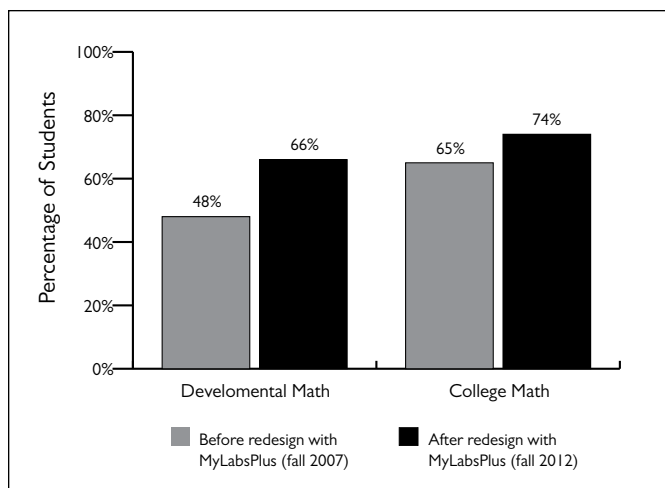


Figure 1. Developmental and College Math Success Rates before and after MyLabsPlus and U Do the Math Program Redesign, Fall 2007 and Fall 2012 ($n = 8,300$)

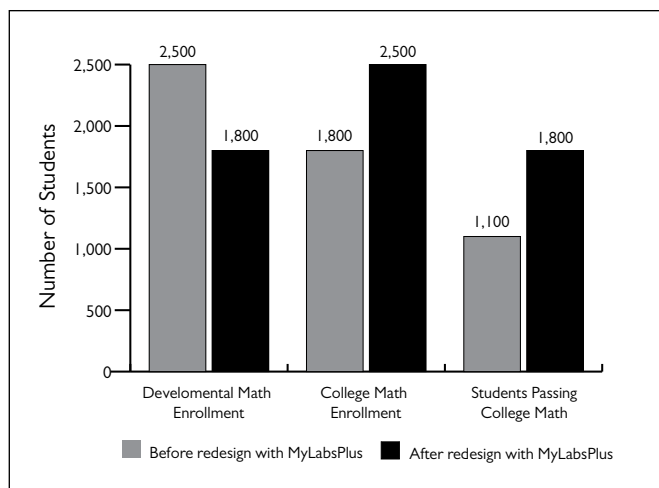


Figure 2. Developmental and College Math Enrollment and College Math Passing Data per Semester before and after MyLabsPlus and U Do the Math Program Redesign

Results and Data

Since implementing U Do the Math, Chattanooga State's success rates have dramatically improved (Figure 1):

- Developmental math success rates increased 37.5 percent—from 48 percent before redesign to 66 percent after implementation.
- College math success rates increased 13.8 percent—from 65 percent before redesign to 74 percent after implementation.

The number of students succeeding in college math has increased by more than 60 percent since the redesign, and college math enrollment has exceeded developmental math enrollment for the past seven semesters (Figure 2).

Low-income students performed at nearly identical levels when compared with all students, and they experienced accelerated progress through the developmental math sequence:

- Low-income students in Elementary and Intermediate Algebra achieved within two percentage points of overall success rates.
- Fall-to-spring retention rates for low-income students in Elementary and Intermediate Algebra were nearly identical to overall retention rates.
- In Elementary Algebra, the percentage of low-income students completing more than one course was within one percentage point of the overall rate.

Finally, independent research group SRI International, in conjunction with Next Generation Learning Challenges, found that U Do the Math has a “statistically significant impact on student outcomes” ($z = 14.670$).

The Student Experience

Squires reports that students who participate in U Do the Math display none of the anxiety problems that exist in typical math classes. “The low-stakes quizzes and tests and the mastery approach to learning combine to eliminate testing anxiety,” he says. “Students focus on learning the material, not simply performing acceptably on high-stakes tests on a given day.” Students realize they can get their questions answered in both the class and the lab. Squires also observes that students with special needs and disabilities do well in the redesign program.

In addition, students like the continuous-enrollment option and they take advantage of it. In academic year 2012/13, 385 students completed multiple math courses in one semester, including some students who completed three courses.

Conclusion

Establishing a friendly environment in both the lab and the classroom has been critical to the success of the program. “We tell students that they are here to work on math and that the instructors are here to help them,” says Squires. “We also tell them they are going to do more work than ever before and get more help than ever before.” Because there is no difference between what students do in the classroom and in the lab, the tone of each course is established from the outset.

Emporium/Lab-Based Model

Product Name MyLabsPlus

School Name Guilford Technical Community College, Jamestown, NC

Course Name Developmental math sequence

Key Results After redesigning its developmental math sequence with MyLabsPlus in an emporium model, Guilford Technical Community College significantly increased the average success rate of each developmental math course and achieved an 85 percent average subsequent-course success rate.

Submitted by
Susan Barbitta, Instructor

Course materials
MyLabsPlus; *Developmental Math*, Martin-Gay; and a custom workbook

Background

Guilford Technical Community College (GTCC), one of the three largest public community colleges in North Carolina, serves more than 15,000 students from four suburban campuses. Before redesign, enrollment in the college's developmental math sequence was approximately 3,700 students per semester; 48 percent of students passed the course in which they were enrolled.

Challenges and Goals

Problems faced in the developmental sequence included low pass rates and gaps in students' mastery of concepts. In response, the college's redesign had three primary goals: (1) increase the percentage of students who successfully complete the developmental math curriculum, (2) fill in academic gaps from previous math courses, and (3) permit students to move rapidly through their courses.

Implementation

Students watch lectures, read the workbook at home, and then receive on-demand tutoring from instructors and tutors during class, which meets in the lab. The emphasis is on active reading, critical thinking, and personal responsibility for student learning.

For each semester that they participate in the program, students register for a shell course in which content is divided into eight modules. Flexible pacing allows students to both work ahead and devote more time to difficult topics. The average time to complete each module is four weeks.

Each module is completed in MyLabsPlus and includes the following:

- **Diagnostic test.** Students who earn a score of at least 85 percent immediately progress to the next module. Students who score less than 85 percent are required to complete both the module in MyLabsPlus and the module's corresponding sections in the LEAP Log (workbook). Students complete only material that they have not demonstrated mastery on.
- **The LEAP Log.** Each section includes reading and written exercises. Students must show all work and turn it in to be checked for completion before proceeding to the test. Corresponding MyLabsPlus lecture videos are optional but highly recommended.
- **Homework.** Students must earn a score of 100 percent before proceeding to the next section. Students may request help from an instructor; they have unlimited attempts, and all learning aids are available except Show Me an Example.
- **Quizzes.** Students take one quiz halfway through the module and another at the end of it. No instructor or tutor assistance is allowed, and learning aids are turned off. Students have four attempts to score at least 85 before they are required to repeat the section. Instructor intervention is required after two failed attempts.
- **Review homework.** Students complete a comprehensive homework assignment at the end of each module. A score of 100 is required to progress from the section. No learning aids are allowed, and students have unlimited attempts.
- **Module test** (proctored, password protected). Upon completion of the rest of the module, students take a comprehensive module test. They have four attempts and must score at least 80 to pass the module. Each time students score less than 80, they remediate via personalized MyLabsPlus homework. Students must score

Semester	Format	Essential Math	Introductory Algebra	Intermediate Algebra
Spring 2011	Traditional	66%	73%	62%
	Redesign	93%	80%	72%
Fall 2011	Traditional	73%	73%	66%
	Redesign	80%	58%	59%
Spring 2012	Redesign	72%	82%	64%
Summer 2012	Redesign	82%	82%	87%

Table 1. Average Success (A/B/C) Rates before and after MyLabsPlus Redesign, Spring 2011–Summer 2012 ($n = 7,000$)

100 on the personalized homework before retaking the module test. After four unsuccessful attempts, a student must rework the entire module.

GTCC uses almost every feature of MyLabsPlus, including Personalized Homework, Prerequisites, Instructor Tips, and the Study Plan.

Assessments (each module)

90 percent MyLabsPlus module test (proctored)

5 percent MyLabsPlus quizzes

5 percent MyLabsPlus homework

Results and Data

Developmental math success rates have steadily increased with the MyLabsPlus redesign. Intermediate Algebra success rates, for example, increased from 62 percent in spring 2011 to 87 percent in summer 2012 (Table 1).

In addition, students are experiencing increased success in subsequent courses. At the end of summer 2012, developmental math students saw an average 85 percent success rate in their next math courses (Figure 1).

The Student Experience

Susan Barbitta, developmental math instructor, reports that students quickly realized the benefits of the MyLabsPlus redesigned format. The following student comments reflect their preference for the new program's flexibility and individualized instruction:

- "I like that I can complete the course at my own speed and that of the class. I comprehend more at my own rate."
- "I hate to work at someone else's pace. This course gives me the ability to learn the way I learn."

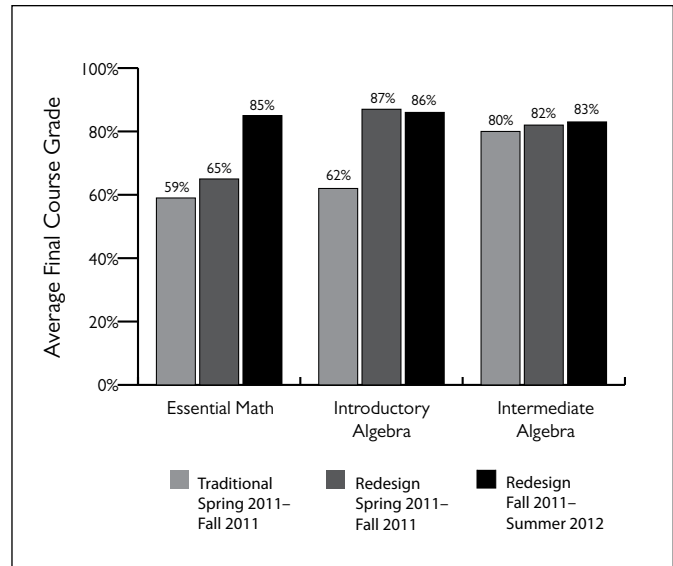


Figure 1. Average Subsequent Success (A/B/C) Rates for Developmental Math Students, Spring 2011–Summer 2012 ($n = 7,000$)

- "All of my class time is actively used, instead of getting lectured at and being lost."
- "I like the individualized attention; a teacher is always available to answer my questions."

Student comments have helped spur programmatic changes. By listening to students, faculty learned that different explanations by different tutors created confusion. As a result, the department agreed on one method to explain concepts, and all tutors now adhere to that method.

Conclusion

Guilford Technical Community College's developmental math redesign enhances its students' quality of learning. The guided module design offers students immediate feedback and promotes their becoming more-active and more-engaged learners.

"The personalized homework feature in MyLabsPlus enables students to focus on what they don't know and gives them credit for concepts in which they can demonstrate mastery," says Barbitta. "This combination of guided content learning, acceleration, and remediation as needed helps students successfully complete their courses. The mastery approach, reinforced by regular testing, increases the cumulative-learning effect from module to module. As a result, students are more successful in subsequent math courses."

According to another faculty member: "Students learn by doing, not by watching. With MyLabsPlus, they are responsible for what they learn and how quickly they learn it."

Emporium/Lab-Based Model

Product Names MyReadingLab, MyWritingLab

School Name St. Petersburg College, St. Petersburg, FL

Course Names Upper-level developmental reading, upper-level developmental writing

Key Results Success rates for redesigned courses average 12 percentage points higher than those for traditional courses and have increased each year over three years. During 2013/14, success rates were 78 percent for the redesigned writing course and 84 percent for the redesigned reading course.

Submitted by

Martha Campbell, Dean of Communications

Course materials

MyReadingLab and MyWritingLab (No textbook was used.)

Background

St. Petersburg College is the fifth-largest state college in Florida and serves approximately 35,000 students a year. In the recent past, approximately 40 percent of incoming students placed into developmental English and/or reading courses.

Challenges and Goals

A 2013 Florida law requires that fewer students take placement tests. With so many students in need of developmental education, faculty and administration were eager to improve both students' test results and students' overall learning experiences. Specifically, they sought ways to address the following:

- Low pass rates in developmental courses
- Low retention rates for developmental students
- More-accelerated advancement into college-level courses
- Increased preparation for Composition I

In 2010, the state of Florida made funding available for course redesign via a developmental education initiative grant. St. Petersburg College launched its first redesigned developmental reading and writing courses in spring 2011 across five campuses with 189 students. The redesigned courses transitioned from 16-week, four-credit-hour courses with 22 students per section in online, hybrid, and traditional formats to accelerated eight-week, two-credit-hour courses meeting in computer labs twice a week with no more than 15 students per section.

For the 2013/14 academic year, enrollment held at 240 students in upper-level developmental writing and grew to 407 students in upper-level developmental reading. The school continues to offer traditional 16-week courses.

Redesigns were based on National Center for Academic Transformation principles and included the following:

- Diagnostic standards for placement into specific instructional modules
- Individualized pedagogy grounded in best practices
- The opportunity to exit developmental course work into college-level courses in the same semester
- Personalized, accelerated-learning instruction to assess and correct students' individual weaknesses

Implementation

MyWritingLab and MyReadingLab were implemented in the new developmental courses. Students complete the MyLabs diagnostic Path Builders, which are then correlated to Florida's standard core competencies. Path Builders prescribe individualized learning paths so students may focus their work on areas assessed as deficient, thereby enabling each student to generate a personalized instructional and assessment plan with multiple attempts for posttest mastery (defined as 80 percent or higher). Faculty lectures are supported by the school's learning management system, and all sections have close ties to the school's Learning Support Commons.

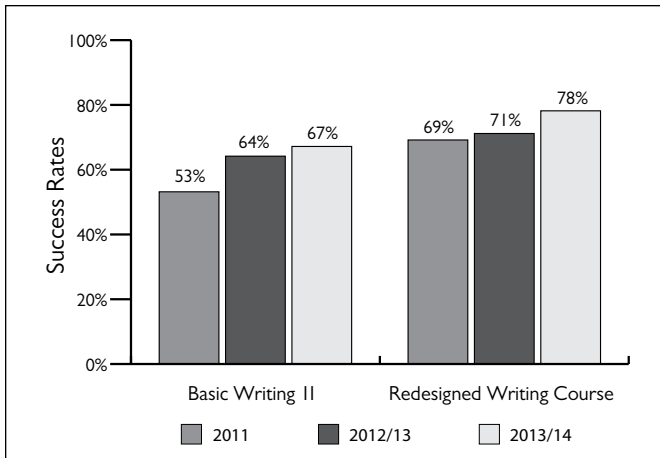


Figure 1. Success Rates (C or Better) in Traditional and Redesigned Writing Courses, 2011–14 (Basic Writing II: 2011, n = 774; 2012/13, n = 1,084; 2013/14, n = 952. Redesigned Writing: 2011, n = 100; 2012/13, n = 281; 2013/14, n = 240.)

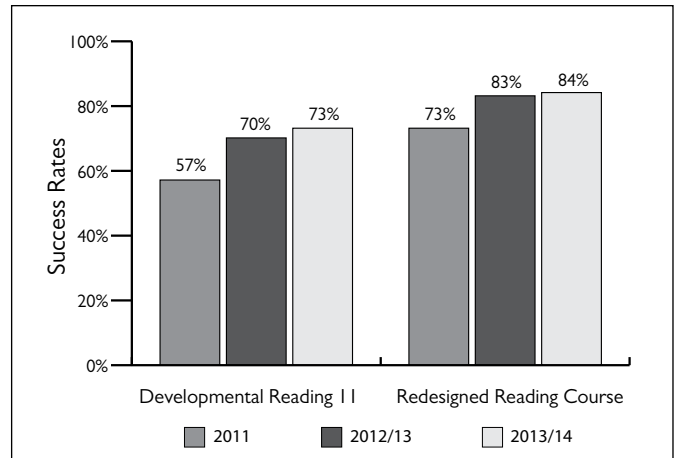


Figure 2. Success Rates (C or better) in Traditional and Redesigned Reading Courses, 2011–14 (Basic Reading II: 2011, n = 744; 2012/13, n = 1,270; 2013/14, n = 1,191. Redesigned Reading: 2011, n = 89; 2012/13, n = 399; 2013/14, n = 407.)

Benefits

According to Martha Campbell, dean of communications, the advantages of St. Petersburg’s MyLab implementations include diagnostic assessment, consistency of course design, training support for adjunct faculty, and reduced costs for students through access codes. Those features enable students to exit early if they can demonstrate that they have remediated their deficiencies. Some finish in four weeks and progress to a 12-week Composition I course, although most go into an 8-week Composition I course. Students who do not complete the course in eight weeks are offered the option to continue working with faculty and Learning Support Commons to complete the course.

Assessments

Redesigned reading course

- 40 percent MyReadingLab assignments (80 percent mastery)
- 20 percent In-class assignments and quizzes
- 20 percent Midterm exam
- 20 percent Final exam

Redesigned writing course

- 40 percent MyWritingLab tests and essays (80 percent mastery)
- 20 percent Midterm grammar exam
- 20 percent Research portfolio/persuasive essay
- 20 percent Final persuasive essay

Results and Data

- Success rates in the redesigned writing course have risen nine percentage points in the past three years and are now at a high of 78 percent (Figure 1).

- Success rates in the redesigned reading course have risen 11 percentage points in the past three years and are now at a high of 84 percent (Figure 2).
- In academic year 2013/14, both the redesigned writing and reading courses had success rates 11 percentage points higher than the standard developmental writing and reading courses (Figures 1 and 2).
- In spring 2011, 72 percent of students passed the redesigned writing course on the first or second attempt, and 63 percent of those students completed and passed Composition I by spring 2012—a significant improvement on previous years. Campbell plans to track more persistence data in the future.

Conclusion

Course redesign offers a variety of new academic pathways for St. Peterburg College students, and the school is committed to continuing its redesign process. “We want to advise students better throughout the process, provide completely online delivery of our redesigned courses, and further support the professional development of our faculty as they gain expertise with the redesign model,” says Campbell. “Side-by-side examinations of student performance results in both the old and new courses show that we are meeting our goals: the MyReadingLab and MyWritingLab redesigned courses address students’ remediation needs quickly and effectively, enabling more students to advance from developmental studies and into credit-level courses swiftly, cost-effectively, and with a level of mastery that fosters success in subsequent courses.”

75%
of college students say
technology helps them
achieve their academic
outcomes.

70%
of college students say
they learn most in
blended learning
environments.

54%
of college students say
they are more actively
involved in courses that
use technology.



Sources: Digital and the New College Experience, TNS's TRU, commissioned by Google, August 2012; ECAR Study of Undergraduate Students and Information Technology, 2012.

Blended/Hybrid Model

IN BLENDED/HYBRID COURSES, SOME OF THE TRADITIONAL FACE-TO-FACE SEAT TIME has been replaced by online learning activities. The blended, or hybrid, model uses online technology not just to supplement learning but also to reform, improve, and have a greater impact on the overall learning process. The most-successful blended learning occurs when technology and instruction inform each other and the material becomes meaningful. The blended/hybrid model is popular for the delivery of college-prep and college-level courses in most disciplines. It is also widely used in college-level foreign language courses,¹ as well as large introductory science courses.²

Florida State College at Jacksonville redesigned its Human Anatomy & Physiology II and Introductory Microbiology courses with MasteringA&P and MasteringMicrobiology to enhance students' opportunities for critical thinking, improve student preparedness, increase pass and retention rates, and facilitate more-efficient use of class time. Today, lab quizzes and homework are delivered via Mastering. Because students do more work in Mastering, which offers immediate feedback and multiple opportunities to demonstrate content knowledge, they come to class better prepared and more able to focus on higher-level material. Pass rates and retention rates have improved, and 93 percent of students in an end-of-semester survey agreed that Mastering helped them think critically (page 14).

Somerset Community College's developmental reading courses were redesigned in response to the Kentucky Community and Technical College System's directive to create courses that could accelerate students' progress through remediation. Students have one class a week in the lab working on content modules in MyReadingLab and one class a week in the classroom on corresponding text topics. Results from fall 2013 show "clear evidence that students can accelerate through—or even test out of—developmental reading in eight weeks, and the time and money they save motivate them to push forward with their college work." In this accelerated format, students move more quickly into credit-bearing courses (page 18).

Seeking to both accommodate increased classroom cap sizes and improve the quality of classroom interaction, the University of Georgia redesigned its Elementary Spanish course by using MySpanishLab in a combination hybrid-flipped model. Students in the redesigned course complete graded assignments, such as grammar tutorials and videos, in MySpanishLab before coming to class. As a result, "face time is now more productive because it is used to engage in realistic communication activities rather than lecture to review grammar and vocabulary." The percentage of students earning an A in the course has increased, and the school is able to accommodate more students via flexible class schedules and additional sections (page 20).

¹S. K. Bourns, F. Rubio, J. J. Thoms, eds. (2012). *AAUSC 2012 Volume—Issues in Language Program Direction: Hybrid Language Teaching and Learning: Exploring Theoretical, Pedagogical and Curricular Issues*. Boston: Cengage Learning.

²D. R. Garrison and N. D. Vaughn (2007). *Blended Learning in Higher Education: Framework, Principles, and Guidelines*. San Francisco: Jossey-Bass.

Blended/Hybrid Model

Product Names **MasteringA&P, MasteringMicrobiology**

School Name **Florida State College at Jacksonville, Jacksonville, FL**

Course Names **Human Anatomy and Physiology II, Introductory Microbiology**

Key Results Grade data indicate that use of Mastering learning technologies enhances student pass rates and improves student retention. Student feedback and faculty observations suggest that it also helps students better prepare for both lecture and lab and more fully engage in the curriculum.

Submitted by

Lourdes Norman-McKay, Professor

Course materials

MasteringA&P and *Human Anatomy and Physiology*, Marieb and Hoehn, and MasteringMicrobiology and *Microbiology: An Introduction*, Tortora, Funke, and Case

Background

Florida State College at Jacksonville is one of several institutions in the Florida College System designated as a state college, as it offers a greater number of four-year bachelor's degrees than traditional two-year community colleges. The college has four major physical campuses and several additional centers located in the state's northeast corner and currently enrolls more than 80,000 students.

Both courses are mandatory prerequisites for allied health majors, including nursing students, and are offered as combined lecture/lab curricula. Human Anatomy and Physiology II is a continuation of Human Anatomy and Physiology I. Students must earn a C or higher in A&P I to take A&P II. The course reviews the cardiovascular system, the lymphatic system and immunity, the respiratory system, the digestive system and metabolism, the urinary system, fluid/electrolyte and acid/base balance, and reproductive systems. The prerequisite for Introductory Microbiology is a C or higher in any college-level chemistry course. The introductory course focuses on bacteria, viruses, fungi, protozoans, and helminths of medical and economic importance.

Challenges and Goals

MasteringA&P and MasteringMicrobiology were adopted to enhance students' opportunities for critical thinking, improve student preparedness for lectures and labs, foster more-engaging laboratory experiences, improve student success and retention rates, and facilitate more-efficient use of class time. This case study provides both qualitative and quantitative illustrations of how those things were implemented to achieve the goals and of the outcomes that were gained as a result.

MasteringMicrobiology is a great tool that puts the responsibility for learning on the student.

Implementation

Each curriculum is divided into four modules. Each module comprises lecture and lab material, a homework assignment, laboratory quizzes, and a module exam. Lab quizzes and homework are delivered via Mastering. Students are encouraged to research homework answers and to work in groups; quizzes are more-rigorous, individual efforts.

Cognitive psychologists describe cognition as developing in stages, with critical thinking (postformal cognition) being the highest level of thinking and one that develops primarily during adulthood. Studies suggest that foundational knowledge, practice, behavior modeling, and opportunities for reflection all contribute to developing postformal cognition. Professor Lourdes Norman-McKay reports that she chose Mastering because it has the tools and resources she needs to easily embed the kind of pedagogical practices that support higher-order cognitive development.

“Mastering helped me interact with the material instead of just reading it out of the book. It challenged my mind.”

—Student

Redesigning Norman-McKay’s course by using Mastering enabled her to infuse three layers of pedagogical practices that foster higher-order cognitive development: (1) priming of the mind with basic knowledge before a higher-order academic task is approached in lab or discussed in lecture, (2) providing timely formative feedback that allows for real-time student redirection and addressing of misconceptions, and (3) in-class opportunities for reflection focused on areas in which students have the most difficulty.

Those three pedagogical practices were delivered via the following:

- *Mastering homework assignments for each module due one week before the exam.* Each homework assignment takes approximately 90 minutes to complete and contains reading, tutorial, and activity questions. Norman-McKay reviews the item difficulty graph from the gradebook diagnostics with students during class. She identifies the most commonly missed items so as to address misconceptions *before* an exam.

During those in-class reflection sessions, students often agree that they struggled with a particular concept or question. Initially, students will say a commonly missed question was “tricky.” Once they go over the questions, it becomes clear that the question itself was not tricky; rather, it required a higher level of thought and understanding. The collaborative review of commonly missed problems enables Norman-McKay to model the problem-solving process. The aggregated class diagnostic data in the Mastering gradebook offers her a real-time snapshot of each class and facilitates a prescriptive approach to refine and redirect her students’ efforts.
- *Mastering prelab quizzes due by the lab session.* Norman-McKay’s goal is to ensure students come to lab prepared. To that end, quizzes are timed and open a week before lab. Questions are scrambled and include Video Tutor and lab questions. As with the homework assignments, about 10 minutes is spent reviewing gradebook diagnostics from the quizzes together—especially the item difficulty graph—and addressing any misconceptions before lab. This shifts the lab experience from a “cookbook” session to a more integrated and reflective experience. Students enjoy the

labs more now, and so does Norman-McKay; students feel empowered to investigate, not regurgitate.

- *Postlab assessments comprising more application-based questions.* These assessments are designed to ensure that students have mastered the concepts explored during lab. In Introductory Microbiology, the postlab assessment is a quiz in MasteringMicrobiology. In Human Anatomy and Physiology II, the postlab assessment is a lab report.

Assessments

A&P II

53 percent	Lecture exams
18 percent	MasteringA&P homework
11 percent	MasteringA&P prelab quizzes*
9 percent	Lab reports
9 percent	Cumulative lab final exam

Microbiology

57 percent	Lecture exams
15 percent	MasteringMicrobiology homework
7.5 percent	Cumulative lab final exam
7.5 percent	Identification of bacterial unknown with comprehensive report
7 percent	MasteringMicrobiology pre- and postlab quizzes
6 percent	Take-home, formal, written case study assignment

*In lieu of postlab quizzes, lab reports are assigned as postlab exercises.

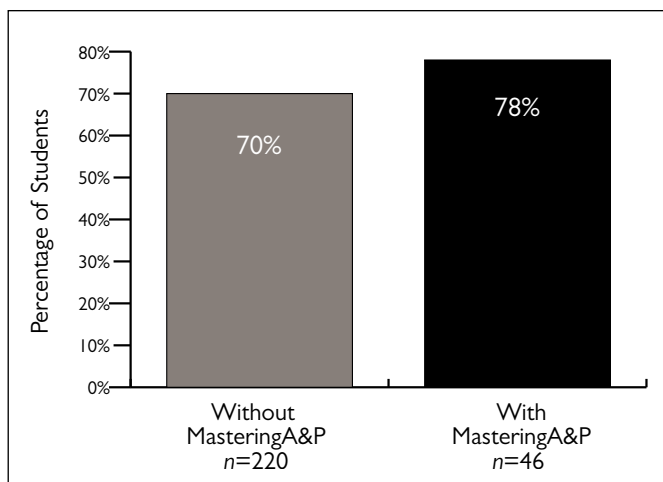


Figure 1. Average Student Pass Rate (A/B/C) with and without the Use of MasteringA&P

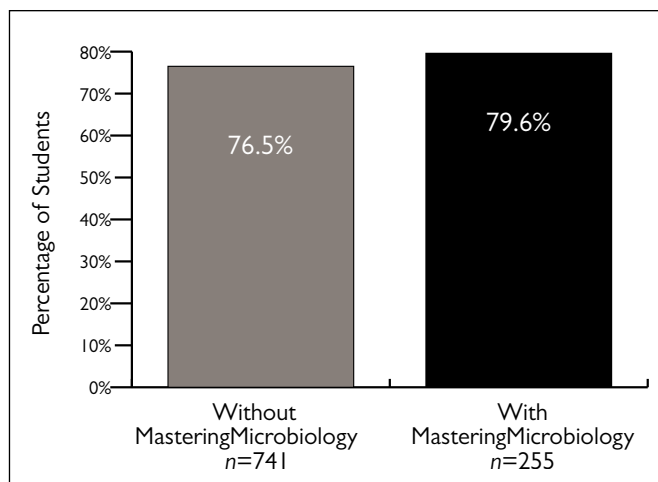


Figure 2. Average Student Pass Rate (A/B/C) with and without the Use of MasteringMicrobiology

Results and Data

After implementation MasteringA&P and MasteringMicrobiology, student pass rates (A/B/C) increased in both courses (Figures 1 and 2). Homework and quizzes were always parts of course grades, so implementing Mastering learning technologies did not lead to grade inflation.

In addition, there were positive changes in student retention:

- After implementation of MasteringMicrobiology, the average withdraw rate fell from 8.9 percent to 7.8 percent—a decrease of 1.1 percentage points and about a 12 percent decrease between pre- and post-Mastering implementation.
- After implementation of MasteringA&P, the average withdraw rate fell from 6.8 percent to 6.5 percent—a 4.4 percent decrease.

Additional retention data relates to student attendance. At Florida State College, faculty may issue a failure-for-nonattendance grade (FN). In Norman-McKay's course, the policy is that students with more than three absences earn an FN grade.

- Prior to implementing MasteringMicrobiology, the course FN rate was 4.2 percent. After implementation, the FN rate fell to 1.2 percent (a 71 percent decrease between pre- and postimplementation data).
- Prior to implementation of MasteringA&P, the course's FN rate was 5 percent. After implementation, the FN rate fell to 4.3 percent (a 14 percent difference).

The Student Experience

Student feedback for both MasteringA&P and MasteringMicrobiology has been overwhelmingly positive. In a spring 2013 survey, the majority of student respondents said assignments in Mastering helped them prepare for class, exams, and lab (Figures 3–5) and better understand lab concepts (Figure 6).

Student responses to an end-of-course spring survey also revealed that:

- 93%** agreed that Mastering helped them think critically.
- 67%** believed they would not have done as well in the course without Mastering.

Student comments about Mastering include:

- “Mastering gave me multiple ways to learn the material and then gave me interactive resources to help me understand the concepts.”
- “I wasn't simply learning so I could take a test; I was learning so I'd be able to apply it.”
- “Using Mastering is like having a professor at home who presents the material in an engaging way.”
- “I loved using Mastering. It helped me in this class and in other classes, too. I tell all of my peers to make sure, or at least hope, that their teacher has this program in their class.”

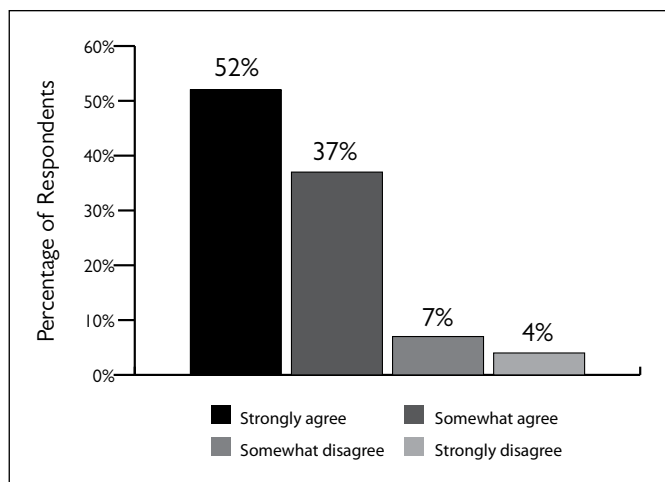


Figure 3. Combined MasteringA&P and MasteringMicrobiology Student Survey Results: "Mastering pushed me to prepare for class," Spring 2013 (n = 27)

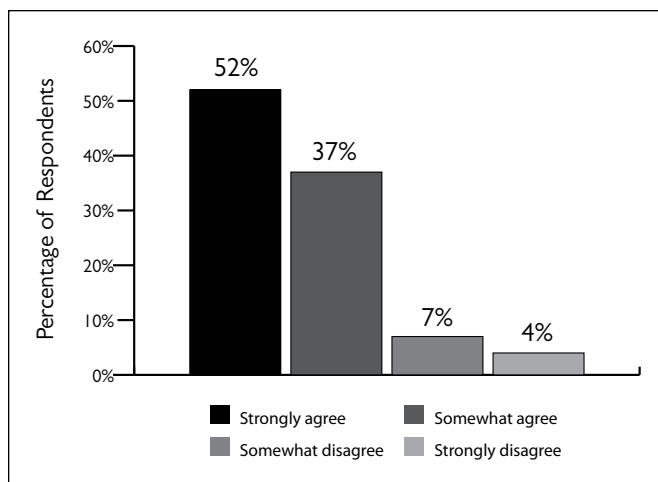


Figure 4. Combined MasteringA&P and MasteringMicrobiology Student Survey Results: "The content in Mastering helped me prepare for my exams," Spring 2013 (n = 27)

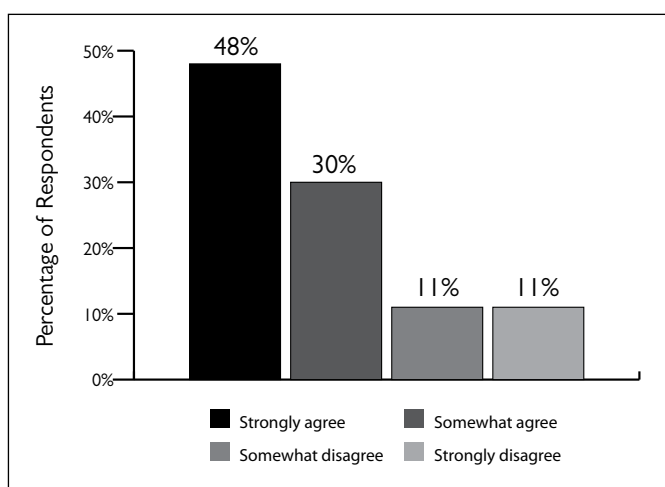


Figure 5. Combined MasteringA&P and MasteringMicrobiology Student Survey Results: "Mastering helped me be better prepared for lab," Spring 2013 (n = 27)

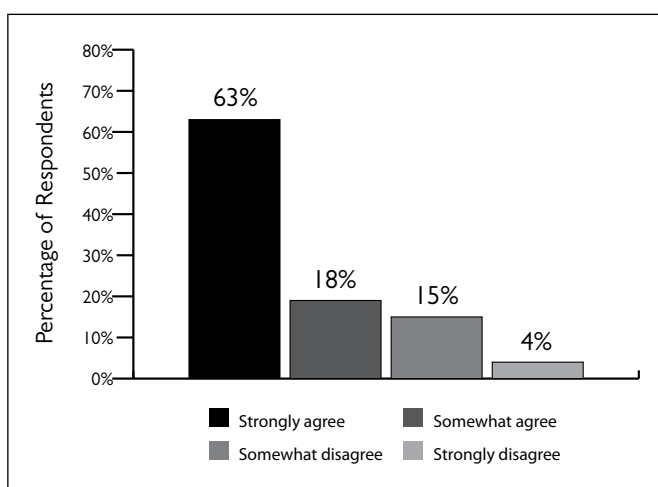


Figure 6. Combined MasteringA&P and MasteringMicrobiology Student Survey Results: "Knowing that I had a pre- or postlab Mastering quiz pushed me to understand, not just perform, the labs," Spring 2013 (n = 27)

Conclusion

Instructors often ask themselves what more they can do to help students learn. Sometimes the best answer is to make students do more on their own. Norman-McKay appreciates that Mastering offers students multiple opportunities to understand course material, and because feedback on homework is instantaneous, students can determine exactly what concepts they need help on earlier than when homework is hand graded.

Students come to class more prepared and so are more able to focus on higher-order material. The enhanced student preparedness and engagement also free class time so that

teaching time centers more on practicing the kind of critical-thinking skills that will help students achieve their long-term goals.

In addition, the student learning outcome data gathered in Mastering help Norman-McKay improve her craft as a teacher. By continually evaluating course results and student attainment of learning outcomes, she engages in a cycle of reflection and improvement that ensures that she's meeting her course learning objectives.

Blended/Hybrid Model

Product Name MyReadingLab

School Name Somerset Community College, Somerset, KY

Course Names Improved College Reading, Reading for the College Classroom

Key Results With MyReadingLab and a redesigned developmental reading program, 68 percent of students passed the course, and 57 percent either accelerated through one or more course levels or tested out of the developmental sequence completely.

Submitted by
Nikki Ware, Assistant Professor

Course materials
MyReadingLab and *The Master Reader*, Henry

Background

Somerset Community College's developmental reading courses were redesigned in response to the Kentucky Community and Technical College System's general directive to create courses that could accelerate students' progress through remediation and on to college-level work. The initiative, a response to Senate Bill 1 (2009) urging all Kentucky schools to carefully examine how

to improve postsecondary retention rates, asked each school to devise an accelerated developmental education curriculum as part of a general effort to assist underprepared students.

For the past three years, both Improved College Reading (RDG 20) and Reading for the College Classroom (RDG 30) have been taught in hybrid courses, with students having one class a week in the computer lab, using MyReadingLab, and one class a week in the classroom. The redesigned courses retain the existing course syllabus but now offer students the option to accelerate to the advanced reading course or to test out at midterm by retesting on the Compass Reading Test (Table 1).

Students are placed into Improved College Reading with Compass scores of 49–69 and into Reading for the College Classroom with Compass scores of 70–82. Students in both courses attend class in one physical classroom while working in different tracks within MyReadingLab (Intermediate and Advanced).

RDG 20 Compass at Midterm	≥85	Reading requirement completed
	83–84	Accelerate to College Reading (RDG 185) for second half of semester or next semester (or continue in second half of RDG 30)
	70–82	Accelerate to RDG 30 for second half of semester or next semester
	≤69	Continue in RDG 20 for remainder of semester*
RDG 20 *Compass at Finals	≥85	Reading requirement completed
	80–84	Take RDG 185 or RDG 30 next semester
	70–82	Take RDG 30 next semester, provided grade is A, B, or C
	≤69	Take RDG 20 again
RDG 30 Compass at Midterm	≥85	Reading requirement completed
	83–84	Accelerate to RDG 185 or stay in RDG 30 and retest at finals
	≤82	Continue in RDG 30 for remainder of semester*
RDG 30 *Compass at Finals	≥85	Reading requirement completed
	77–84	Reading requirement completed with grade of A, B, or C
	≤76	Retake RDG 30

RDG 30
Compass at Finals

≥85	Reading requirement completed
80–84	Reading requirement completed with grade of A, B, or C
≤79	Take RDG 30 again

Assessments

- 33.3 percent Attendance and participation
- 33.3 percent In-class assignments, homework, and quizzes
- 33.3 percent MyReadingLab modules (16)
- Pass/fail Final exam/Compass reading test*

*Passing grades of A, B, and C are awarded only to students who pass the Compass with a score of 70 or above.

Table 1. Course Placement and Acceleration Options

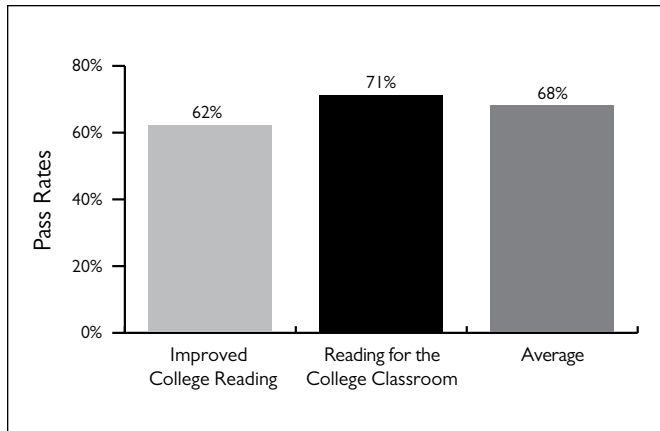


Figure 1. Pass Rates for Improved College Reading ($n = 140$) and Reading for the College Classroom ($n = 228$), Fall 2013

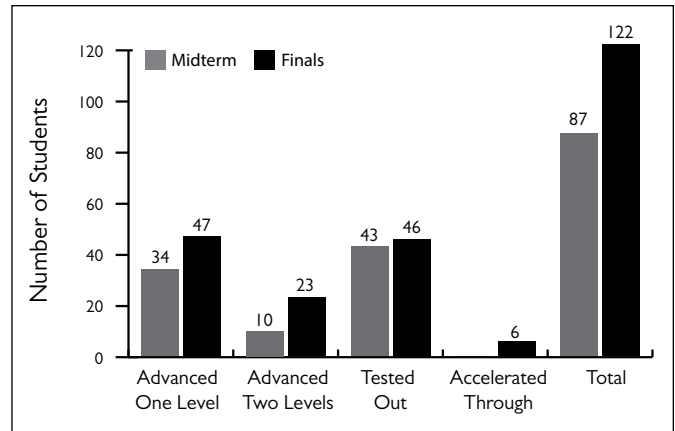


Figure 2. Students' Acceleration through the Redesigned Developmental Sequence, Fall 2013 ($n = 209$)

Implementation

During the first half of the semester, students focus on seven key Reading Skills modules as well as material on Reading Level and Test-Taking Skills in MyReadingLab during lab days and cover corresponding topics in their text during classroom days. The goal is to prepare students to score higher on their Compass retest at midterm and move immediately on to the next course in the sequence or to have completed their reading requirement and be ready for college-level work. During the second half of the semester, they work on vocabulary development and gain extensive practice in reading nonfiction texts typical of material assigned in academic courses across the college curriculum. During this segment of the semester, students also work through nine additional modules in MyReadingLab. To demonstrate mastery on the MyReadingLab modules, students must score at least 70 percent, and they have two chances to get their best score. We provide a pacing guide so students know when the assigned modules must be completed.

Results and Data

- In fall 2013, Compass scores improved an average of 9.09 points, enabling 250 students out of 368 to pass the redesigned courses (Figure 1).
- By midterm, 44 students had advanced one or more levels, and 43 students had tested out of developmental reading (Figure 2).
- At the end of the term, 70 students advanced one or more levels, 46 had tested out of developmental reading, and six had accelerated through the two courses in one semester. In all, the redesign enabled 209 students to accelerate through one or more courses (Figure 2).

The Student Experience

Because many of the students who are required to take developmental reading also have jobs, families, or other life obligations, the opportunity to complete Improved College Reading or Reading for the College Classroom in eight weeks is an attractive one. It motivates students to apply themselves vigorously to the assigned course work. Also, the redesigned courses help students save money: many of them students now do not have to pay for as many developmental courses, and the school's Pearson rep works with them to provide one MyReadingLab access code and one textbook that accommodate both courses.

Conclusion

According to Assistant Professor Nikki Ware, the redesign was a team effort, spearheaded by a colleague with a background in assessment who drafted the team's plan. "The associate dean was also very supportive," says Ware. "Although it has taken some time and effort to get the entire staff on board, we tweak these courses as we go and make accommodations as needed. We will be meeting again at the end of this semester to evaluate the redesigned program and discuss other possible adaptations that might improve it further."

The school is pleased with its results from fall 2013. Ware has seen clear evidence that her students can accelerate through—or even test out of—developmental reading in eight weeks, and the time and money they save motivate them to push forward with their college work. "Academic departments across the campus are eagerly waiting to enroll these students in a wide variety of credit-bearing courses, and with our accelerated format, more and better-prepared students are now moving into those courses sooner," Ware says.

Blended/Hybrid Model

Product Name MySpanishLab
School Name University of Georgia, Athens, GA
Course Name Elementary Spanish

Key Results A redesigned course using a hybrid format enables the University of Georgia to serve more students while seeing improved classroom interaction, increased student engagement, and more active communication.

Submitted by
Raúl Vázquez, Instructor

Course materials
MySpanishLab and *Unidos*, Guzmán, Lapuerta, and Liskin-Gasparro

Background

The University of Georgia is the first US state-chartered university and the oldest and largest of Georgia's institutions of higher learning. It is a part of the University System of Georgia and is accredited by the Southern Association of Colleges and Schools.

Challenges and Goals

In fall 2012, rising enrollment at the university and an increased classroom cap size caused difficulty in scheduling and reserving enough classrooms. The Department of Romance Languages decided to redesign its Elementary Spanish sequence, changing it from a face-to-face course meeting four days a week to a hybrid-format course meeting just three times a week. Credit hours did not change.

Faculty and the administration knew hybrid classes would automatically solve the issue of classroom space, but they also wanted to improve the quality of classroom interaction—their main goal. Before the redesign, homework was completed online and instruction and assessment were conducted in the classroom. Students were expected to review material before coming to class but could not be held accountable. Faculty often skipped this review because they knew the information would be covered during class time. Twice a week, teaching assistants led the class in communicative activities to practice material learned the previous day. Students didn't have much to do outside class except homework.

At that point, MySpanishLab was used mostly as an online workbook for assignments. The courses they were not taking

advantage of all it had to offer. The redesign process led faculty to critically assess programmatic needs, identify assessments and instructional materials that would work well in a hybrid course format, evaluate available products and resources, and pilot a product. "We chose Pearson's *Unidos* with MySpanishLab," says Instructor Raúl Vázquez, "because it employs a flipped-classroom approach and is thoroughly integrated with a broad array of online activities, assessments, and instructional tools."

Implementation

Instead of listening to classroom lectures and afterward practicing Spanish outside class, students in the redesigned course complete multiple assignments in MySpanishLab *before* coming to class, such as grammar tutorials or videos. Vázquez purposely assigns a completion grade for preclassroom work to encourage students to come to class better prepared and ready to participate. "With *Unidos*, we are now able to make them accountable for acquiring the foundation they need to truly engage with the Spanish language," he says.

Assessment

25 percent	MySpanishLab (homework, interactive presentations, vocabulary/grammar tutorials, autograded activities, and two online oral tests)
75 percent	In-class activities (four chapter quizzes, midterm exam, final exam, daily class participation, and two compositions)

Results and Data

Although the spring 2013 hybrid pilot sections did not show any major differences in student grades from the traditional sections, because there was better use of classroom space and no decrease in student grades, Vázquez considers this a positive result (Figure 1).

Face-to-face class time is now more productive because it is used to engage in realistic communication activities—rather than lecture—for review of grammar and vocabulary.

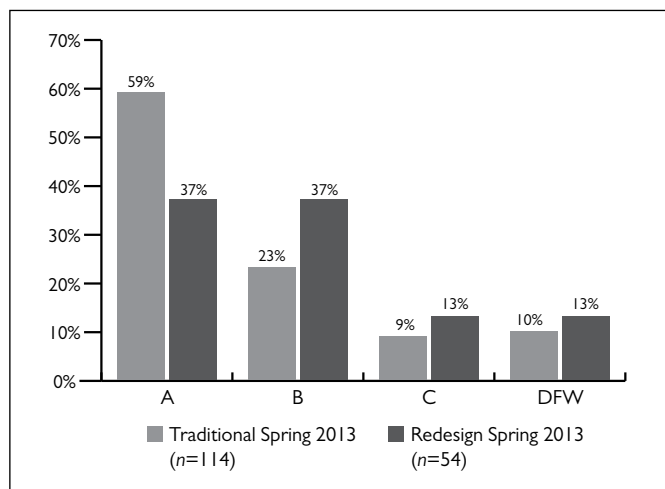


Figure 1. Grade Distribution for Traditional and Redesigned Courses, Spring 2013

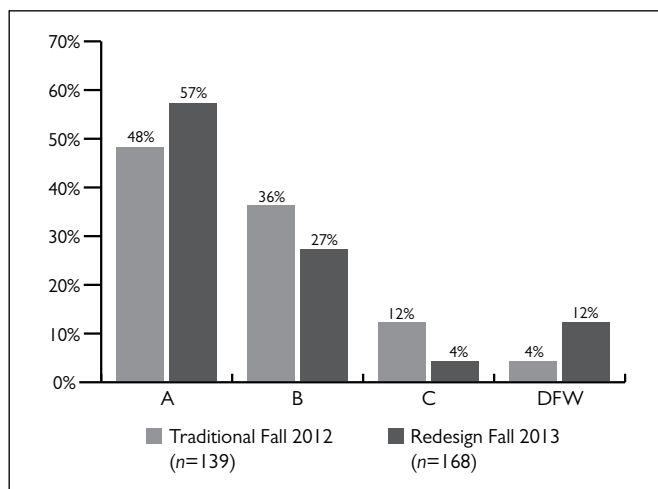


Figure 2. Grade Distribution for Traditional and Redesigned Courses, Fall 2012 and Fall 2013

Data from the fully redesigned fall 2013 semester indicates that A grades increased by nine percentage points (Figure 2). Although DFW rates were higher in the redesigned semester, Vázquez notes that the redesign transition takes time for both instructors and students.

The hybrid format accommodates more students with flexible class schedules and additional sections. An additional section of 29 students was added in the redesigned fall 2013 semester. In spring 2014, enrollment increased by another section of 33 students, for a total of 196.

Best practices

Communication among instructors was crucial throughout the pilot. The redesign team held regular meetings with the department's language coordinator and met once a month with other instructors to field questions and receive feedback. "We wanted everyone to be informed, engaged, and excited about teaching a hybrid course so that when the entire program moved to this model in fall 2013, every instructor and teaching assistant would know what to expect," says Vázquez.

The Student Experience

Since the redesign, students ask more-purposeful questions that include informed examples. With a knowledge base from online

work completed at home, students are more confident in their language skills and more likely to actively participate.

Graduating PhD students also benefited. When interviewing for teaching jobs, many found their experience teaching hybrid courses made them more-attractive candidates.

Conclusion

Today, all of the school's Elementary Spanish courses are hybrid, and the school is committed to continuing to reevaluate and improve the program. Faculty know what students can do both in the classroom and online and are considering adding quizzes to the online work, because quizzes take valuable class time to proctor. The success of the redesign has encouraged faculty to think big: they plan to offer Elementary Spanish fully online to accommodate off-campus students and summer students and anticipate continuing to increase the university's enrollment.

The hybrid format's focus on group work and conversation challenged instructors to become more active in the classroom. Although classes now meet three times a week instead of four, face-to-face class time is more productive because it is used to engage in realistic communication activities—rather than lecture—for review of grammar and vocabulary. "Our classrooms are much more productive than they were a year ago," says Vázquez.



The flipped-classroom model has been growing in popularity as more educators adjust their style of teaching to increase student engagement and improve student learner outcomes.

A recent survey indicated that the number of teachers who flipped a lesson increased from 48% in 2012 to 78% in 2014.

**Of the teachers who flipped,
96% say they would recommend it
to a colleague.¹**

¹ Extension of a Review of Flipped Learning (2014), Flipped Learning Network™, George Mason University, and Pearson's Center for Educator Learning & Effectiveness

Flipped-Classroom Model

THE FLIPPED-CLASSROOM MODEL IS GAINING POPULARITY AMONG INSTRUCTORS seeking to incorporate active-learning strategies into their classrooms. The Center for the Integration of Research, Teaching, and Learning describes the flipped approach by comparing it with the traditional classroom. “In the traditional approach to college math and science teaching, students come to class to get a first exposure to the material through lecture, then try to make sense of that material through problem sets and other activities after class. The ‘flip’ involves shifting the first exposure to outside of class [prelecture] and the deeper learning to class time.”¹

A form of blended learning, in the flipped classroom students learn content online via interactive learning features, including videos and other multimedia assignments, usually at home; and class time is used for active problem solving by students’ analyzing or applying content and for small-group interactions with the instructor. Students may help each other—a process that benefits both advanced and less-advanced learners.² In addition, instructor interaction with students is hands-on and personalized: guidance instead of lecturing.

Bowling Green State University chose a flipped-classroom model plus MyBCommLab with WritingSpace. Prior to lecture, students read new content, complete a diagnostic pretest, remediate what they don’t completely understand, and complete a posttest. Lectures are used to (1) address specific questions and expand on areas the posttests indicate are problem areas, and (2) promote active learning in the forms of lively discussions of real-life applications, group work, and oral presentations. In addition to higher homework and final course grades, the new, flipped model means more time in the classroom for active learning and examination of real-world topics that offer students opportunities to apply what they’ve learned (page 24).

As part of a statewide course redesign initiative, Missouri State University redesigned its Introduction to Psychology class from a large, lecture-based, multi-instructor course with inconsistent outcomes to a flipped-classroom model using MyPsychLab. Student learning gains have more than doubled, the school has seen a 10 percent reduction in instructional costs, and instructors have become able to identify and reach out to struggling students earlier in the semester (page 26).

Rochester Institute of Technology’s flipped-classroom redesign of General Biology II addresses the course’s biggest issues: student preparedness, student engagement, and accurate assessment of student learning. Students interact with brief videos, complete work sheets, and do MasteringBiology homework outside the classroom with Adaptive Follow-Up exercises powered by Knewton, thereby freeing valuable class and instructor time for hands-on support and assessment of student learning via active-learning exercises, critical thinking problems, and quizzes. Data indicate that since the redesign, there has been an increase in both average exam scores and the average amount of time students spend on assignments (page 28).

¹<http://www.cirtl.net/node/7788>.

²Tina Rosenberg (2013-10-09). “Turning Education Upside Down.” *New York Times*.

Flipped-Classroom Model

Product Name MyBCommLab with Writing Space
School Name Bowling Green State University, Bowling Green, OH
Course Name Business Communication

Key Results Students who achieved higher scores on MyBCommLab homework assignments also earned higher final course grades. In addition, Writing Space's automatic grading saved the instructor time and provided students with consistent, objective evaluations of their written work.

Submitted by
Ruth White, Instructor

Course materials
MyBCommLab with Writing Space and *Business Communication*, Shwom and Snyder

Background

Bowling Green State University is located in northwest Ohio and serves approximately 20,000 students a year. Business Communication, offered by the school's College of Business Administration, is a three-credit course taken by nearly 350 students a semester, primarily business and sports management majors. Students learn to communicate effectively through written documents—such as reports and memos—and oral presentations for small groups and individuals.

Challenges and Goals

Instructor Ruth White decided to redesign her course in a flipped-classroom model whereby students read, do activities, and take quizzes on basic course content *before* coming to class; and class time is spent on realistic applications and group activities. White had used Pearson's MyMarketingLab in a previous course and was eager to bring similar tools and content assets to her Business Communication course. She also sought a way to make grading less subjective and less time-consuming. Writing Space, a feature included in MyBCommLab, offered a solution based on its objective, unbiased, and automatic essay grading: students receive fair grades and specific, immediate feedback on their writing.

Implementation

More than two-thirds of the assessment points for this course (67 percent: 926 out of 1,376 total) come from MyBCommLab assignments: homework that includes chapter pre- and posttests, timed chapter objective-based exams, and Writing Space

assignments. Prior to attending class, students read the assigned chapter, complete a pretest to identify topics they may not completely understand, remediate on those topics by using the textbook and MyBCommLab study aids, and then take a posttest. The class meets either twice a week (Tuesday and Thursday) or three times a week (Monday, Wednesday, and Friday). The first session is spent reviewing content: students arrive prepared with specific questions, and White adapts her lectures to expand on areas of interest and topics that the posttests indicate are problem areas. The second and/or third session is devoted to lively discussions and real-life applications, including breakout sessions, group work, and oral presentations.

The Writing Space assignments are vital components for success in this course: they form the students' bridge between concept mastery and critical thinking. Writing Space enables students to craft well-reasoned and logical documents informed by concepts they have learned from the text and the in-class activities. Writing Space includes customized rubrics that objectively and consistently grade essays and generate immediate, personalized feedback to help students focus their thoughts and sharpen their writing.

Assessments

446 points	MyBCommLab chapter pre- and posttests
300 points	MyBCommLab Writing Space assignments (three)
180 points	MyBCommLab chapter exams (12)
135 points	Attendance and participation
100 points	Final business strategy memo report
65 points	Oral presentation
50 points	Movie assignments
50 points	Résumé project
50 points	Business strategy memo report

Total: 1,376 points

The Writing Space assignments are vital components for success in this course: they form the students' bridge between concept mastery and critical thinking.

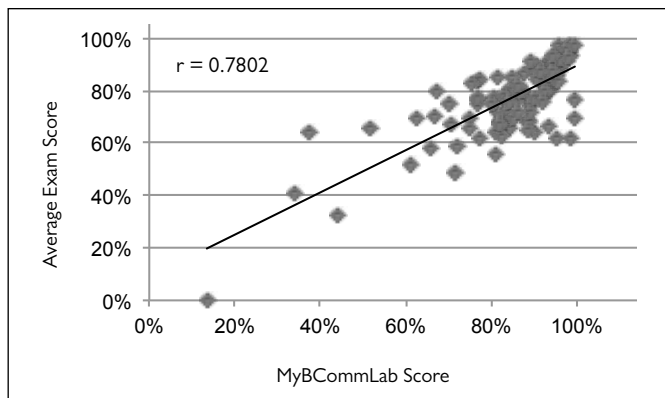


Figure 1. Correlation of Average Exam Score and MyBCommLab Grades, Fall 2013 (n = 116)

Final Course Grade	Average MyBCommLab Homework Score
A	96%
B	88%
C	78%
D	57%
F	28%

Table 1. Comparison of Final Course Grades and MyBCommLab Homework Scores, Fall 2013 (n = 116)

Results and Data

Data indicate a strong, positive correlation between MyBCommLab pre- and posttest scores and chapter exam scores, where $r = 0.7802$ (Figure 1). The pattern of required pretest/remediation/posttest appears to effectively prepare students for their exams.

A comparison of final course grades and average MyBCommLab homework scores shows that students who earned higher MyBCommLab homework scores achieved higher final course grades (Table 1).

The Student Experience

Students say they believe the pretest/posttest sequence helps prepare them for both exams and the first weekly class meetings. Because they have put effort into MyBCommLab materials before coming to class, they arrive ready to ask targeted questions about challenging topics and to participate fully in group work and application activities. Although initially apprehensive about having their written assignments graded digitally, students quickly realized that Writing Space grades are accurate for both format and content.

Conclusion

Now that students are doing so much preparatory work in MyBCommLab before class, White can adapt her teaching to focus on topics of particular importance and explore students' questions about concepts they don't fully understand. She also has the time to research new and more-interesting activities that offer her students opportunities to apply on their own time what they learn. Further, MyBCommLab's Writing Space feature enables White to require more writing in her course, thereby helping students improve their critical-thinking skills without having to feel worried about subjective or inconsistent grading.

As a result of her students' increased success after completion of MyBCommLab assignments, White planned to delve even more deeply into the program in fall 2014. Her plans included decreasing lecture time to have more time for small-group work, creative activities, and oral presentations. Finally, White anticipates that MyBCommLab's forthcoming Knewton adaptive-learning feature will provide students with even more focused and personalized instruction, freeing her to meet more often with students and coordinate their group work outside class.

Flipped-Classroom Model

Product Name MyPsychLab

School Name Missouri State University, Springfield, MO

Course Name Introductory Psychology

Key Results With MyPsychLab, student learning gains increased from 30 percent to an average of 79 percent, as measured by a comparison of pre- and posttest scores. In addition, the university's per-student costs were reduced by 10 percent.

Submitted by

Danae L. Drab-Hudson, Associate Professor; Brooke L. Whisenhunt, Professor; Carol F. Shoptaugh, Professor; Ann D. Rost, Associate Professor; and Rachel N. Fondren-Happel, Instructor

Course materials

MyPsychLab and *Psychology* by Ciccarelli and White

Background

Missouri State University is a public university located in Springfield, Missouri. It is the state's second-largest university, with an enrollment of more than 20,000. Introductory Psychology is a large-enrollment course serving more than 2,500 students a year.

Challenges and Goals

From 2010 to 2013, the governor of Missouri and Missouri's public four-year institutions established a major course redesign initiative. The institutions partnered with the National Center for Academic Transformation (NCAT), utilizing the successful models and lessons learned from NCAT's course redesign programs. The school's Introductory Psychology course was Missouri State University's representative in this initiative and was one of the first to go through the redesign process.

Despite being a popular course, Introductory Psychology had delivered less-than-satisfactory learning outcomes for many students. The course, before redesign, was lecture based and typically taught by approximately 65 percent full-time faculty and 35 percent adjunct instructors. There were common general education goals across all sections, but each instructor was individually responsible for the choice of content and the delivery of course material. This produced significant variability from section to section in the material covered and led to course drift and inconsistent outcomes.

Redesign goals included improving student learning, reducing course drift, incorporating best-practices teaching strategies, increasing course completion rates, and reducing institutional costs. Five full-time faculty members worked as a team throughout the planning, pilot, and implementation of the redesign. All sections were redesigned using the same syllabus, textbook, online course materials, and staffing plan.

Implementation

The redesign included significant changes to the staffing structure: the traditional course had one instructor per section; the redesigned course has seven staff members per section: one full-time faculty instructor, one senior learning assistant (a graduate assistant or adjunct instructor), and five undergraduate learning assistants. Although the redesigned course seats 300 students per section compared with 153 in the traditional course, the ratio of staff to students decreased from one staff member for every 153 students to one staff member for every 43 students.

To improve learning outcomes, the traditional course transformed into a blended, or hybrid, course with a flipped-classroom model. In this model, students read the textbook or eText and complete the MyPsychLab chapter study plan and media assignments prior to attending class.

Assessments

48 percent	Unit exams (four)
18 percent	MyPsychLab chapter study plan and media assignments
16 percent	Comprehensive final exam
7.5 percent	Participation
6 percent	Study session attendance
3 percent	Research participation
1.5 percent	Introduction letter + Week 1 online training and quiz

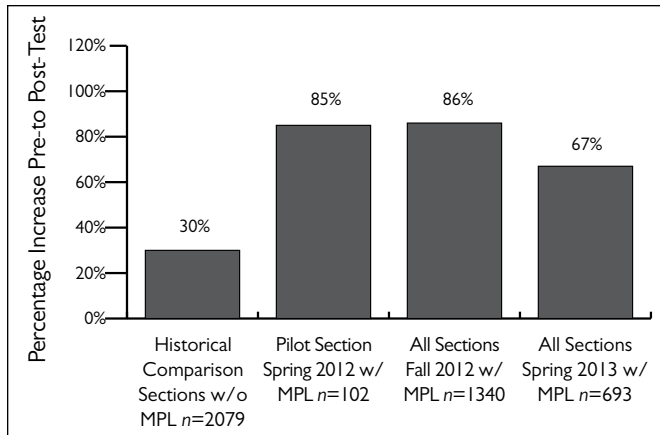


Figure 1. Comparison of Pretest-to-Posttest-Score Increases before and after MyPsychLab Implementation

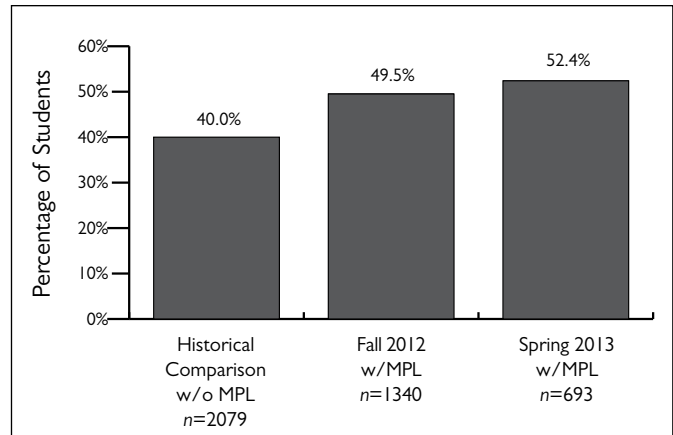


Figure 2. Percentage of Students Earning an Overall Course Grade of A or B before and after MyPsychLab Implementation

Results and Data

Student learning gains more than doubled, as measured by increases in a comprehensive pre- to posttest before redesign versus after redesign with MyPsychLab (Figure 1). Data also indicate a 31 percent increase in the number of students earning a course grade of A or B (Figure 2), suggesting that more students are demonstrating mastery of course material. In addition, the combination of increased section sizes and more-efficient use of instructors and learning assistants resulted in a 10 percent reduction in instructional costs: from \$73 to \$66/student.

After two years and via a number of quantifiable measures, there is clear evidence of the efficacy of the redesigned course.

The Student Experience

One of the challenges before redesign was an inability to identify and proactively reach out to struggling students early in the semester. In the redesigned course, early-intervention teaching strategies were introduced that resulted in improved learning over the course of the semester. The combination of frequent online assignments in MyPsychLab to identify students' areas of weakness and a staffing structure that facilitated more-frequent and more personalized monitoring of student progress resulted in clear gains in learning.

Because students are reading the textbook and actively engaging with the material in MyPsychLab outside of class, they come to class better prepared and more willing to participate in class discussions. As a result, class time can now be focussed on more difficult concepts (based on students' performance on MyPsychLab assignments) and incorporate more active-learning strategies (such as the use of clickers, classroom demonstrations, and online activities). Students report that they find these methods more engaging, and data indicate that they lead to greater mastery of course content.

Conclusion

After two years and via a number of quantifiable measures, there is clear evidence of the efficacy of the redesigned course. Further, the majority of the goals identified at the beginning of the redesign have been accomplished. Reducing the drop/fail/withdraw rate proved to be the most challenging goal; however, recent data suggests that a significant reduction in the overall rate is now occurring.

Redesigning Introductory Psychology resulted in an innovative class utilizing many best practices. The course reduced course drift, was implemented at a lower cost than the course's traditional counterpart, and, most important, resulted in greater student learning.

References

- Danae L. Drab-Hudson, Brooke L. Whisenhunt, Carol F. Shoptaugh, Mary C. Newman, Ann Rost, Rachel N. Fondren-Happel (2012) Transforming Introductory Psychology: A systematic approach to course redesign. *Psychology Learning & Teaching*, 11(2), 146-157. <http://dx.doi.org/10.2304/plat.2012.11.2.146>.
- Danae L. Drab-Hudson, Brooke L. Whisenhunt, Carol F. Shoptaugh, Mary C. Newman, Ann Rost, Rachel N. Fondren-Happel (2013). Course Redesign in Introductory Psychology: Efficacy after Two Years (submitted manuscript).

Flipped-Classroom Model

Product Name MasteringBiology with Knewton Adaptive Follow-Up

School Name Rochester Institute of Technology, Rochester, NY

Course Name General Biology II

Key Results Course redesign, with increased implementation of MasteringBiology and more active learning, resulted in a trend toward both higher exam scores and a tightening of exam scores.

Submitted by

Sandra Connelly, Assistant Professor

Course materials

MasteringBiology with Knewton Adaptive Follow-Up and *Campbell Biology: Concepts and Connections*, Reece, Taylor, Simon, Dickey, and Hogan

Background

Rochester Institute of Technology (RIT) is a private four-year institution in suburban Rochester, New York, with an enrollment of approximately 18,000 students. RIT is an internationally recognized leader in preparing deaf and hard-of-hearing students for successful careers in professional and technical fields and provides access and support services for the more than 1,200 deaf and hard-of-hearing students who live, study, and work with hearing students on the RIT campus.

General Biology II is the second course in a three-quarter (10-week) sequence. It is a fundamental biology course designed for nonbiology majors who have a lab science requirement. The course takes a broad approach to the field of biology, focusing on an introduction to the anatomy and physiology of plants and animals. Students taking the course can be from any major, range from freshmen through graduate students, and include deaf and hard-of-hearing students.

The redesigned course provides remediation and study resources, increased engagement both inside and outside the classroom, and the ability to better assess student learning and success.

Challenges and Goals

One of the challenges Assistant Professor Sandra Connelly faces is her students' levels of preparedness. Students may struggle for many reasons, including poor reading and writing comprehension, English as a second language, learning disabilities, lack of fundamental knowledge in science, poor study skills, and lack of dedication to the course. Connelly redesigned the course with MasteringBiology to address those issues. The redesigned course provides remediation and study resources, increased engagement both inside and outside the classroom, and the ability to better assess student learning and success.

Year	MasteringBiology Assignment	Credit	Attempts	Time Allowed	Completion Rate
Fall 2008–Spring 2010	Homework	Optional	3	Unlimited	Not measured
Fall 2010–Spring 2011	Homework	5%	3	Unlimited	~80%
Fall 2011–Spring 2012	Homework	15%	2	Unlimited	~100%
Fall 2012–Spring 2013	Homework	20%	2	Unlimited	>97%
	Quiz	5%	1	60 Minutes	>97%
Fall 2013–Spring 2014	Homework	15%	2	Unlimited	>96%
	Quiz	10%	1	60 Minutes	>96%
Fall 2014–Spring 2015	Homework	10%	2	Unlimited	TBD
	Adaptive Follow-Up*	Extra credit			TBD
	Quiz	10%	1	60 Minutes	TBD

Table 1. Use of MasteringBiology, Fall 2008–Spring 2015

*Adaptive Follow-Up items are generated based on an individual student's performance on the MasteringBiology parent homework and will vary from student to student.

Implementation

Connelly's use of MasteringBiology started as optional in 2009 and since then has progressed. She continues to evaluate and redesign her course, increase the active-learning component, and put a heavier emphasis on building critical-thinking skills and assessing qualitative items (Table 1).

Beginning with the fall 2014 semester, Connelly added Knewton Adaptive Follow-Up exercises to MasteringBiology homework and quizzes. Homework assignments are now worth 10 percent and contain active tutorial questions that involve watching or reading to complete the exercises.

Adaptive Follow-Up exercises each comprise five questions for extra credit. Students who earn less than 90 percent on their MasteringBiology homework are required to do these exercises to receive credit. Students who earn 90 percent or higher on their homework automatically receive the extra credit. Exercise questions are generated based on a student's homework performance, and they target gaps in a student's content knowledge. MasteringBiology quizzes, which contain reading or test bank questions, continue to be given and are worth 10 percent course credit.

Connelly teaches the course in multiple formats, including traditional lecture and lab, online, flipped, and hybrid. Her strategy for offering alternative formats, such as the flipped and hybrid models, is to put the responsibility for learning on students outside the classroom via videos, work sheets, and MasteringBiology homework and to assess student learning during class via active-learning exercises, critical-thinking problems, and quizzes.

For example, Connelly assigns students short videos to watch before class time. To keep students engaged, individual videos are no longer than 8–10 minutes, and they total no longer than 60 minutes per topic. Then students complete a work sheet prior to class and one or more activities in class, such as writing a guided response, completing a case study, performing an applied experiment, or participating in a group activity.

Following class, students complete an online MasteringBiology homework assignment designed to help them understand whether they have mastered the concept. They may watch the videos again if needed and may be asked to write about important points. Finally, students take a low-stakes quiz either online in MasteringBiology or in class, depending on timing and the amount of content covered by the date of the quiz.

In-class group activities are designed to help students develop critical-thinking and application skills. It also helps them learn to work in groups, to make contact with fellow students, and to see how science is relevant to their lives. By observing their participation in these activities, Connelly can address misconceptions or issues as they arise during class.

Assessments

65 percent	Exams
25 percent	MasteringBiology
10 percent	Other (video work sheets, in-class activities)

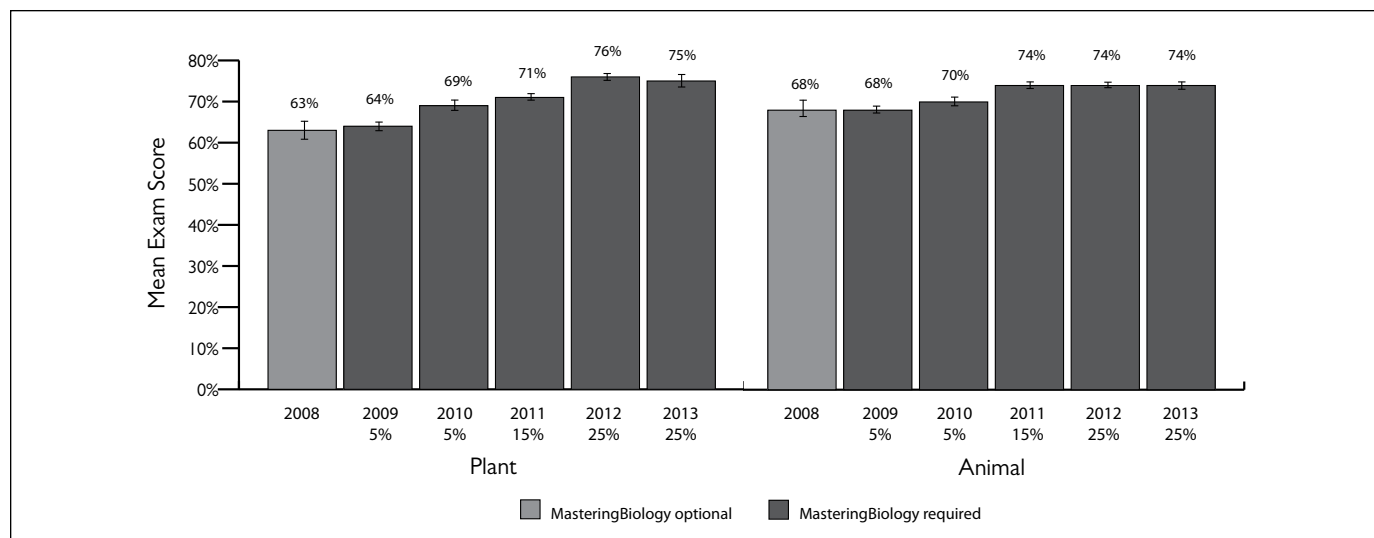


Figure 1. Average Plant and Animal Exam Scores by MasteringBiology Credit Value, 2008–13 (2008, $n = 271$; 2009, $n = 278$; 2010, $n = 281$; 2011, $n = 250$; 2012, $n = 264$; 2013, $n = 172$)

Results and Data

Results for this course were first published in Pearson's *MyLab & Mastering: Science and Engineering, V. 4*.¹ Connelly believes it is important to continually evaluate results after a redesign in order to understand the redesign's impact on student learning. Since 2009, results have shown consistent increases in exam averages, with the largest increase in 2011–12, when MasteringBiology became integrated more significantly into the course.

Figure 1 shows an increase in average exam scores for both the plant and animal exams, often the most predictive of students' performances in the second course in general biology and which include concepts that are built on in the third course.

Because of the diversity of students, it is difficult to achieve a huge jump in scores, but the trend shows higher scores in addition to a tightening of exam scores. The standard deviation and ranges are decreasing, and the average time students spend on assignments is increasing—both of which indicate that students are putting effort into their MasteringBiology homework assignments.

Since 2009, results have shown consistent increases in exam averages, with the largest increase in 2011–12, when MasteringBiology became integrated more significantly into the course.

¹*MyLab & Mastering: Science and Engineering, V. 4*, 2014, www.pearsonmylabandmastering.com/northamerica/results/files/Mastering_Final_v4.pdf.

*Prior to redesign, approximately 75 percent of students regularly attended class.
Today approximately 95 percent attend on a regular basis.
And when they are in class, students are participating and engaged.*

The Student Experience

It is critical that students be engaged in course content and, thereby, more motivated to learn. Although Connelly has added course work—and hears students complain about it—she reports that they are happier in the end because they are learning more and recognize the importance of that to their future successes.

Student feedback about both the class and MasteringBiology includes:

- “Best class ever! I would recommend it to anyone.”
- “Thank you for giving us this amazing opportunity.”
- “In the short term, MasteringBiology will help me get better grades. This in turn will help me get a better job.”
- “I am not a strong or confident test taker, but as long as my classes use MasteringBiology, I know I will be prepared and capable of doing well on every exam. This will benefit me throughout college as I strive for the best grades possible, which is important because I plan to apply to graduate school, where outstanding grades are required.”

In addition, class attendance has increased. Prior to redesign, approximately 75 percent of students regularly attended class. Today approximately 95 percent attend on a regular basis. And when they are in class, students are participating and engaged.

Conclusion

Teaching to a diverse group of students presents challenges, including how to ensure each student will learn and succeed. One result of redesigning her course so that students come to class more prepared is that Connelly can now offer more in-class activities that help assess student understanding and develop students’ conceptual understanding and critical-thinking skills.

In fall 2014, Connelly implemented a hybrid-flipped class, a very new approach to courses at RIT—especially in a College of Science general education course. Students are responsible for upwards of five hours of videos to prepare for exams, and they may meet with Connelly only three times (one time per week) between exams.

The change was motivated by space constraints; there were literally no available seats in the room. The new design will be assessed side by side with Connelly’s online class, flipped class (which meets two times per week), and traditional lecture class in the fall and spring semesters of 2014. Because all students are assessed in the same way and have the same learning outcomes regardless of the delivery, Connelly can conduct a valid analysis of the new design. Those findings can then determine future directions for the course.

Educators are taking note of the long-term impact of online learning.

Students are more likely to earn an associate degree or a vocational certificate or transfer to a four-year college if they take at least some online courses.¹

This is an indication that for some students – generally those who earn the most units – online learning offers the availability and flexibility to help them achieve their goals.



¹H. Johnson, M. C. Mejia, and K. Cook (2014). *Online Learning and Student Outcomes in California's Community Colleges*, Public Policy Institute of California.

Fully Online Model

COLLEGE STUDENTS LOGGING ON TO FULLY ONLINE COURSES BRING WITH THEM a variety of instructional and personal experiences: some are taking their first online course, and others have taken online courses before. Some use online tools in their personal lives, and others have less access. Some students log on regularly, others access courses asynchronously, and still others check in less often. Many students never see each other, or their instructors, or even the physical campus associated with their institution. Some are self-disciplined about their schoolwork, and others lack self-direction.¹ Fortunately, online education has evolved beyond the static presentation of course materials that was typical in the first generation of online courses. In today's Web 2.0 generation of online education, course content is dynamically integrated with online discussions, collaborative work, and the latest online resources.² The challenge that remains, however, is to provide engaging, interactive tools that promote personal responsibility for learning and motivate students to participate in the course.

The College of Western Idaho redesigned its fully online College Study Methods course with MyStudentSuccessLab as a way to increase student engagement, enable greater access to course materials, and improve student performance. Course content is delivered via weekly modules, and students complete pretests, posttests, overviews, practice activities, and postcourse assessments using MyStudentSuccessLab. Other activities include discussion board use, journaling, and multimedia presentations. Data from this dynamic environment show both an increase in average completion rates and increased success in mastering key course topics after implementation (page 34).

Eastern Gateway Community College redesigned a number of high-demand, high-enrollment business management courses by using CourseConnect to promote more-consistent curriculum, delivery, and assessments across courses and formats. Students engage with instructors and each other via discussion forums, and they complete weekly lesson presentations before class that provide a solid foundation of course concepts so class-time discussions can go deeper. Assessments are standardized so there are no inflated grades: students who pass the courses truly earned an A, B, or C because they did the work and demonstrated mastery of the course content (page 36).

Missouri University of Science and Technology redesigned General Chemistry I, a course with enrollment exceeding 1,000 students of varying chemistry backgrounds and learning skills. Students in the redesign pilot were offered multiple learning opportunities—thereby eliminating the one-size-fits-all approach to teaching—and MasteringChemistry was used to deliver tutorials, homework assignments, online recitation, quizzes, and exams. Data from the pilot showed an increase in postassessment performance, a decrease in cost per student, and improved grading efficiency (page 38).

¹A. Tuominen (2013). "Creating Excitement through Active Learning Opportunities in Fully Online Courses in Sociology." *Proceedings of the 3rd Annual International Conference on the Future of Education*, Florence, Italy, June 2013.

²P. Toth (2009). "Cooperative Learning by Utilization of 2nd Generation Web Technologies." *1st International Conference on Education and New Learning Technologies*. Barcelona, Spain, July 2009.

Fully Online Model

Product Name	MyStudentSuccessLab
School Name	College of Western Idaho, Nampa, ID
Course Name	College Study Methods

Key Results After implementation of MyStudentSuccessLab in fall 2013, course completion rates increased by nine percentage points: from 71 to 80 percent.

Submitted by
Kae Jensen, Chair, Education Department

Course materials
MyStudentSuccessLab and *Study Skills*, Piscitelli

Background

The College of Western Idaho (CWI) is a public community college located in southwest Idaho with main campus locations in Boise and Nampa. The college offers academic transfer and professional-technical programs leading to associate degrees and certificates, as well as basic skills education to help both traditional and nontraditional students update skills, prepare for the GED, obtain dual credit, and fast-track career training.

College Study Methods is designed to (1) provide students with the general skills and abilities they need to be successful in life and (2) promote the specific materials, programs, policies, and resources they will need at CWI. Seven on-ground and seven online sections of the course are offered per semester, with a cap of 25 students per section.

Challenges and Goals

In 2012, Education Department chair Kae Jensen sought an effective online learning tool for the College Study Methods course. She was motivated to implement MyStudentSuccessLab for two reasons. First, she had seen a presentation by instructors who had redesigned their course with MyStudentSuccessLab and documented positive results. In addition, the College of Western Idaho uses Pearson's MyLabs successfully across a variety of disciplines, so she was confident that the program would prove valuable in promoting student engagement, enabling greater access to course material, and improving student performance.

Implementation

The first semester she implemented MyStudentSuccessLab, Jensen used one or two modules in areas where she needed supplemental material. She provided students with an early introduction to MyStudentSuccessLab to make sure they were comfortable using the technology. Because of the breadth of valuable content in MyStudentSuccessLab, Jensen increased the amount of required work beginning in summer 2013.

Jensen now assigns 15 of the 21 available modules—one module per week. Students complete the pretests, the overviews, and the practice activities in each module. Then they may take the module posttests up to three times, with the highest score counting toward their final grade. Jensen likes the practice activities in MyStudentSuccessLab because they are interactive, with immediate instructional feedback, which helps students understand that learning is truly a process.

Jensen's first required assignment is the precourse assessment. The postcourse assessment serves as the students' final exam, customized from 68 questions down to 50 questions to correspond to the course objectives. In addition, toward the end of the semester, Jensen makes all 21 MyStudentSuccessLab modules available so students who are interested in learning about other topics can do so.

Assessments

12.5 percent	Midterm exam
19.0 percent	MyStudentSuccessLab module posttests (15)
37.5 percent	Assignments/discussion boards
10.0 percent	Reflective journals
2.5 percent	Participation
6.0 percent	Multimedia presentation/final project
12.5 percent	MyStudentSuccessLab postcourse assessment/final exam

MyStudentSuccessLab helps Jensen create a more dynamic, technology-driven environment for her students both in person and online and enables her to focus on her students' areas of need.

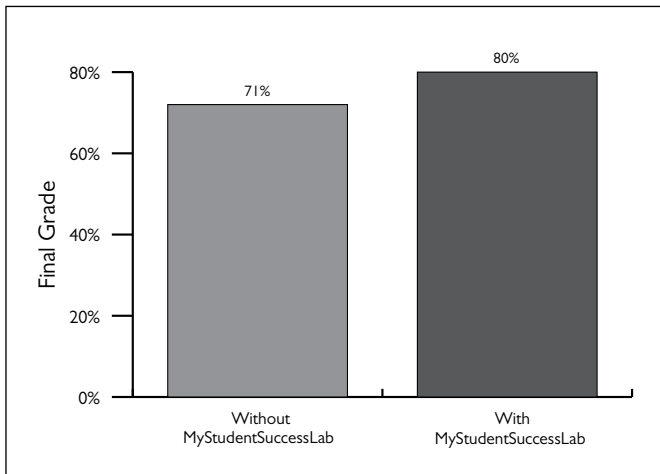


Figure 1. Completion Rates without (Fall 2012, $n = 233$) and with (Fall 2013, $n = 187$) MyStudentSuccessLab

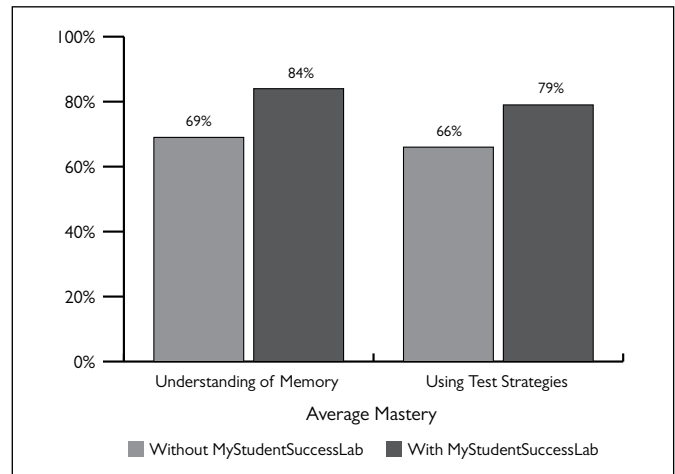


Figure 2. Average Course Objective Mastery without (Fall 2012, $n = 233$) and with (Fall 2013, $n = 187$) MyStudentSuccessLab

Results and Data

- Average completion rates increased from 71 percent in fall 2012 sections without MyStudentSuccessLab to 80 percent in fall 2013 sections with MyStudentSuccessLab (Figure 1).
- The data analysis tools in MyStudentSuccessLab facilitated the gathering of student data to measure learning outcomes and improvement. For example, analysis showed students' increased success in mastering key course topics like Understanding of Memory (from 69 to 84 percent successful outcomes) and Using Test Strategies (66 to 79 percent successful outcomes) (Figure 2).
- MyStudentSuccessLab indirectly helped students' average scores in essay writing jump from 44 to 68 percent. Jensen attributes this to having more in-class time to cover the components of essay writing because MyStudentSuccessLab enables students to master basic study concepts on their own.

Conclusion

Jensen reports that MyStudentSuccessLab helps her create a more dynamic, technology-driven environment for her students both in person and online and enables her to focus on her students' areas of need.

She realizes that faculty training is critical to continued outcomes improvement. She offered two 3-hour staff trainings in summer 2013 to show colleagues what MyStudentSuccessLab has to offer and how the program works. About half of the instructors teaching College Study Methods took her lead and now fully integrate MyStudentSuccessLab into their sections.

Jensen plans to build a master course and require additional elements from MyStudentSuccessLab. She also intends to analyze her pre- and postcourse assessment data to help her make data-driven decisions about expanded use of the program.

Fully Online Model

Product Name CourseConnect Business and Management

School Name Eastern Gateway Community College, Steubenville, OH

Course Names Principles of Management, Principles of Marketing, Introduction to Business, Business Math, Organizational Behavior, Business Law, Entrepreneurship

Key Results CourseConnect enabled delivery of a consistent curriculum and common assessments across seven courses with 10 instructors, 424 students, and 23 sections.

Submitted by

Ken Knox, Assistant Professor and Program Director

Course materials

CourseConnect Business and Management and *Business Essentials*, Ebert and Griffin; *Business Math*, Cleaves, Hobbs, and Noble; *Marketing*, Armstrong and Kotler; *Business Law*, Cheeseman; *Entrepreneurship*, Mariotti and Glackin; *Management*, McKee; *Essentials of Organizational Behavior*, Robbins and Judge

Background

Eastern Gateway Community College serves approximately 2,500 students a year from its main campus in Steubenville, Ohio; campuses in Youngstown and Warren; and delivery sites at career centers across Jefferson, Columbiana, Mahoning, and Trumbull Counties. The college has an open-door admissions policy and offers placement tests for newly enrolled students. Eighty-two percent of students are in state, and more than half are part-time.

Challenges and Goals

Eastern Gateway Community College offers a number of high-enrollment, high-demand courses in its business management department. As both an instructor and the program director, Ken Knox ensures that students experience a consistent curriculum regardless of course format or instructor. To accommodate all of its students, the college hires adjunct faculty to teach alongside full-time instructors. Some adjuncts are hired very close to the start of the term with little time to prepare. “We have a responsibility to preload these adjuncts with the course content they need to teach effectively,” says Knox.

To give students and instructors a high-quality, validated, consistent curriculum with common assessments, Knox adopted CourseConnect and deployed it across seven courses in on-ground, blended, and online formats beginning in fall 2013.

Implementation

Knox offered Blackboard and CourseConnect training for all of the instructors before the start of the fall term. Training faculty at the outset helps ensure the desired results. Some faculty expressed anxiety that adopting a modularized course content solution would mean a potential loss of academic freedom. Knox addressed that concern head-on in the faculty training. With CourseConnect’s consistent curriculum, instructors’ academic freedom is actually enhanced. With CourseConnect, instructors are free to personalize their lectures, knowing that students acquire a solid conceptual foundation from the lesson presentations. “All of the faculty validated the CourseConnect content so we have agreement there,” says Knox. “We’re taking the academic freedom out of content and putting it into delivery—where it belongs.”

With CourseConnect, all classes—whether on ground, blended, or online—are conducted in the same fashion. The only difference is that online students participate with instructors and each other via discussion forums rather than face-to-face. Students are expected to work through the week’s lesson presentation before class. Knox gives students a quiz on Monday based directly on the lesson presentation. After working through the required CourseConnect assignments and class activities and discussion, students are ready for the higher-stakes quiz at the end of the week. Students are required to complete a course project (a paper and presentation); there are five tests during the course of the semester and a comprehensive final exam.

Assessments

57 percent	Exams (five)
15 percent	Final exam
14 percent	Participation
14 percent	Course project

CourseConnect enables Eastern Gateway Community College to serve a large student population, offering uniformly high-quality courses in a variety of formats. Its consistent curriculum and common assessments benefit students, and instructors are back to their core expertise and joy: teaching.

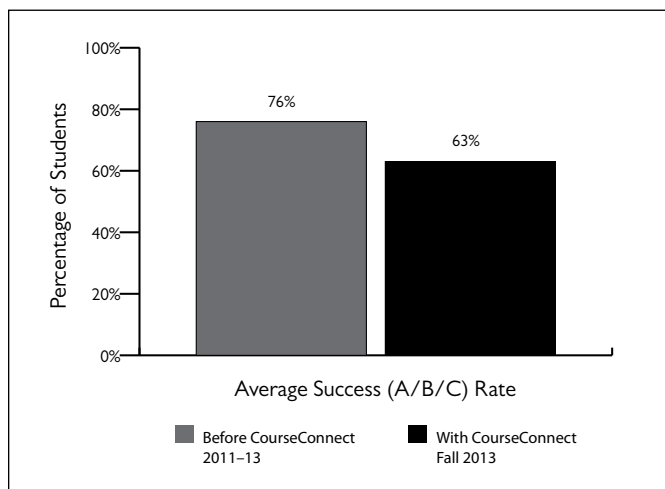


Figure 1. Average Success (A/B/C) Rate before ($n = 1,562$) and after ($n = 424$) CourseConnect Implementation, 2011–Fall 2013

Results and Data

“I love the content and the experience of teaching with CourseConnect,” says Knox. “CourseConnect makes it so easy for the instructor; it keeps me on track.” In addition, the program helps students understand his lectures. The lesson presentations give students a solid foundation of the course concepts so that class discussions can go deeper.

It may seem counterintuitive to celebrate fewer students passing courses, but data indicates CourseConnect is fixing a serious problem (Figure 1). Business Management is the largest single program at Eastern Gateway. The college’s growth resulted in inconsistency in its curricula and a lack of accountability in its assessments. CourseConnect facilitates standardized grading across all formats, instructors, and sections; and facilitates a guaranteed-consistent curriculum and assessment for every student. As program director, Knox quantifies all of the course assessments. There is no way for instructors to inflate grades; students complete the assessments, and grades are assigned. Students who passed one of his courses in fall 2013 truly earned an A, B, or C because they did the work and demonstrated a genuine understanding of course content.

Partway through his second term with CourseConnect, Knox checked in with both instructors and students. Instructors who taught with CourseConnect in the fall are doing really well this spring; they love the content and the quality. Students tell him they understand and appreciate the CourseConnect lesson presentations as a way to study and master course content.

The Student Experience

A fall 2013 end-of-semester survey suggests that students understand the value of CourseConnect:

- 90%** responded that they would take another CourseConnect course.
- 91%** responded that they would recommend CourseConnect to another student.

Conclusion

CourseConnect enables Eastern Gateway Community College to serve a large student population, offering uniformly high-quality courses in a variety of formats. Its consistent curriculum and common assessments benefit students, and instructors are back to their core expertise and joy: teaching.

The college is expanding its use of CourseConnect across campus. The college is introducing CourseConnect in its paralegal courses this spring, with plans to also use it in health sciences, accounting, business communication, economics, and general education.

In addition, this spring the college is piloting four courses using Pearson’s self-paced, student-directed courseware, Propero. The courses include psychology, sociology, American government, and American history. Because the CourseConnect and Propero content is identical, offering Propero gives students additional flexibility to pick up courses they need on a self-directed platform. The college intends to offer a suite of Propero courses this fall as high school dual-credit courses.

Fully Online Model

Product Name **MasteringChemistry**

School Name **Missouri University of Science and Technology, Rolla, MO**

Course Name **General Chemistry I**

Key Results A redesign of General Chemistry I using MasteringChemistry resulted in an increase in post-assessment scores and a reduction in instructional costs.

Submitted by

Klaus Woelk, Associate Professor, and EmmaLou Satterfield, Assistant Teaching Professor

Course materials

MasteringChemistry and *Chemistry: A Molecular Approach*, Tro

Background

Missouri University of Science and Technology, a public institution in rural Rolla, Missouri, is part of the University of Missouri System. Most of its more than 8,500 students study engineering, computing, mathematics, and the sciences.

Challenges and Goals

In 2010, in partnership with the National Center for Academic Transformation, the governor of Missouri and Missouri's public four-year institutions established a major course redesign initiative. The goal of the redesign was to achieve improvements in learning outcomes and reductions in instructional costs via the redesign of large-enrollment, multisection courses using technology-supported, active-learning strategies.

General Chemistry I, the first in a sequence of two general chemistry courses with an enrollment exceeding 1,000 students, was targeted for redesign. The course offers general chemistry education to major and nonmajor students. For more than 75 percent of students, General Chemistry I is a required course in which they typically enroll during their freshman year. The lab is taught separately and was not included in the redesign.

The redesign addressed the following issues:

1. Incoming students have different chemistry backgrounds.
2. Students often lack successful learning strategies and resist adjusting their study skills as they transition from high school to college.

3. Student success relies too much on—or may be achieved by—rote memorization rather than the development of conceptual thinking and problem-solving skills.
4. Student engagement in recitation classes is inconsistent and often inefficient and lacking active-learning strategies.
5. Despite weekly faculty meetings, duplication takes place when instructors individually compile course content.
6. The department lost several faculty positions due to budget cuts and hiring freezes prior to 2012. As a result, 200- and 300-level courses are taught together, sacrificing the quality of upper-level education and preventing students from taking 300-level courses as electives if they were previously enrolled in the 200-level course.

Implementation

The redesigned General Chemistry course uses the buffet model, which offers a menu of multiple learning opportunities for each student, thereby eliminating the one-size-fits-all approach to teaching. Students are given choices: face-to-face sessions, a fully online environment, or a mix of activities from both formats. To ensure engagement, students are required to develop learning strategies and discuss their study plans with teaching assistants (TAs) or instructors.

Structural changes to the course include:

- Moving from six courses and 48 recitation sections to three courses and 24 collaborative learning centers
- Moving from six to two instructors
- Moving from 12 TAs and 6 peer learning assistants (PLAs) to 6 TAs and 6 PLAs

MasteringChemistry is used to deliver tutorials, common homework assignments, online recitations, and exams that are mandatory for all students, thereby enabling the elimination of 12 graduate and undergraduate student graders.

The pilot began in fall 2012 with one instructor responsible for two General Chemistry I sections: one taught in the traditional format and one taught in the redesign model. Four common, intermediate exams were used to track student performance throughout the semester, and the final exam was used to compare performance. To test the homogeneity of the two groups, a prior-knowledge test based on high-school-level chemistry problems and a preparedness test for math relevant to science in general—and chemistry specifically—was administered at the beginning of the semester.

Assessments

Students who earn at least 950 points (95 percent) before the final exam are eligible to receive an exam grade of A without taking the exam (although that eligibility may be forfeited due to lack of attendance or missed assignments). Point values are illustrated in Table I.

Item	Possible Points	Points per Item
Exams (four)	400	100
Recitation	260 <i>(lowest two dropped)</i>	20
Final exam	200	200
MasteringChemistry homework	200 (max.)	9
Clicker questions	100 (max.)	4 (per day)
MasteringChemistry reading quizzes	40 (max.)	3
TOTAL	1,200	

Table I. General Chemistry I Point Values

Results and Data

There was an increase in postassessment performance in the redesigned course compared with the traditionally taught course (Figure 1). The results of the math and science preparedness test at the beginning of the semester indicate that students in the redesigned course were less prepared than those in the traditional course (Figure 1), making the learning increase in the redesigned course even more impressive.

There was no significant difference in course completion rates: in the redesigned course, 77 percent of students received a grade of C or better compared with 78 percent in the traditional course.

In the pilot, actual cost per student dropped 32 percent, a higher savings than originally anticipated. This was achieved primarily by the following:

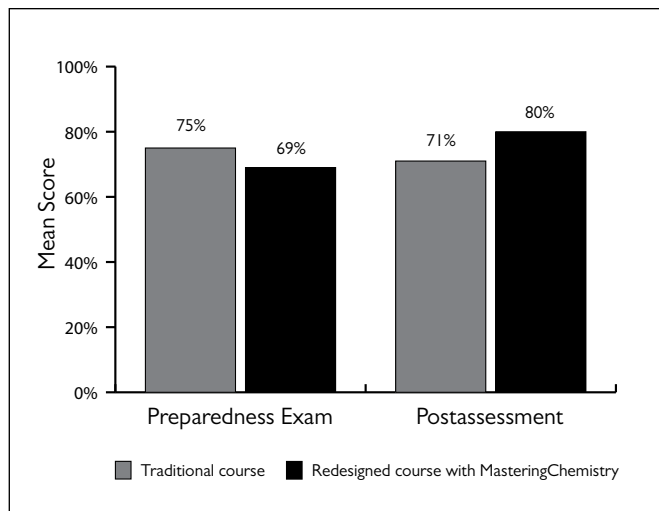


Figure 1. General Chemistry I Mean Preparedness Exam and Postassessment Scores in the Traditional and Redesigned Course Formats, Fall 2012.

- Increasing the section size from 200 to 400 students
- Reducing the number of sections per year from six to three
- Transferring some student experiences online

In addition to the cost savings, instructors were released from their general chemistry teaching duties, so now, a more varied and improved curriculum for upper-level undergraduate and graduate instruction can be offered.

The Student Experience

The redesigned course allows students to select from a wide pool of instructional materials and strategies to match their own learning characteristics and needs. Such flexibility enables students to prepare for challenges in subsequent courses. It encourages active learning versus memorization. And it helps individualize study plans in the large-enrollment basic science course and better serve the needs of diverse learners. Finally, the modular online exercises reinforce students' conceptual understanding and enable students to take control of their progress, thereby enhancing both student satisfaction and student success.

Conclusion

The redesign of General Chemistry I with MasteringChemistry provides students with immediate feedback and individualized online tutoring, reduces instructional costs by 32 percent, increases the efficiency of the grading process, and gives students access to a variety of learning resources. As a result, students are more engaged and the number of students achieving As and Bs has substantially increased.

Best Practices: 10 Steps to Successfully Implementing Your Pearson Digital Product

The institutions included in this report did more than simply add a new learning technology to their curricula: the ways they implemented Pearson’s digital product solutions significantly contributed to their positive results. Following are 10 recommended best practices that will help you and your students get the most out of your implementation.

1. Identify the problems you want to solve. An examination of the most-successful Pearson digital product implementations show that one common thread emerges: schools that have achieved success knew precisely what they wanted to accomplish. They established clear educational goals at the outset and then designed implementations specifically so as to achieve them.

2. Choose the learning technology, textbook, and method of delivery that best fit your goals. Assign the specific Pearson digital product features that will help you achieve your stated goals.

3. Build an assessment plan. How will you measure success? What are the quantifiable goals you want to achieve? Pertinent metrics might include comparisons of homework grades, exam scores, final course grades, or retention rates with those of previous semesters; correlations between Pearson digital product assessment scores and exam scores; or student success rates in subsequent courses they take.

4. Get everyone—and keep everyone—on the same page. Communicate your goals clearly to colleagues, students, and administrators. Train all full-time instructors, part-time instructors, adjuncts, tutors, and other key players—and make available plenty of opportunities for continuous training. Pearson provides product and implementation training to help ensure that your implementation aligns with your goals.

5. Start small. Slowly integrate Pearson digital products into your course. Start with requiring homework such as chapter exams, study plans, or writing assignments. When you’re ready, add more assignments and activities.

6. Position students for success. Students tend to skip optional assignments. Experienced users recommend that you count use of your Pearson digital product as at least 10 percent of a student’s final course grade. Provide structure: clearly communicate course and workload expectations to students and set firm and consistent deadlines. Finally, conduct a Getting Started orientation on the first day of class to show students how to access the MyLab & Mastering materials and assignments they’ll be responsible for. Visit www.pearsonmylabandmastering.com/educators/support for details.

7. Connect and engage with students. Educators implementing Pearson digital products in their classes are unanimous about the importance of individually connecting with students both in class and outside class. Some educators recommend not waiting for students to ask questions about their work. Rather, they suggest circulating in the classroom proactively to assess what students need, thereby avoiding student embarrassment. For outside class, consider sending weekly emails containing kudos for those doing well and offering support and intervention to those who are having trouble or not completing their work.

8. Employ personalized learning. The most-successful learning solutions include personalization and immediate feedback that engage students in active learning and enhance and inform assessment. Students using Pearson digital products can complete assessments at their own speed and, via diagnostics performed as they progress, can follow a personalized learning path that both targets the exact content/skills they need to work on and delivers the right material they need for mastering the requisite skills.

9. Conduct frequent assessments. Educators have long recognized the necessity of assessment as both a measurement of how well students are learning and a tool for critical feedback. Pearson digital product implementations enable educators to exponentially increase the *power* of assessment by increasing the *number* of assessments, thereby offering students a firsthand account of what they know and what they do not know and providing educators more opportunities to intervene before a student falls too far behind.

10. Track learning gains. What you don’t track you can’t measure. And what you haven’t measured you can’t prove has actually happened in your class. Educators who consistently track and measure learning gains are able to make informed decisions about course transformations, redesigns, or programmatic shifts and can strengthen their ability to prove institutional effectiveness, meet accreditation standards, track quality-enhancement plans, and fulfill grant requirements.

Getting Started: Planning Your Implementation

1. What are the main issues you are trying to address?

2. What are the quantifiable goals you want to achieve?

Example: Increase student retention rates by 10 percent during the course of a semester; increase student success rates by 15 percent during the course of a semester.

3. When do you want to start integrating a Pearson digital product into your course? Will you start with a pilot course? If so, at what point do you foresee moving into a full implementation?

4. What course materials are you using? Do they align with your intended outcome?

5. Have you pursued grants or initiatives? If yes, what are they?

Note: Check with your Pearson partner or visit the Pearson Grant Help Center at www.pearsonhighered.com/granthepl/ to learn more.

6. Will you hold organizational or professional development meetings for faculty, lab staff, IT administrators, or others?

7. What are at least three ways to educate the culture of your colleagues involved in the project?

Example: Invite guests from institutions that have successfully implemented or redesigned with a Pearson MyLab & Mastering solution.

8. Who is on your implementation or redesign team (faculty, staff, lab directors, senior administrators)? Who will manage the actual implementation or redesign?

9. How will you measure success?

Example: Retention rates, final exam scores, final course grades, and subsequent success.

10. Will you use historical data to support the efficacy of your Pearson digital product? Will you administer common exams and assessments?

11. What percentage will your Pearson digital product contribute to a student's final course grade?

12. Do you have—or must you seek—approval from your school's institutional review board?

13. What is your main concern about implementing a Pearson digital product?

14. At the end of the course, would you like assistance in analyzing your data? If so, contact your local Pearson representative.

Conclusion

HELPFUL PEARSON LINKS

Following is a list of links developed to inspire, support, and promote conversation among educators and to ensure that the latest and most-effective practices get shared across the industry. We hope you find them useful and urge you to share them with colleagues and others committed to improving the teaching and learning experience.

MYLAB & MASTERING: 10 BEST PRACTICES

www.pearsonmylabandmastering.com/northamerica/educators/results/

COURSE REDESIGN COMMUNITY

<http://community.pearson.com/course redesign>

COURSE REDESIGN WEBSITE

www.pearsoncourseredesign.com

FACULTY ADVISOR NETWORK

<http://community.pearson.com/fan>

RESULTS GALLERY

www.pearsonmylabandmastering.com/results

TEACHING AND LEARNING BLOG

www.pearsonlearningsolutions.com/blog/channels/college-career-readiness/ask-the-experts-course-redesign-to-boost-achievement-and-lower-costs-part-2

More than simply successful implementations, the courses, programs, and initiatives described on the previous pages are victories. Behind the successful outcomes—in the forms of improved final exam grades, increased persistence, success in subsequent courses, college readiness, and other learning gains—are students who have become better equipped to pursue their academic goals and achieve their life dreams.

An Ongoing Process

We applaud the institutions included herein for their efforts and determination. But those efforts are not over: a successful technology implementation is an ongoing process, ever evolving with the emergence of new and improved pedagogy, the entry of each unique cohort of students, and the increased amounts of information gleaned via the long-term tracking and measuring of student data.

Pearson's Faculty Advisor Network (FAN) is available to help you improve the teaching and learning experience in your courses. Visit the FAN site to meet and engage with a community of educators who are eager to share advice, tips, and best practices related to MyLab & Mastering products. Join the network by visiting the site at <http://community.pearson.com/fan>.

The Pearson Family of Solutions

Pearson offers solutions for all kinds of educational needs, for all types of courses, and for all of the ways those courses are taught and delivered. Combined with one of the many proven-successful best practices, the possible configurations of an effective MyLab & Mastering implementation increase exponentially. Let us help you:

- **Increase achievement.** Instant access to reliable data can help in the development of personalized learning, assessment, and instruction and can provide a blueprint for faculty and institutional effectiveness.
- **Expand access.** From digital course materials and real-time assessments to fully online courses, MyLab & Mastering learning solutions are more flexible, more powerful, and more accessible than ever before.
- **Enable affordability.** Innovative technology offers the best opportunity to deliver personalized, scalable, and engaging solutions that drive results up and drive costs down.

We look forward to hearing about your achievements and to including your experience in the next MyLab & Mastering report. To tell us about your success, contact Mary Jo Lawless, efficacy results manager, at maryjo.lawless@pearson.com.

Glossary

To ensure clear and consistent understanding of the terms used in this report, we define several of them here. The definitions are only for the purposes of this report and do not necessarily reflect either official or dictionary-true versions.

Active learning is the procedure of implementing learning activities that engage students in a meaningful, hands-on way with course content.

Completion rate is the percentage of students who registered for a course and completed the course through the final exam, excluding students who officially dropped (withdrew from) the course. 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. Course redesign is typically accomplished by taking advantage of technology’s capabilities and is most effective in large-enrollment courses.

Distance-learning course is a course wherein 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. Also called an online course.

Drop/fail/withdraw 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, respectively) in the course.

Dual-enrollment/dual-credit programs offer high school students the opportunity to simultaneously enroll in high school and college courses. Students receive both high school and college credit for successfully completed college courses.

Emporium, or lab-based, course is a course in which much if not all of the student learning takes place in a computer lab where students work independently and use technology to enhance learning. Called the emporium model when there are few if any face-to-face meetings in a traditional classroom setting.

Flipping the classroom or flipped classroom means that students gain first exposure to material outside class—usually via reading or lecture videos—and then use class time to integrate that knowledge, often via problem-solving activities, discussion, or debates.

Hybrid, or blended, course is a course that has both face-to-face classroom activities and lab-based activities.

Integrated use refers to an instructor’s making a Pearson digital product a part of the syllabus and assigning work to be completed by students.

Online course is a course in which 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. Also called a distance-learning course.

Pass rate is the percentage of students whose final grades are 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.

Personalized learning uses technology to tailor pedagogy, curriculum, and learning environments in order to meet students’ individual learning needs and objectives.

Required use means an instructor requires that students use a Pearson digital product for an individual grade that is part of the final course grade. It is the opposite of optional use.

Retained students are students who registered for and completed the course through the final exam. It excludes 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. It excludes students who officially dropped (withdrew from) the course. Also called the completion rate.

Subsequent success refers to the success that students experience in higher-level courses based in part on having successfully completed lower-level courses using a Pearson digital product.

Success rate is the percentage of students who registered for the 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 refers to a course that usually is taught in the same way as in years past. It frequently involves a lecture format with little or no use of technology.

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