



MyLab® & Mastering®

# Business, IT, and Career

Efficacy Report • November 2015

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*Business, IT, and Career: Efficacy Report 2015*

Edited by Michelle D. Speckler

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## Welcome Letter

**A**T PEARSON, WE DEFINE EFFICACY AS A MEASURABLE IMPACT ON IMPROV-  
ing 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.

On the following pages you'll find exemplar, data-driven case studies from two- and  
four-year institutions, as well as a list of proven MyLab best practices and tips for getting  
started with your own implementation.

These user-report case studies document implementation practices and evaluate possible  
relationships between program implementation and student performance. The findings  
are not meant to imply causality or generalizability beyond these specific instances.  
Rather, findings from these studies demonstrate associations that are potentially useful  
for further theory testing in future experimental studies. For these case studies, mixed-  
methods designs were applied, and the data collected included qualitative data from  
interviews, quantitative program usage analytics, and student performance data. An  
open-ended interview protocol was used to guide data collection.

Looking for more case studies? Visit Pearson's Results Library, an online repository  
of more than 350 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](http://www.pearsonmylabandmastering.com/results).

We extend our deepest gratitude to each contributing instructor. Every case study was  
submitted voluntarily and without compensation. Each instructor submitted his or her  
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. Pearson's efficacy program is a commitment to measure and improve our likelihood of impact on learners and to 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 supports learner outcomes like skills mastery, persistence, and completion.
- *Effectiveness* measures the size of the educational improvement from a product or educational intervention.

## Why Pearson Is Interested in Efficacy Studies

Efficacy studies keep us accountable for learner outcomes, help us improve our products, and enable us to share blueprints of best practices with educators seeking new ways to increase student success.

## 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 Pearson digital learning solutions.

## How Pearson and Educators 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 Support Educators

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.

Correlational studies are not meant to imply causality. Rather, they demonstrate associations that may inform implementation guidelines and be evaluated further in future experimental studies.

Contact [candace.cooney@pearson.com](mailto:candace.cooney@pearson.com) for more information.

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# Student Engagement

**WHAT EXACTLY DO WE MEAN WHEN WE SAY** *student engagement*? According to the National Survey of Student Engagement of Indiana University Bloomington, student engagement represents two key components of the college experience:

- the amount of time and effort students put into their studies and other educationally purposeful activities, and
- how the institution deploys its resources and organizes its curricula and other learning opportunities to promote participation in activities proven to be linked to student learning.<sup>1</sup>

With open-source educational Web sites being used more frequently at the K12 level, a survey by the Higher Education Research Institute at University of California, Los Angeles, finds that “students were ... much more likely to utilize these resources independently—almost seven out of ten (69.2 percent) incoming first-year students have used such sites ‘frequently’ or ‘occasionally’ to learn something on their own.”<sup>2</sup> Today’s students are already familiar with and motivated to use technology. The key is how to best implement technology to enhance student engagement so that retention and graduation rates improve.

In “The Power of Feedback,”<sup>3</sup> educational researchers John Hattie and Helen Timperley from the University of Auckland systematically investigate the impact of feedback, provide a conceptual analysis of it, and review the evidence related to its impact on learning and achievement. Their evidence shows that although feedback is among the major influences on learning and achievement, the type of feedback and the way it is given can be differentially effective. They conclude that the data “demonstrated the most effective forms of feedback provide cues or reinforcement to learners; are in the form of video-,

audio-, or computer-assisted instructional feedback...” This is the type of feedback used to engage and inform students in Pearson MyLab digital solutions.

Because student engagement takes place both inside and outside of the classroom, and because technology is such an integral part of students’ everyday lives, many instructors use interactive technology to engage their students. The degree of technology implementation may range from purely optional to required and graded—a key teaching and learning component of the course.

*Today’s students are already familiar with and motivated to use technology. The key is how to best implement technology to enhance student engagement so that retention and graduation rates improve.*

The five case studies on the following pages (EMS Training Institute, University of Georgia, Indiana University, Cambrian College, and Wright state University) include implementation of a Pearson MyLab product as part of a greater course redesign. Each case study describes how the product was used and the outcomes that resulted from that use. While a number of variables, including motivation and effective study habits, can impact student learning, the data show that students who are engaged and put forth effort in their courses value the kind of tools and resources Pearson MyLab digital solutions provide to help them achieve course success.

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<sup>1</sup> <http://nsse.iub.edu/html/about.cfm>.

<sup>2</sup> <http://www.heri.ucla.edu/monographs/TheAmericanFreshman2013-Expanded.pdf>.

<sup>3</sup> Hattie, J. “The Power of Feedback,” *Review of Educational Research*, 2007 77:81, <http://education.qld.gov.au/staff/development/performance/resources/readings/power-feedback.pdf>.

## MyBradyLab

School Name EMS Training Institute, Inc., Simi Valley, CA  
Course Name Emergency Medical Technician  
Course Format Lecture

**Key Results** Students who achieved higher quiz and exam scores also earned higher MyBradyLab scores. In addition, data show a very strong positive correlation between MyBradyLab homework scores and average quiz and exam scores.

### Submitted by

Mark Komins, President and Program Director

### Course materials

MyBradyLab and *Brady Emergency Care*, Limmer, O'Keefe, Grant, Murray, Bergeron, Dickinson

### Setting

Located 30 miles from downtown Los Angeles, EMS Training Institute specializes in emergency medical technician (EMT) training in California, as well as online EMT refresher courses, cardiopulmonary resuscitation (CPR) training, and first aid courses for the public. They also offer full-service advanced cardiac life support (ACLS), pediatric advanced life support (PALS), and emergency medical services (EMS) training for advanced students, such as EMTs, paramedics, and nurses. In 2014, its EMT training program boasted 100-percent course-completion and certification pass rates. The average student age is 18–24, 90 percent are male, and 50 percent identify as minorities (including African American, Asian, and Hispanic).

The Emergency Medical Technician course provides a basis for gaining EMT certification, and it is taken by students in the EMT program, fire fighters, life guards, and paramedics. In accordance with the US Department of Transportation Basic Life Support Curriculum and US Educational Guidelines, students are given the opportunity to develop the necessary knowledge, skills, and abilities required to pass the National Registry Emergency Medical Technician certification exam. The EMT course is generally conducted at the basic life-support level. Upon completion of the exam, EMTs are eligible for employment and for paramedic-level training. Students must have a valid CPR card prior to registering for the course.

### Challenges and Goals

EMT students come from a variety of backgrounds and learn in many different ways. With that in mind, Mark Komins, president and program director, sought a digital addition to the course that would (1) enable students to study outside of the classroom, (2) support both individual styles and the needs of the class as a whole, and (3) reinforce lecture material and give students the opportunity to immediately assess what they learned during lecture. He implemented MyBradyLab in 2013 and continues to use the program today.

### Implementation

Komins encourages students to read the appropriate chapter material before attending lecture, so they are familiar with vocabulary and content. After lecture, he assigns work in MyBradyLab to reinforce lecture content.

Komins covers three or four chapters each week, and students are expected to spend considerable time working on their MyBradyLab assignments. In a 2015 end-of-semester survey, 43 percent of students reported that they spent four or more hours per week working in MyBradyLab; an additional 43 percent reported that they spent two to four hours per week in the program. Students are allowed one attempt to complete each weekly assessment, as follows:

- **Chapter pretest.** Not scored for a grade, but generates personalized homework based on its results.
- **Homework assignment.** Number and content of questions depends on pretest performance.
- **Chapter test.** Uses preassigned default questions to facilitate review of chapter content before a high-stakes posttest.
- **Chapter posttest.** Final assessment of chapter material using preassigned default questions.



*Students who earned higher MyBradyLab scores subsequently earned higher quiz and exam scores.*

Assessments outside of MyBradyLab include:

- **In-class weekly quiz.** A 10-question, paper-and-pencil quiz comprising test-bank questions.
- **Four block exams.** 100 multiple choice questions worth 2 points/question built using test bank questions; in class paper and pencil exam.
- **Final exam.** A paper-and-pencil exam comprising 200 multiple-choice test-bank questions, each worth 3 points.
- **Additional quizzes.** A medical terminology quiz comprising 75 fill-in-the-blank questions and the Glasgow Coma Scale quiz comprising 35 fill-in-the-blank questions.

In accordance with National Registry Emergency Medical Technician exam standards, quizzes and exams have time limits; students are allowed 1 minute per question.

Due dates are firm. If a task or assignment is not turned in by the specified date, the student receives a zero. This also applies to incomplete assignments. Komins urges instructors to follow this best practice when requiring the MyBradyLab. “Instructors must assign firm due dates and stick to them,” he says. “There should be no exceptions, especially technology excuses.” Students are given an assignment schedule at the beginning of the semester. They know when all assignments are due and should plan accordingly.

Students are required to successfully complete at least two clinical-experience days, including one ambulance ride-along and one day in a hospital emergency room.

Students must earn at least an 80 percent in the course in order to take the National Registry EMT exam.

#### Assessments

|            |   |
|------------|---|
| 71 percent | MyBradyLab homework, chapter tests, and posttests |
| 12 percent | Block exams (nine)                                |
| 9 percent  | Final exam  |
| 6 percent  | Chapter quizzes (41)                              |
| 2 percent  | Other quizzes                                     |

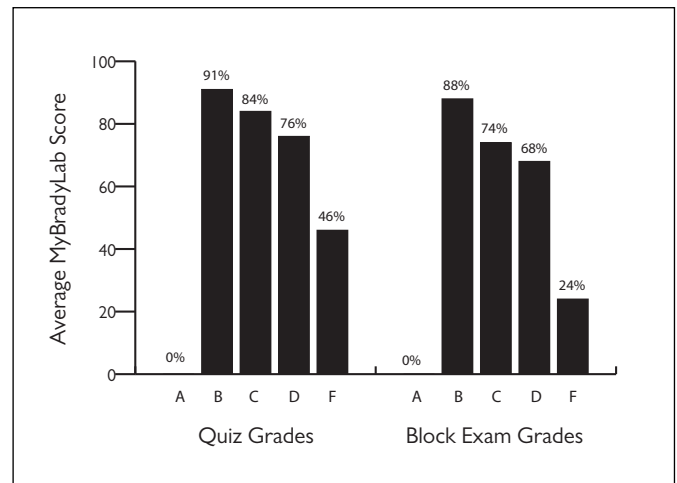


Figure 1. Relationship between Average Block Exam and Quiz Grades and Average MyBradyLab Scores, Spring 2015 (n = 18)

#### Results and Data

Figure 1 shows the relationship between average MyBradyLab scores and performance on quizzes and exams. Students who earned higher MyBradyLab scores subsequently earned higher quiz and exam scores. Similarly, performance on quizzes and exams (on average) declined as MyBradyLab homework scores declined for this course implementation. No students earned an A average on quizzes or exams.

- Students who demonstrated course mastery by earning an average grade of A, B, or C on their block exams had an average MyBradyLab score of 83 percent. Students who earned an average grade of D or F on their block exams had an average MyBradyLab score of 50 percent.

Figures 2 and 3 are correlation graphs that measure the strength of the relationship between average MyBradyLab homework scores and average quiz and exam scores. The corresponding *p* value measures the statistical significance, or strength, of the evidence, with  $< .01$  considered strong evidence. A very strong positive correlation exists between average MyBradyLab homework scores and average quiz scores, where  $r = .76$  and  $p < .01$ . Similarly, a very strong positive correlation exists

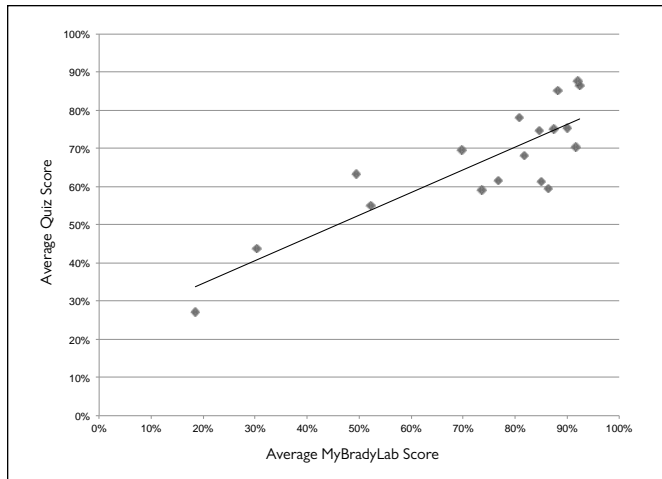


Figure 2. Correlation of Average MyBradyLab Scores to Average Quiz Scores, Spring 2015 (n = 18)

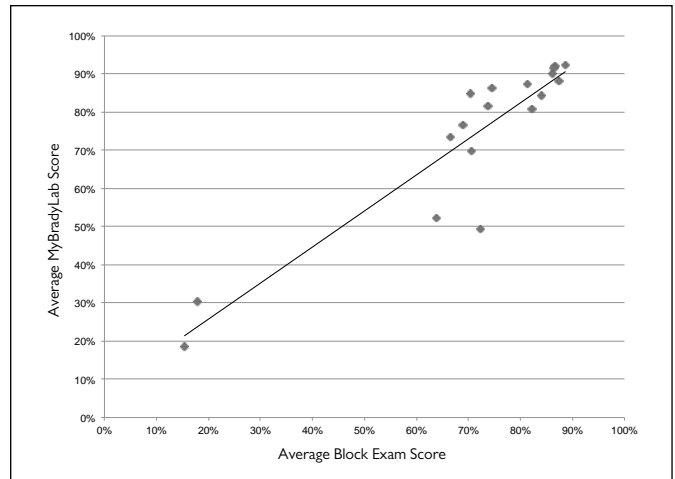


Figure 3. Correlation of Average MyBradyLab Scores to Average Block Exam Scores, Spring 2015 (n = 18)

*Komins uses MyBradyLab to keep students on task, on time, and prepared for course assessments.*

between average MyBradyLab scores and average block exam scores where  $r = .86$  and  $p < .01$ . For students, MyBradyLab scores may help them identify where they stand in terms of successfully completing their exams. It appears that performance on MyBradyLab assignments could be a leading indicator of exam and course success. (A more rigorous study might develop and test this concept further.) As a best practice, MyBradyLab scores may help instructors identify early on students who are struggling and might be at risk of poor course performance.

### The Student Experience

In spring 2015, Komins conducted a voluntary end-of-semester student survey regarding the use of MyBradyLab and its impact on learning and assessment. Of the students surveyed:

- 100%** Agree or strongly agree that their understanding of the course material increased as a result of using MyBradyLab.
- 100%** Agree or strongly agree that the use of MyBradyLab positively impacted their quiz and exam scores.
- 72%** Agree or strongly agree that they would recommend MyBradyLab for future use by their instructor.

In the same survey, when asked what they liked best about MyBradyLab, student answers included the following:

*“It helped reinforce material and helped prepare for quizzes and tests.”*

*“I didn’t like it but it helped me learn!”*

### Conclusion

The stakes are high for students in Komins’ EMT course—they must learn three to four chapters a week and earn at least 80 percent in the course in order to sit for the National Registry EMT exam. It is critical that students do not fall behind. Komins uses MyBradyLab to keep students on task, on time, and prepared for course assessments. In addition, MyBradyLab’s wide variety of learning tools and assessment types helps learners of all types and skills to find the tools that work best for them, thereby facilitating their paths to course success.

## MyEconLab

|               |  |
|---------------|--|
| School Name   | University of Georgia, Athens, GA            |
| Course Name   | Principles of Microeconomics                 |
| Course Format | Lecture, required ebook, online testing only |

**Key Results** Students earning higher than average MyEconLab homework grades also earned higher average exam and final course grades. In addition, students who use MyEconLab Practice Exams for exam preparation earned exam scores an average of five percentage points higher than students who did not prepare with Practice Exams.

**Submitted by**  
Katherine McClain, Lecturer

**Course materials**  
MyEconLab, *Microeconomics* (ebook), Parkin

### Setting

University of Georgia, a public, four-year institution with three college-town campuses, is both Georgia's flagship university and the oldest public university in the country. The school serves more than 35,000 undergraduate and graduate students averaging 22 years of age; 24 percent are low income.

Principles of Microeconomics is a one-semester, three-credit course required of all business, journalism, and sports management majors. It enrolls more than 250 students per semester, from freshmen to seniors. Course content includes the study of how people and firms make choices in response to constraints and incentives; the market system of independent producers and consumers (how it operates, what it does well, and what it doesn't do well); and how government involvement affects the economy.

### Challenges and Goals

In fall 2010, Katherine McClain, lecturer, was asked to teach Principles of Microeconomics. Previous experience with an online homework and assessment program had already convinced her that regular practice was a requirement for course success. She sought a platform that included both content and assessment, and chose MyEconLab for its variety of content delivery methods, plus homework, quiz, and test capabilities.

### Implementation

Students must complete weekly, required MyEconLab homework by 11:59 p.m. on the date due after lecture. Home-

work assignments have approximately 25 questions each, including multiple choice for concept understanding and problems and graphing to address practice and repetition. McClain promotes homework as practice, not assessment. As such, learning aids are turned on and students have three attempts to arrive at their final answers. Students appreciated the ability to work problems more than once. In an end-of-semester survey, 86 percent of students said the multiple attempts helped them recognize mistakes and learn course concepts more completely.

Students may turn in late homework, but are assessed a five-percent penalty for every day it is late. Because McClain drops the lowest homework score, she is not compelled to extend deadlines. And instead of limiting herself to the publisher's preloaded assignments, she creates each assignment based on exercise topics that have been covered in lecture.

To prepare for exams, McClain recommends that students take advantage of MyEconLab's optional study features, including the Practice Exam, the Dynamic Study Modules, and the Study Plan. Students who came to office hours expressing frustration with homework or test prep were directed to the Study Plan to help them identify problem areas and specifically remediate those topics. Students who used the Study Plan quickly identified its benefits. "If I pass this class, it will be because of the Study Plan. It saved my grade," reported one student.

Digital Interactives, a series of Pearson components slated for wide distribution in fall 2015, was beta tested by a select group of instructors, including McClain. These progressive-level, active-learning activities are built around core learning outcomes. To better help her students understand fundamental economic principles, McClain used the Digital Interactive on Competitive Advantage as a lecture tool—and it worked. In an end-of-semester survey, 84 percent of students indicated that the active learning aspect of Digital Interactive helped them understand chapter material more completely.

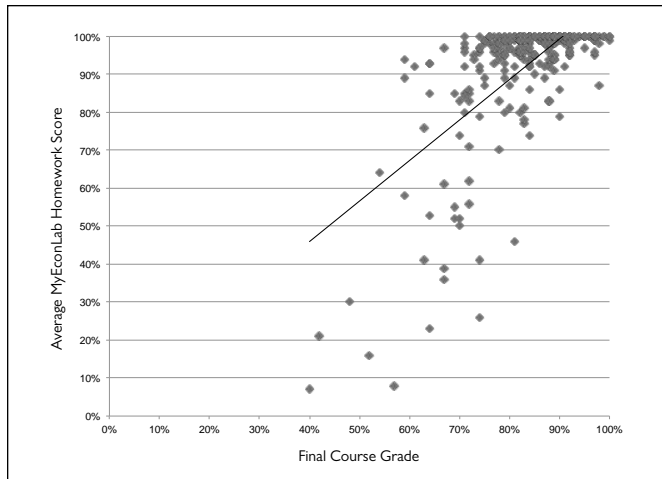


Figure 1. Correlation between Average MyEconLab Homework Scores and Final Course Grades, Spring 2014 ( $n = 284$ )

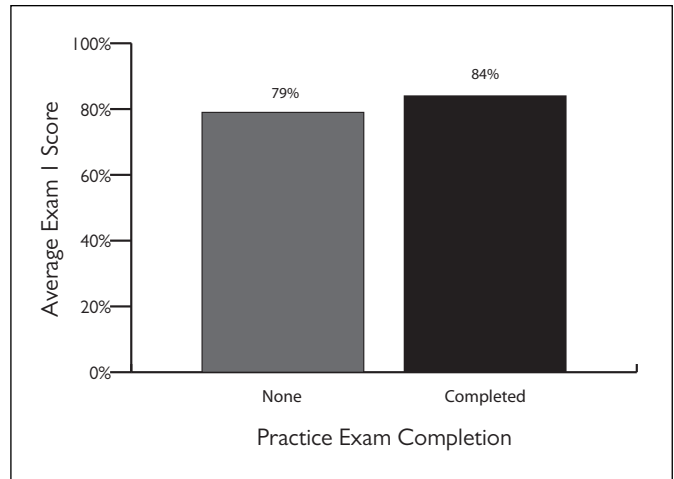


Figure 2. Average Exam I Score by Practice Exam Completion, Spring 2014 (None  $n = 187$ , Completed  $n = 95$ )

Students take exams online. Exams include 50 multiple-choice questions, are open book/open note, and have a 75-minute time limit to prevent students from being able to look up every answer. In addition, exams are open for 48 hours so students can take them when and where it is most convenient.

McClain believes in online testing for the following reasons:

- For instructors, grading is challenging in large lectures of 300+ students; online testing is immediately graded and scored.
- Students benefit from the immediate feedback and instant grading.
- It alleviates the need to maintain and store paper tests
- It helps curtail cheating without requiring that instructors write new exams every semester. Unlike paper exams, online exams are not available to subsequent semesters of students.

Students appreciate the online exams, as well. In an end-of-semester survey, one student reported, “I enjoyed the flexibility of online homework/exams. It allowed me to prepare more and reduced my stress while taking the exam.” What’s more, 76 percent of McClain’s students said they used their notes and textbook during the exam, but generally studied for the exam as if it were not open book/open notes.

#### Assessments

- 54 percent MyEconLab midterm exams (three)
- 25 percent MyEconLab final exam
- 21 percent MyEconLab homework and quizzes

## Results and Data

Figure 1 shows the correlation between MyEconLab homework scores and final course grades (for students who completed the course earning a letter grade, where  $r = .65$  and  $p$  value  $< .001$ ), and indicates a strong positive relationship between them. MyEconLab homework scores help students identify where they stand in terms of successfully completing the course; it appears that performance on MyEconLab homework is a leading indicator<sup>1</sup> of overall course success. For instructors, MyEconLab homework scores may help identify students who are struggling or at risk.

In addition, the correlation between the MyEconLab homework grade to average exam grade identifies a moderately positive correlation at  $r = .36$  where  $p$  value  $< .001$  (not depicted here).

- Students earning final course grades of A earned average MyEconLab homework scores of 98 percent.
- Students earning final course grades of D or F earned average MyEconLab homework scores of 46 percent.

McClain strongly suggests, but does not require, that students complete a Practice Exam prior to taking the midterm. Figure 2 shows the grade distribution when students are grouped according to completion of the Practice Exam. Students who took the Practice Exam for midterm I scored an average of five percentage points higher on the midterm—the difference between a C+ and a B.

**30%** of students who completed the Practice Exam earned an A on midterm I.

<sup>1</sup><http://annenberginstitute.org/pdf/LeadingIndicators.pdf>

## MyEconLab homework scores help students identify where they stand in terms of successfully completing the course

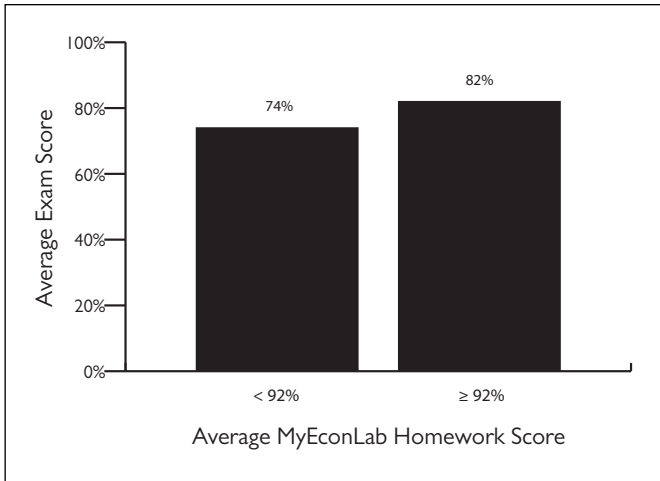


Figure 3. Average Exam Score by MyEconLab Homework Score, Spring 2014 (< 92% n = 61, ≥ 92% n = 223)

- 22%** of students who did not complete the Practice Exam earned an A on midterm I.
- 7.5%** of students who completed the Practice Exam failed midterm I.
- 16%** of students who did not complete the Practice Exam failed midterm I.

Students were also grouped according to MyEconLab homework scores (Figure 3). With 92 percent established as the average score, an analysis of the data indicate that students who scored at or above the average score earned average exam grades that were 11 percent higher than students who's homework scores were below the class average.

To further understand the impact of MyEconLab homework on exam scores, McClain evaluated exam performance using average exam I scores as a baseline. Students were divided into two groups: Low Exam with students who scored at or below the median of 83 percent on exam I; and High Exam with students who scored above the median. She evaluated the exam score trajectories, based on a 92 percent average MyEconLab homework score, by further dividing the Low and High Exam groups into Low Homework (HW) and High HW groups. The following findings were observed (Figure 4):

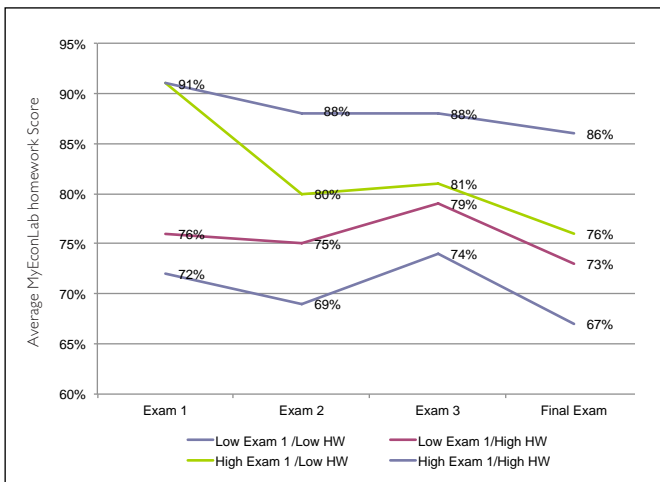


Figure 4. Comparison of Exam Performance by Exam and Average MyEconLab Homework Scores, Spring 2014 (n = 284)

- High Exam group. The High HW group starts statistically equivalent to the Low HW group at baseline, but is statistically significantly higher than the Low HW group on exam 2, exam 3, and the final exam. This gap generally increases as the semester progresses.
- Low Exam group. The High HW group begins with higher Exam Grades than the Low HW Group, and remains 5–6 percentages points higher on exam 2, exam 3, and the final exam. (The final exam was two percentage points higher than baseline for the High HW group.)
- Low Exam/High HW and High Exam/Low HW groups. By exam 2, the Low Exam/High HW Group is statistically equivalent to the High Exam/Low HW Group. This continues through exam 3 and the final exam.

These findings indicate a trend toward higher average exam scores, despite initial performance on exam I, for students who earn higher MyEconLab homework grades.

## The Student Experience

Responses from a spring 2014 student survey indicate that students make the connection between use of MyEconLab and increased course performance.

**94%** Agree or strongly agree that their understanding of the course material increased as a result of using MyEconLab.

**90%** Agree or strongly agree that the use of MyEconLab positively impacted their quiz and exam scores.

On the same survey, when asked what they liked best about MyEconLab, student answers included the following:

*“The program is user friendly. It was crucial to my success in the class.”*

*“The assignments on MyEconLab not only gave reasons as to why answers were right, it gave reasons as to why answers were wrong. This aspect of [the program] allowed me to learn from my mistakes.”*

*“I liked the unlimited amount of resources that MyEconLab had. It was definitely worth the money.”*

*“The Help me Solve This and See an Example features in particular, because they helped me learn concepts I was having trouble with.”*

*“I liked that each Chapter Study Plan came with so many practice problems grouped by concept. This helped me focus on weaknesses.”*

*“The program is easy to use and to understand. One of my favorite aspects was being able to click on the etext when I needed help with a question and having it take me straight to the correct section in the book.”*

## Conclusion

“The only way to learn economics is to practice it,” says McClain. “Homework is necessary.” But in lecture sections of 300 or more students, the time it would take to hand grade that amount of homework without teaching assistants prohibits even assigning it. MyEconLab enables McClain to assign her students the amount of practice that the course content requires, while also providing students with help and hints in the moments that they need them.

McClain uses the full breadth of MyEconLab features and functions, required and optional. “The tool is at its most powerful when you use all of it,” she says. According to their student survey comments, her students agree. They report that even optional features, like the Dynamic Study Modules and the Study Plan are critical to course success.

*MyEconLab enables McClain to assign her students the amount of practice that the course content requires, while also providing students with help and hints in the moments that they need them.*

MyEconLab offers McClain and her students a one-stop shop—a communication platform that helps students remain organized by housing homework, grades, announcements, and other necessary information in one location. McClain reports that students frequently comment on the effectiveness of using MyEconLab as a repository for all their course needs.

Future plans include possibly making required some of MyEconLab’s optional resources, such as the Dynamic Study Modules, to assess how their use impacts exam and final course grades.

## MyITLab

School Name [Indiana University, Bloomington, IN](#)  
Course Name [Introduction to Computers and Computing](#)  
Course Format [Lecture](#)

**Key Results** Students who complete all or most MyITLab homework assignments earn higher average quiz and final course grades than do students who more routinely skip assignments. Data also show a very strong positive correlation between MyITLab Skill Training and Grader Project scores, where  $r = .75$ .

**Submitted by**  
Charles Pope, Senior Lecturer and Course Coordinator

**Course materials**  
MyITLab and *Introduction to Computers* (custom edition),  
Poatsy, Beekman, Quinn, Pope, and Snyder

### Setting

Indiana University Bloomington, the flagship campus of Indiana University's eight campuses statewide, is a four-year public university serving more than 40,000 students in a small-city setting. Seventy-six percent of the school's students are undergraduates, 55 percent are state residents.

Introduction to Computers and Computing is a one-semester, three-credit course enrolling 500 to 800 students each semester. Required of all non-IT majors, the course uses real-world problems to challenge students to become effective problem solvers using Microsoft Excel, Access, and Word, as well as Web programming languages. Students who successfully complete the course will have demonstrated a level of understanding beyond traditional computer literacy and understand how the fundamental design principles of computers and computing are related to real-world activities.

### Challenges and Goals

Charles Pope, senior lecturer and course coordinator, began using MyITLab in 2007. Large enrollments in his class made grading homework prohibitive; he sought a program that could autograde assignments, thereby enabling his lab instructors to spend less time reviewing homework and more time covering the course's most challenging material. In addition to its automated homework and assessment capabilities, Pope chose MyITLab for its ability to help students test themselves, then remediate on those topics where they need the most support.

### Implementation

Students are tested in class on both concepts and applications. Concepts are tested via four lecture quizzes, a midterm, and a final exam. Lecture quizzes are low stakes and comprise 10 questions each. The midterm examines chapters 1 and 2 and includes 66 questions. The final exam is comprehensive and covers chapters 0, 1, 2, 3, 6, and 7 and includes 100 questions.

During the application portion of the course, students take an optional pretest to identify knowledge gaps in Microsoft Word, Excel, and Access. Students who score less than 70 percent on the pretest and students who choose not to take the pretest are required to complete MyITLab Skill Trainings in the lab. Trainings take approximately 40 minutes to complete. After completing the Skill Training or scoring higher than 70 percent, students are required to take the posttest.

Students complete two required, 90-minute Grader Projects per module in the lab. They are allowed two submissions and the higher grade is counted. Students also take three 75-minute lab quizzes, each covering several application topics.

For each day that an assignment is turned in late, a student's grade for that assignment is dropped 10 percent off the total points available. Lecture and lab exams may only be made up under exceptional circumstances and with documentation.

### Assessments

|            |                         |
|------------|-------------------------|
| 24 percent | MyITLab Grader Projects |
| 22 percent | MyITLab Skill Trainings |
| 21 percent | Lab quizzes (three)     |
| 14 percent | Midterm exam            |
| 14 percent | Final exam              |
| 5 percent  | Lecture quizzes         |

*Students who skipped one or fewer assignments had 35 percent higher average final course grades than students who skipped two or more assignments.*



Figure 1. Correlation between Average MyITLab Skill Training Scores and Average MyITLab Grader Project Scores, Fall 2014 ( $n = 440$ )

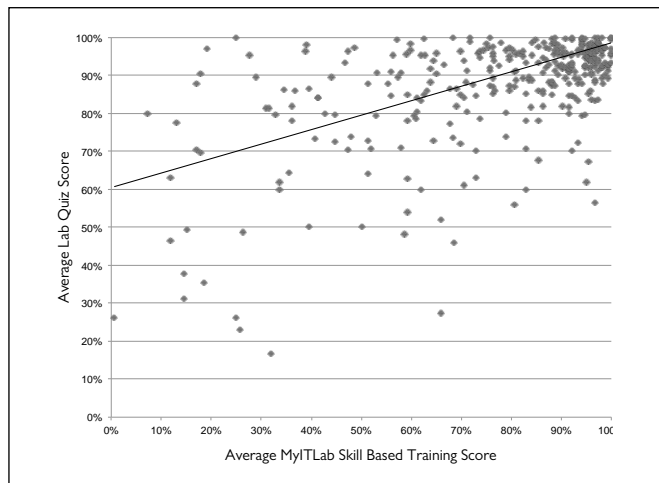


Figure 2. Correlation between Average MyITLab Skill Training Scores and Average Lab Quiz Scores, Fall 2014, ( $n = 440$ )

## Results and Data

Figure 1 shows a very strong positive relationship between MyITLab Skill Training scores and MyITLab Grader Project scores for students who received a final course grade and who attempted both Skill Trainings and Grader Projects, where  $r = .75$  and  $p$  value  $< .001$ . MyITLab Skill Training scores help students identify where they stand in terms of preparation for Grader Projects, and help instructors identify early on students who are struggling and at risk of poor course performance. Similarly, Figure 2 shows a strong positive correlation between Skill Trainings and lab quizzes for students who received a final course grade and who attempted Skill Trainings, where  $r = .56$  and  $p$  value  $< .001$ .

Figure 3 shows the course grade distribution per average total MyITLab score: students who earned an A or B for their final course grade also earned a higher overall MyITLab score. Students who spend time in MyITLab working to achieve greater success on homework assignments generally earn both higher quiz scores and final course grades.

- Students who earned a final course grade of A earned an average score of 92 percent on Average Cumulative MyITLab Homework Grade.

- Students who earned a final course grade of D or F earned an average score of 43 percent or less on MyITLab Grader Projects.

In addition, MyITLab homework completion rates were analyzed to determine if a relationship exists between both homework completion and average quiz and final course grades (includes only students who attempted MyITLab Skill Trainings). Results show that students who completed most assignments achieved considerably higher quiz scores and earned higher final course grades (Figure 4).

- Students who skipped one or fewer assignments earned 10 percent higher average quiz grades than students who skipped two or more assignments.
- Students who skipped one or fewer assignments earned 35 percent higher average final course grades than students who skipped two or more assignments.



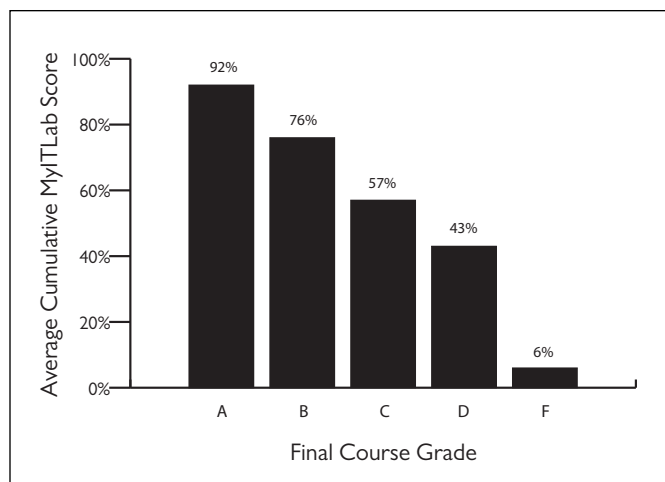


Figure 3. Average Cumulative MyITLab Scores and Final Course Grades, Fall 2014 ( $n = 443$ )

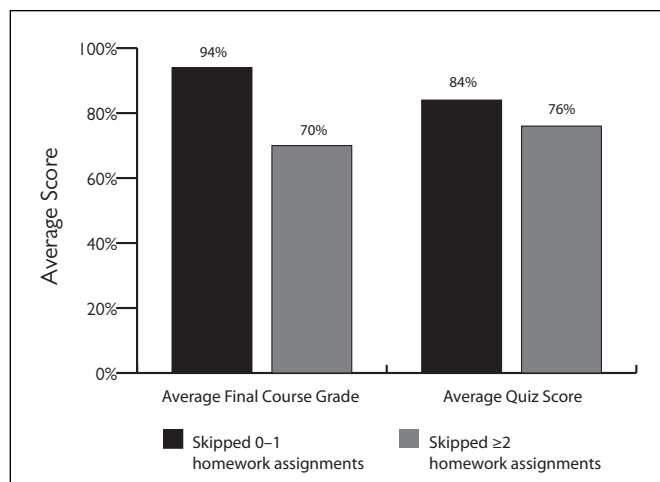


Figure 4. Relationship between MyITLab Homework Completion, Average Quiz Scores, and Final Course Grades (in Percentages), Fall 2014 ( $n = 443$ )

## The Student Experience

Responses from a fall 2014 end-of-semester student survey indicate that the majority of students surveyed recognize the value of MyITLab.

**72%** Agreed or strongly agreed that use of MyITLab positively impacted their exam scores.

**76%** Agreed or strongly agreed that their understanding of the course material increased as a result of using MyITLab.

On the same survey, when asked what they liked best about MyITLab, student answers included the following:

*“It had helpful training modules that demonstrated the fastest and easiest ways to complete the tasks that were asked of me.”*

*“The different options for learning aids because everyone learns differently.”*

*“It was helpful when I was lost.”*

*“I liked that there were learning aids when I was not sure what to do. It gave me extra help and confidence within the course.”*

*“MyLab helped me understand and become better with Access. I had never used Access before. Now I know the gist of it, which will be useful in the long run.”*

## Conclusion

Pope believes MyITLab’s outcome-based Skill Trainings, which include powerful multimedia hints and learning aids, helped his students earn both higher average quiz scores and higher final course grades. Student survey comments, including the following, indicate that students recognize and appreciate the value of these features:

*“[I like] the different options for learning aids because everyone learns differently.”*

*“The learning aids helped me a lot. I was able to practice over and over.”*

Thanks to the adaptive feedback from its pretests, MyITLab promotes a learning environment in which students can both remediate areas of weakness and move quickly through areas of mastery. This kind of support outside of class via MyITLab Skill Trainings and Grader Projects also means that lab instructors are able to cover more content in lab sessions.

## MyMarketingLab

School Name [Cambrian College, Greater Sudbury, Ontario, Canada](#)  
Course Name [Introduction to Marketing](#)  
Course Format [Lecture](#)

**Key Results** Data indicate that students earning higher MyMarketingLab scores achieved higher average exam and final course grades. In addition, data from before and after MyMarketingLab implementation show that, on average, students earned higher exam and final course grades when MyMarketingLab was required.

### Submitted by

Brian Vendramin, Professor and Program Coordinator

### Course materials

*Marketing: An Introduction*, Canadian edition, Armstrong, Kotler, Trifts, and Buchwitz

### Setting

Cambrian College is a Canadian, public college of applied arts and technology with urban campuses in Sudbury, Espanola, and Little Current, Ontario. The school serves more than 11,000 students: more than 4,100 in 80+ full-time programs and more than 7,000 in nearly 900 part-time courses/programs, a number of which are uniquely suited to the academic and employment aspirations of First Nations people. Eighty percent of the school's students are under 25 years of age; 26 percent are first generation college students; and 9 percent are Aboriginal.

Introduction to Marketing is a one-semester, four-credit course with approximately 130 students per semester. The course is a requirement for all students in the School of Business, as well as students in disciplines such as Public Relations and Fitness Management. Course objectives include the following:

- Explain the concepts that are the basis for marketing decision-making and strategy development.
- Explain the importance of environmental scanning in developing marketing strategies and describe the basic aspects of the environment in which marketing activities take place.
- Begin to apply marketing techniques to develop marketing strategies in given organizational situations.

### Challenges and Goals

Introduction to Marketing is taught by Brian Vendramin, who has been teaching at Cambrian for 28 years. In 2014, he was recipient of the college's President's Award for Excellence, which is presented annually to a faculty member who has gone above and beyond in achieving professional goals and inspiring peers to set and achieve the highest standards in the classroom.

Vendramin began using MyMarketingLab in fall 2014. Although already using an online homework system, he sought new resources and a new textbook to both engage students and help him offer the best possible classroom and digital experiences. Vendramin appreciates the variety of exercises provided by MyMarketingLab and that it offers students the opportunity to repeat lab assignments, thereby reinforcing lecture topics and discussions.

Vendramin received full support for this pilot from Orville Andrews, an instructional design technologist at Cambrian.

### Implementation

Students are required to read an assignment from the textbook before each lecture. Vendramin begins every lecture with a review of current events related to recently covered or soon to be covered content. Via these news and video stories, he illustrates the marketing concepts students are learning in class.

Students complete required MyMarketingLab assignments for each of the nine chapters covered in the course. Each assignment includes 40–50 questions: students watch a video, answer five questions pertaining to the video, and finish the assignment with Decision-Making Simulation questions, multiple-choice questions on other chapter material, and other application-type questions. Students are allowed three attempts at each assignment; the final score is the average of the three attempts. MyMarketingLab assignments are due the Sunday after lecture, which enables students to work on them all week.

*Professor Vendramin appreciates the variety of exercises provided by MyMarketingLab and that it offers students the opportunity to repeat lab assignments, thereby reinforcing lecture topics and discussions.*

Each chapter features a mini case study about WestJet, a Canadian airline. The case studies convey real-world applications of course content and are introduced by YouTube videos, which were developed by Vendramin and Captain Sherri Stringer, a WestJet pilot. (See a sample video at <http://youtu.be/PWiAZWuSRi0>.)

With the help of electronic badging, Vendramin incorporated a gaming component into the course in which students complete tasks outside of the syllabus to earn gamification badges. Students might be tasked to visit a mall, take pictures of unique new products, and write a paragraph about them referencing new product development and marketing concepts learned in class. Badges do not earn students grades or points; rather they engage students in light-hearted competition and motivate them with prizes, such as gift certificates to local restaurants. Vendramin's students responded positively to gaming. "I liked the gamification badges; they gave me a sense of achievement," replied a student in an end-of-semester survey. As additional incentive, students who earn 10 badges are allowed to drop their lowest MyMarketingLab score.

Exams cover three chapters each and are timed and multiple choice. They include questions from MyMarketingLab to promote completion of MyMarketingLab assignments. And although exams are open book, unless students have studied and are prepared, the textbook becomes a hindrance as students waste time trying to locate correct responses.

Vendramin uses the Moodle 2.7 course management system. He is currently piloting an integration of MyMarketingLab into Moodle so his students will be able to find all course materials, content, communication, and processes in one place.

#### Assessments

75 percent Exams (three)

25 percent MyMarketingLab assignments

Cambrian College adheres to the Canadian grading scheme:

A = 80–100 percent

B = 70–79 percent

C = 60–69 percent

D = 50–59 percent

F = 0–49 percent

#### Results and Data

Tables 1 and 2 show a relationship between average MyMarketingLab scores and average exam grades and final course grades. Students who earn higher MyMarketingLab scores achieved higher average exam and final course grades, signifying that in Vendramin's implementation, MyMarketingLab may be a way for students to identify success on future course assessments.

In addition, Vendramin examined the relationship between the number of MyMarketingLab assignments skipped and exam grades. Exam grades were an average of 10 percent higher for those students who completed most MyMarketingLab assignments (skipped no or one assignments) compared to students who skipped two or more assignments (Figure 1). Exam grades for students who completed all the assignments were an average of 13 percent higher than grades for students who skipped

| Average Exam Grade | Average MyMarketingLab Score |
|--------------------|------------------------------|
| A                  | 81%                          |
| B                  | 67%                          |
| C                  | 64%                          |
| D                  | 48%                          |
| F                  | 48%                          |

Table 1. Comparison of Average Exam Letter Grades and MyMarketingLab Homework Scores, Fall 2014 (n = 81)

| Final Course Grade | Average MyMarketingLab Score |
|--------------------|------------------------------|
| A                  | 83%                          |
| B                  | 76%                          |
| C                  | 60%                          |
| D                  | 49%                          |
| F                  | 32%                          |

Table 2. Comparison of Final Course Letter Grades and MyMarketingLab Homework Scores, Fall 2014 (n = 81)

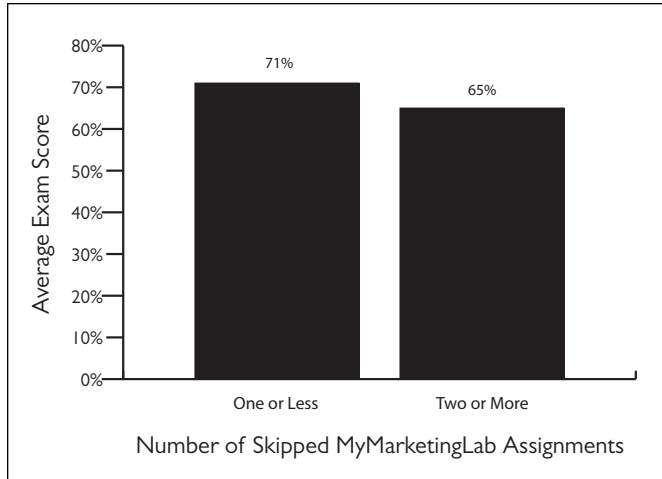


Figure 1. Relationship between Average Exam Scores and MyMarketingLab Homework Completion, Fall 2014 (n = 81)

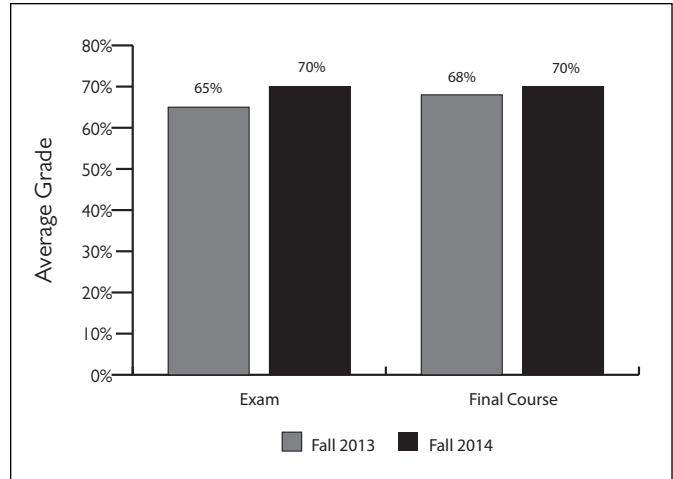


Figure 2. Average Exam and Final Course Grades before and after Implementation of MyMarketingLab, Fall 2013 (n = 115) and Fall 2014 (n = 81)

at least one assignment. Also, the Pearson correlation,  $r = -.3$ , is a moderate negative correlation indicating an inverse relationship between the number of assignments skipped and the total number of exam points earned. In other words, the more homework a student skipped, the lower the total number of exam points that student earned.

- 1** Average number of skipped assignments
- 36%** Percentage of students who skipped one assignment.
- 19%** Percentage of students who skipped more than one assignment.

A t-test analysis shows a statistically significant difference between the mean number of total points earned on all exams for the group of students who completed all assignments (n = 44, mean = 54.41) and those that did not (n = 37, mean = 50.07), where the p value < .001.

A comparison of both average exam grades and final course grades before and after implementation of MyMarketingLab indicates that both metrics showed improvement, with average exam grades improving five percentage points overall (Figure 2).

- The percentage of students earning an average exam grade of A increased seven percentage points from fall 2013 to fall 2014 (from 12 percent to 19 percent).

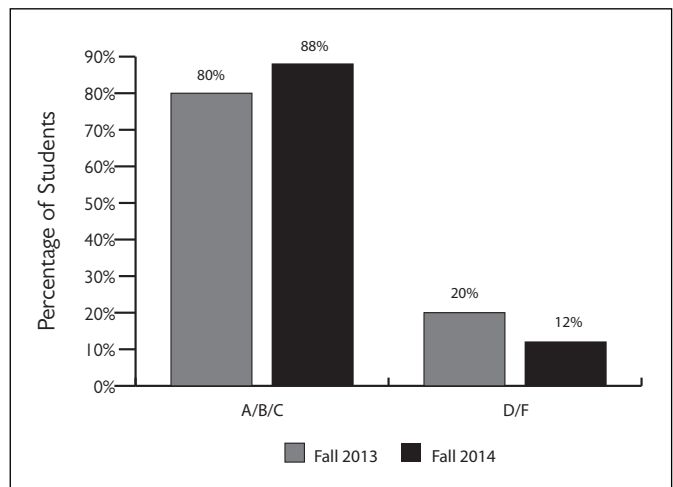


Figure 3. Student Success Rates (A/B/C) before and after Implementation of MyMarketingLab, Fall 2013 (n = 115) and Fall 2014 (n = 81)

- The percentage of students earning an average exam grade of D or F decreased 22 percentage points from fall 2013 to fall 2014 (from 31 percent to 9 percent).

In addition, the percentage of students who showed mastery of course content (earned an A, B, or C) increased eight percentage points in 2014; and the percentage of students who earned a D or F decreased eight percentage points (Figure 3).

## The Student Experience

In a fall 2014 end-of-semester survey, the majority of students indicated that they believe MyMarketingLab is beneficial to their learning.

**76%** Agree or strongly agree that their understanding of the course material increased as a result of using MyMarketingLab.

**75%** Agree or strongly agree that the use of MyMarketingLab positively impacted their quiz and exam scores.

Students were asked what they liked best about using MyMarketingLab. Their replies include the following:

*“I liked the mini case studies. They really got me thinking and were interesting to answer.”*

*“Each MyMarketingLab assignment focused on all areas of the textbook chapter and helped me to better understand the chapter. Doing homework gave me a better understanding of the material taught in class. I would definitely recommend MyMarketingLab for future courses.”*

*“I liked the MyMarketingLab assignments the best. The questions challenged my knowledge, showed where I needed to improve, and prepared me for exams.”*

*“I liked the chapter quizzes. They kept me on track and refreshed the material in my mind for the exams.”*

## Conclusion

MyMarketingLab helps Vendramin create a course that incorporates an interactive and engaging online component that in turn helps students review and apply the concepts taught in lecture. Specifically, the program’s videos and simulations enable students to practice course content in real-world environments, making the course both more interesting and more practical. In addition, the inclusion of mini case studies and gaming exercises illustrates marketing concepts in action.

Student survey comments are positive, focusing on the accessibility, convenience, and fun of learning marketing with MyMarketingLab.

Future plans include moving toward a fuller implementation of the flipped classroom model and adding more activities, such as Chapter Warm-ups (practice quizzes) and posttests.

## MyProgrammingLab

School Name [Wright State University, Dayton, OH](#)  
Course Name [Computer Science I](#)  
Course Format [Lecture](#)

**Key Results** Data show strong positive correlations among all course components: MyProgrammingLab homework, programming projects, laboratory assignments, MyProgrammingLab exams, and final course grades. In addition, data indicate that students with higher average MyProgrammingLab scores show greater mastery of course content based on average exam scores.

**Submitted by**  
Michael Ondrasek, Lecturer

**Course materials**  
MyProgrammingLab and *Introduction to Java Programming: Brief*,  
Liang

### Setting

Wright State University is a four-year public university with two local suburban campuses: Dayton and Lake. The school serves nearly 17,000 students; 77 percent attend full time, 77 percent are undergraduate, 70 percent are under 25 years of age, 66 percent receive need-based financial assistance, and 20 percent identify as minorities.

Computer Science I is a one-semester, four-credit course primarily taken by freshman computer science and computer engineering majors. The course enrolls approximately 125 students a year and covers basic programming concepts and programming languages, with an emphasis on problem solving and object-oriented programming. Course learning objectives include competency in object-oriented and event-driven paradigms and the ability to communicate effectively in Java with a focus on style and increasingly self-documenting high-level code.

### Challenges and Goals

It was important to Michael Ondrasek, lecturer, that students interact with coding on a daily basis. “Students need to see and work in Java every day in order to master it,” he says. “Reading textbooks, which can be terse and dense, is great for reference, but I wanted my students to engage directly with course content. The only way to truly learn a computer language is by doing it.” In 2013, he implemented MyProgrammingLab so his students could recreate textbook material and obtain the daily repetition they needed to become competent with programming languages.

### Implementation

Students attend lecture three times per week and lab twice per week. They prepare for lecture and spend in-class time according to the following format:

- Read a textbook assignment prior to lecture.
- Take an in-class, online quiz.
- Review the quiz during lecture.
- View an instructor PowerPoint presentation of important concepts.
- Complete an in-class experiential coding exercise (a 15-minute exercise conducted in groups of three).
- Participate in a group presentation of the exercise solution, as would be expected in industry.

Lab consists of practical exercise time with the intention of keeping students working with Java on a daily basis. Exercises are related to MyProgrammingLab, usually mini problems and often in two parts.

Ondrasek covers one chapter per week. To promote that students successfully learn Java, Ondrasek assigns about 10 hours of homework per week via both MyProgrammingLab and other course work. MyProgrammingLab homework opens on Sunday night and closes on Saturday; it includes 35–40 questions in the beginning of the semester and decreases to 10 questions by the end because students are asked to write code, which can be time consuming.

Midterm exams are given in class. For large sections of 150 or more students, exams comprise 50 multiple-choice questions, and students have one hour to complete them; for smaller sections, exams include a short programming exercise, plus multiple-choice, short-answer, and long-answer questions. Ondrasek does not subtract points for minor syntax errors.

*[S]tudents who earned higher overall MyProgrammingLab homework scores  
also earned higher average exam grades*

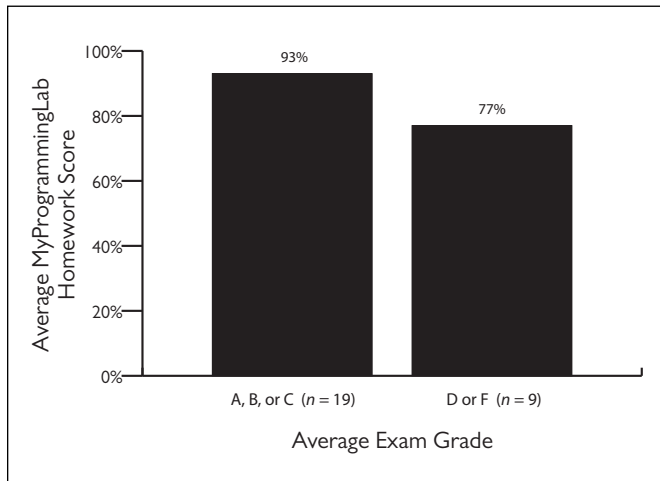


Figure 1. Average Exam Grades and Average MyProgrammingLab Homework Grades, Fall 2014 (n = 28)

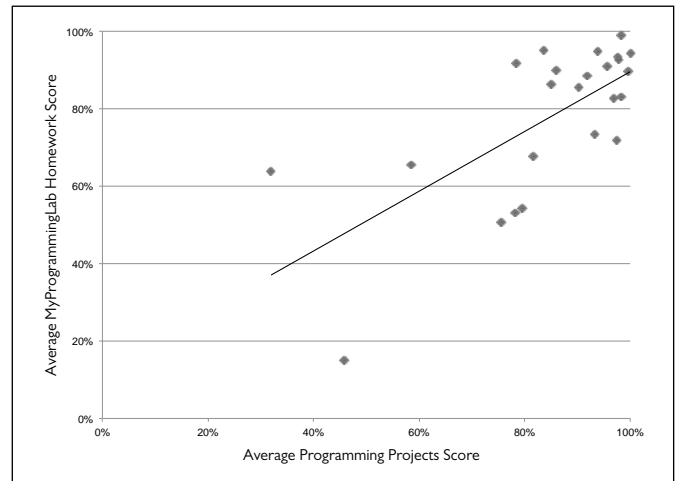


Figure 2. Correlation between Average MyProgrammingLab Homework Scores and Average Programming Projects Scores, Fall 2014 (n = 28)

The final exam is given in class and consists of 100 multiple-choice questions. Students have two hours to complete it. Because language constructs and programming logic are assessed with MyProgrammingLab and the programming project assignments, Ondrasek can use multiple-choice exams and take advantage of the program's autograding function.

#### Assessments

|            |                                       |
|------------|---------------------------------------|
| 30 percent | Programming projects                  |
| 20 percent | Final exam                            |
| 20 percent | Midterm exams (two)                   |
| 17 percent | MyProgrammingLab homework and quizzes |
| 13 percent | Laboratory assignments                |

#### Results and Data

Grade distribution data in terms of course success (students earning an A, B or C) show that students who earned higher overall MyProgrammingLab homework scores also earned higher average exam grades (Figure 1).

- Students who earned A, B, and C average exam grades had average MyProgrammingLab grades that were 21 percent higher than students who earned D and F exam averages.

Figures 2–5 are correlation graphs. They measure the strength of the relationships between average MyProgrammingLab homework scores and average programming project scores, average lab programming scores, average exam scores, and final course grades. Corresponding  $p$  values measure the statistical significance/strength of this evidence, with  $< .01$  considered strong evidence.

- Average MyProgrammingLab homework scores and average Programming projects scores: very strong positive correlation where  $r = .71$  and  $p$  value  $< .01$ .
- Average MyProgrammingLab homework scores and average laboratory assignment scores: strong positive correlation where  $r = .56$  and  $p$  value  $< .01$ .
- Average MyProgrammingLab homework scores and average exam scores: strong positive correlation where  $r = .46$  and  $p$  value  $< .01$ .
- Average MyProgrammingLab homework scores and final course grades: very strong positive correlation where  $r = .77$  and  $p$  value  $< .01$ .

For instructors, MyProgrammingLab homework can be viewed as a formative assessment that provides the information needed to adjust learning as it is taking place. For students, it can help

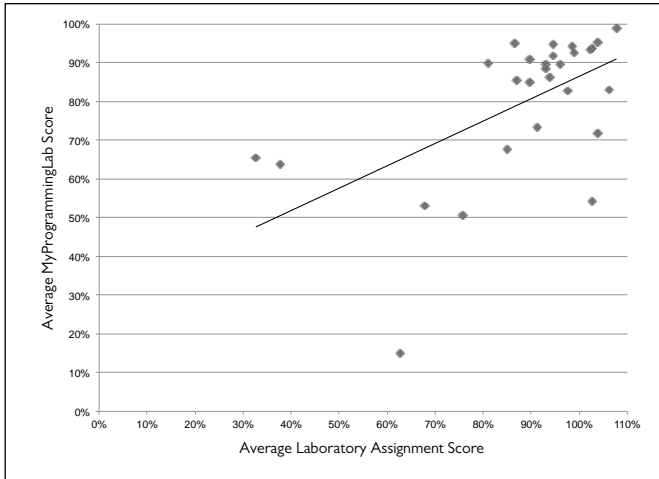


Figure 3. Correlation between Average MyProgrammingLab Homework Scores and Average Laboratory Assignment Scores, Fall 2014 (n = 28)

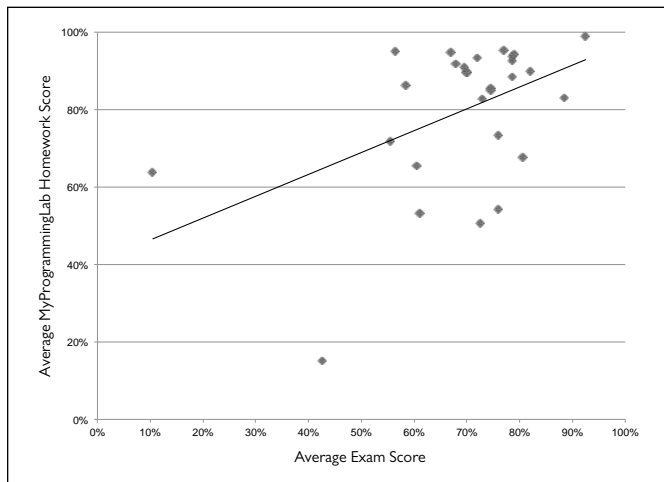


Figure 4. Correlation between Average MyProgrammingLab Homework Scores and Average Exam Scores, Fall 2014 (n = 28)

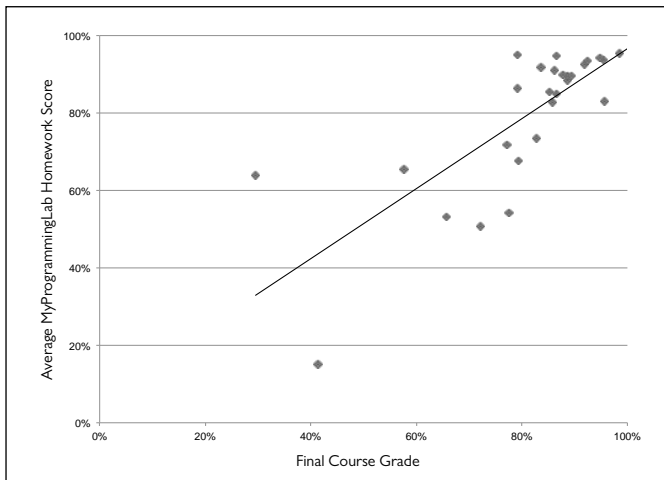


Figure 5. Correlation between Average MyProgrammingLab Homework Scores and Final Course Grades, Fall 2014 (n = 28)

them to identify areas of strength and weakness during the learning process and to target areas of improvement before taking summative assessments.

*Ondrasek reports that exam and final course grades increased after he implemented MyProgrammingLab. He attributes the improvement to daily coding work, and data from his fall 2014 class supports this claim.*

### The Student Experience

Students report that MyProgrammingLab helps them learn coding by doing it. Because issues of language specifics, such as where a comma goes or how to use double quotes, are covered in context, Ondrasek is able to spend more time on issues of design and logic, the more critical-thinking tasks that students often find challenging. In addition, students benefit from the immediate, personalized feedback in MyProgrammingLab; they are able to identify their limitations before moving on to more complex content. The identification of errors, specifically in code compilation, helps students correct their coding quickly and more easily.

### Conclusion

Ondrasek reports that exam and final course grades increased after he implemented MyProgrammingLab. He attributes the improvement to daily coding work, and data from his fall 2014 class supports this claim. Those students who earned higher MyProgrammingLab scores also had higher average exam scores and higher average final course grades.

Ondrasek notes that it took him a few semesters to smooth out his MyProgrammingLab implementation. He suggests that instructors spend time prior to each semester previewing the MyProgrammingLab assignment questions to ensure they apply to their lecture content. He also checks the level of assignment questions. He explains that offering questions that are too challenging too early in the semester can lead to frustration and that there is plenty of time to assign the complex coding and critical-thinking questions as students gain confidence in their coding abilities.



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## Active Learning/Adaptive Learning

**I**N 2006, THE SPELLINGS REPORT RECOMMENDED THAT “America’s colleges and universities embrace a culture of continuous innovation and quality improvement by developing new pedagogies, curricula, and technologies to improve learning...”<sup>1</sup> Since then, as technology has developed and enhanced learning possibilities outside of class, time during class has been freed up for experiential activities and conceptual learning. And universities and colleges have seized the opportunity to redesign their lecture-based courses, thereby enhancing student learning, serving more students, and frequently saving money.

According to Jo Handelsman, PhD, associate director for science at the White House Office of Science and Technology Policy and a professor (on leave) in the Department of Molecular, Cellular and Developmental Biology at Yale University, “Many talented college students... find introductory courses uninspiring. This can be corrected by incorporating classroom teaching practices that engage students in the learning process, known as active learning. Active learning includes any activity in which every student must think, create, or solve a problem.”<sup>2</sup>

Studies document that active learning leads to increases in examination performance that could raise average grades by a half a letter, and that failure rates under traditional lecturing increase by 55 percent over the rates observed under active learning. The analysis supports the theory claiming that calls to increase the number of students receiving STEM degrees could be answered, at least in part, by abandoning traditional lecturing in favor of active learning.”<sup>3</sup>

One of the most powerful aspects of active learning is the notion of accountability—students who take ownership of their learning tend to be more proactive and achieve higher

outcomes. It follows, then, that the most effective remediation helps students understand what they don’t know and provides students with the tools they need to learn it.

At Pearson, we’ve incorporated facets of adaptive learning into our MyLab digital solutions. Adaptive technology works by continuously assessing student performance and activity in real time. Then, using data and analytics, it personalizes content to reinforce concepts that target each student’s particular strengths and weaknesses. Students receive personalized guidance where and when they need it most. In turn, they exhibit greater engagement, improved knowledge retention, and greater subject-matter mastery—important criteria to facilitate student success.

For educators, adaptive learning provides a way to address diverse student populations and individual remediation needs. Because adaptive learning helps student stay on track and achieve a higher level of subject-matter mastery, more class time can be used for higher-order ideas, explaining and expanding complex concepts, and helping students reinforce what they’ve learned.

Personalized learning resources address the fact that no two students are identical—they learn and forget at different rates, come from a variety of educational backgrounds, and have a wide range of intellectual capabilities, attention spans, and modes of learning.<sup>4</sup> With all of the other duties facing an educator, providing face-to-face personalized remediation for each student in need would be a daunting task. The four case studies on the following pages (Sante Fe College, Southern Maine Community College, University of Maryland, and University of Texas at Arlington) show how advances in personalized and adaptive learning technology address these needs.

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<sup>1</sup> *Spellings Report*, <http://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/final-report.pdf>.

<sup>2</sup> Mark J. Graham, Jennifer Frederick, Angela Byars-Winston, Anne-Barrie Hunter, Jo Handelsman, “Increasing Persistence of College Students in STEM,” by *Science Education*, Vol. 341, September 27, 2013.

<sup>3</sup> Catherine H. Crouch and Eric Mazur, “Peer Instruction: Ten years of experience and results,” *The Physics Teacher*, Vol. 40, April 2002.

<sup>4</sup> <https://www.knewton.com/resources/blog/adaptive-learning/what-is-adaptive-learning/>.

## MyAccountingLab

School Name [Sante Fe College, Gainesville, FL](#)

Course Name [Accounting for Non-Financial Managers, Survey of Accounting](#)

Course Format [Online, hybrid](#)

### Key Results

Data indicate very strong positive correlations between average MyAccountingLab Study Plan scores and average MyAccountingLab quiz scores and between MyAccountingLab Study Plan scores and final course grades. In addition, students who mastered course material—earned final course grades of A, B, or C—earned Study Plan scores 42 percent higher than those of students who earned Ds or Fs.

### Submitted by

Harry Hooper, Professor

### Course materials

MyAccountingLab; *Essentials of Accounting*, Breitner; and *Management Accounting: Information for Decision Making and Strategy Execution*, Atkinson, Kaplan, Matsumura, and Young

### Setting

Santa Fe College, part of the Florida College System, was once a community college, but in 2008 changed its name to reflect the seven bachelor's degrees it offers. It is now both a two- and a four-year institution. From a suburban campus, the college serves more than 16,000 students. Approximately 83 percent of its students receive financial aid, 32 percent are minorities (Hispanic or Black), 30 percent are over 25 years of age, and approximately 10 percent are first-time-in-college high school graduates.

Accounting for Non-Financial Managers is a one semester, three-credit accounting course that enrolls approximately 125 online and hybrid students per semester. These students are working toward a four-year business degree, generally in applied science or operations management. The course covers accounting information for nonfinancial managers and emphasizes the interpretation of accounting information and the language of accounting. Course outcomes include the ability to prepare, analyze, and interpret financial statements; calculate financial ratios for the analysis of financial performance; use budgets to plan and monitor operating and production costs; demonstrate ethical practices; and develop management-level decision-making skills through critical thinking.

### Challenges and Goals

Harry Hooper, professor, was familiar with MyAccountingLab when he was asked to teach the Accounting for Non-Financial Managers course in 2009. Sante Fe College had changed learning management systems several times in the recent past, so Hooper sought a way to provide students with consistency in his online courses. MyAccountingLab's ease of use and quick learning curve made it a good fit for his online students who needed to get up and running quickly.

### Implementation

Hooper creates homework assignments for each chapter in MyAccountingLab. Homework comprises 5–10 problems and all learning aids are turned on. Students have unlimited attempts and must earn at least 75 percent in order to progress to first the MyAccountingLab Study Plan and then the chapter quiz. Hooper views homework as the core of a successful learning and practice process, but does not give credit for homework assignments. He does not want his students to get frustrated by their inevitable mistakes; rather, he wants them to continue to practice and learn from their mistakes.

MyAccountingLab's Study Plan is a critical component to success in Hooper's online course. It provides a platform for students to review concepts and problems they may have missed in homework, and offers them an opportunity to quiz themselves to learn if they have mastered a topic. The Enhanced Study Plan scoring grades students on the number of sections/learning objectives mastered (Mastery Points), rather than the number of exercises worked correctly. This enables Hooper to easily tie a grade to the Study Plan and quickly assess in which content areas students need more practice. Students can see the next sections/learning objectives they should study, are given easy access to practice problems, and are provided with an automatically generated quiz (Quiz Me) that allows them to demonstrate content mastery.

## *MyAccountingLab's Study Plan is a critical component to success in Hooper's online course.*

Students are assigned 13 weekly MyAccountingLab quizzes—the real test of a student's understanding of the weekly material. Students have one attempt at completion once the quiz is opened, but they are not timed. Quizzes have 5–10 problems, depending on complexity, partial credit is given, and learning aids are turned off.

Students take two on-campus exams, one for each half of the course: financial accounting and managerial accounting. Students also submit a final project, a practical test of their understanding of the course material.

### Assessments

|            |  |
|------------|--|
| 50 percent | Midterm and final exams (two)            |
| 25 percent | MyAccountingLab quizzes (13)             |
| 15 percent | Final project                            |
| 10 percent | MyAccountingLab Study Plan/participation |

### Results and Data

MyAccountingLab generates a personalized Study Plan for each student based on achievement of identified Learning Objectives as demonstrated on homework and quizzes. Study Plans include direct links to interactive tutorial exercises on those topics on which students need the most help. Data indicate that completion of Study Plans before attempting quizzes has a positive impact on both final course grades (Figure 1) and quiz grades (not depicted graphically).

- Students who earned final course grades of A had average Study Plan scores of 88 percent.
- Students who earned final course grades of D or F had average Study Plan scores of 53 percent.
- Students who showed mastery of course material by earning final course grades of A, B, or C, earned average Study Plan scores that were 39 percent higher than those of students who earned final course grades of D or F.

Figure 2 shows the correlation between average MyAccountingLab Study Plan scores and average MyAccountingLab quiz scores. A very strong positive correlation exists between Study Plan and quiz scores, where  $r = .71$  and  $p < .001$ . Similarly, a very strong positive correlation exists between the average

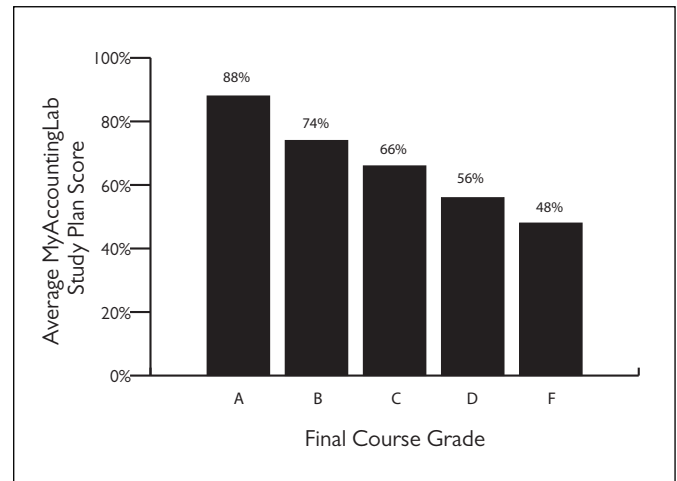


Figure 1. Relationship between MyAccountingLab Study Plan Scores and Final Course Grades, Online Section, Fall 2014 ( $n = 49$ )

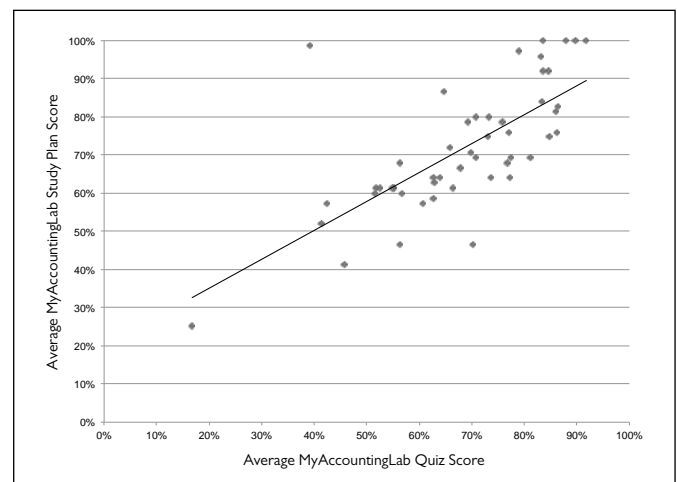


Figure 2. Correlation between Average MyAccountingLab Study Plan Scores and Average MyAccountingLab Quiz Scores, Online Section, Fall 2014 ( $n = 49$ )

## MyAccountingLab's Study Plan is a critical component to success in Hooper's online course.

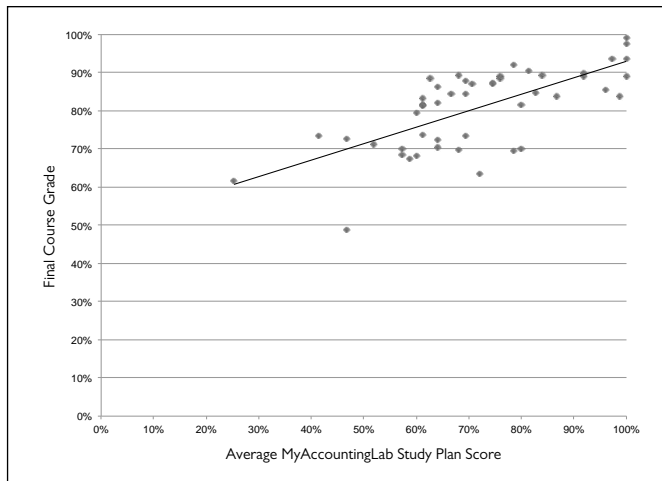


Figure 3. Correlation between Average MyAccountingLab Study Plan Scores and Final Course Grades, Online Section, Fall 2014 ( $n = 49$ )

Study Plan score and final course grades where  $r = .7$  and  $p < .001$  (Figure 3). For students, the MyAccountingLab Study Plan may help them identify where they stand in terms of successfully completing course quizzes and exams. As a best practice, MyAccountingLab Study Plan grades may help instructors identify early on students who are struggling and might be at risk of poor course performance. This analysis includes only students who finished the course with a letter grade ( $n = 38$  did not finish the course with a grade).

### The Student Experience

Responses from a fall 2014 student survey indicate that the majority of students surveyed recognize the value of MyAccountingLab.

- 89%** Agree or strongly agree that their understanding of the course material increased as a result of using MyAccountingLab.
- 82%** Agree or strongly agree that the use of MyAccountingLab positively impacted their quiz and exam scores.

On the same survey, when asked what they liked best about MyAccountingLab, student answers included the following:

*"I liked Help Me Solve This and the Dynamic Study Modules."*

*"Help Me Solve This was the most useful tool for me. I learn by hands-on—to watch the problem step-by-step helped automate the steps in my mind so I could retain them better."*

*"It had a lot of interactive problems and gave the questions a real-world feel. This helped me to learn the material."*

*"It let me redo assignments until I felt comfortable with the material."*

*"The Study Plan is a great tool!"*

### Conclusion

In Hooper's hybrid sections, the use of MyAccountingLab enables him to raise the bar on in-class lecture topics. He now spends his time discussing how to use financial statements, instead of how to do them, and assigns practical exercises and case studies to support business decision-making and critical thinking skills. Students apply these concepts to business problems and real work scenarios, and then participate in guided, group discussions.

Hooper reports that students who use MyAccountingLab have fewer how-to questions. As a result, class time can be spent on more-interactive assignments designed to help them understand the practical uses of course material. Finally, Hooper uses the gradebook to help him identify both at-risk students and the most common student homework and Study Plan errors, which he then addresses in lecture before moving to the next topic.

## MyEconLab

School Name Southern Maine Community College, South Portland, ME  
Course Name Microeconomics  
Course Format Online

**Key Results** Average quiz, exam, and final course grades increased when students were required to use Dynamic Study Modules. In addition, data show strong correlations among MyEconLab course components: homework, Dynamic Study Module assignments, quizzes, and exams. These correlations measure the strength of the relationships among the course assessments.

**Submitted by**  
Alan Lovell, Instructor

**Course materials**  
MyEconLab and *Principles of Microeconomics*, Case, Fair, and Oster

### Setting

Southern Maine Community College, one of seven colleges in the Maine Community College System, is a two-year, public community college whose main campus is located oceanside, close to Portland. The school enrolls nearly 7,500 students, of which 44 percent attend full time. The average student is 27 years of age, 94 percent are from Maine, and 72 percent receive financial aid.

Microeconomics is a one-semester, three-credit course with online sections of approximately 20 students each, taken by all business majors. The course covers the introduction to the analysis of firms and consumers in a market economy. Topics include consumer preferences and consumer behavior, production choices and production costs, industry structure and resource pricing, along with the history of economic thought. Course learning objectives include successfully describing (1) how a market economy works, including the laws of supply and demand; (2) the short- and long-term costs of production and how they impact a firm's output decisions; and (3) various market structures, how markets fail, and the role of government intervention.

### Challenges and Goals

In 2010, Instructor Alan Lovell was faced with creating an online course for Microeconomics from scratch. He had used several online programs in the past and was familiar with the significant

resources publishers could offer. He sought a product that would provide a complete online experience in a ready-to-go format. MyEconLab's mix of interactive text, homework capabilities, and wide range of assessment options made its adoption for his new online courses an easy decision.

### Implementation

In fall 2014, Lovell added Dynamic Study Modules to his course. Dynamic Study Modules use the latest findings in neurobiology, cognitive psychology, and game theory to create personalized learning that is designed to decrease study time and boost knowledge acquisition and retention. Each module begins with a set of questions that a student attempts to answer, even if they have not yet done the required textbook reading. Research has found that asking questions first triggers students' brains to learn faster, while real-time feedback heightens their curiosity and enhances their long-term memory. Lovell was excited to use Dynamic Study Modules, as he realizes that low stakes quizzing (such as the Dynamic Study Modules) may help students retain more of what they learn.<sup>1</sup> Personally, he has observed that while online learning works well for students with well-developed study skills, other students often need something like Dynamic Study Modules to help them develop their own pathway to success.

Lovell offers his students information about the Dynamic Study Modules at the start of the semester, so they understand how and why he requires this component of MyEconLab. Dynamic Study Modules continuously assess student performance and use analytics to provide personalized content in real-time to reinforce concepts that target each student's strengths and weaknesses. For this reason, students must complete modules before they can access any MyEconLab chapter homework assignments. No points are earned by completion of the Dynamic

<sup>1</sup>[http://www.nytimes.com/2014/07/20/opinion/sunday/how-tests-make-us-smarter.html?smid=pl-share&\\_r=0](http://www.nytimes.com/2014/07/20/opinion/sunday/how-tests-make-us-smarter.html?smid=pl-share&_r=0)

*[Lovell] sought a product that would provide a complete online experience in a ready-to-go format. MyEconLab's mix of interactive text, homework capabilities, and wide range of assessment options made its adoption for his new online courses an easy decision.*

Study Modules, but they are a prerequisite to opening chapter homework assignments.

Lovell encourages his students to adhere to the following while completing course assignments:

- Preview the MyEconLab chapter PowerPoint slides (found in the Chapter Resources tab).
- Attempt the Dynamic Study Modules.
- Read the chapter in the textbook.
- Complete the weekly MyEconLab homework assignment.
- Take the weekly MyEconLab quiz.

MyEconLab homework assignments include 18–20 multiple-choice and graphing problems. All learning aids are turned on, and students have unlimited attempts. Homework is open all week and available until the end of the week for each chapter assignment (the week begins on Sunday and ends on Saturday). Answers from Lovell's end of semester opinion survey indicate that students find the Help Me Solve This learning aid to be particularly beneficial. According to one student, "I liked the Help Me Solve This feature. For an online class with no teacher to ask in person, this was very helpful!"

Students must finish MyEconLab homework before they can open the quiz. Lovell drops each student's lowest three homework scores when calculating final course grades.

To help students prepare for exams, Lovell designs MyEconLab quizzes that are similar in approach to the exams. Quizzes include 5–7 multiple-choice and graphing questions. There is no time limit, but learning aids are turned off and students are allowed two attempts; the highest score is recorded. Quizzes are available all week and close at the end of the week for each chapter assignment. Lovell drops each student's lowest two quiz scores when calculating final course grades.

Students take three exams of 35 multiple-choice and graphing questions each. Exams are open book/open notes, and Lovell encourages students to use all resources. Exams have no time limit and are due at the end of the week they were assigned.

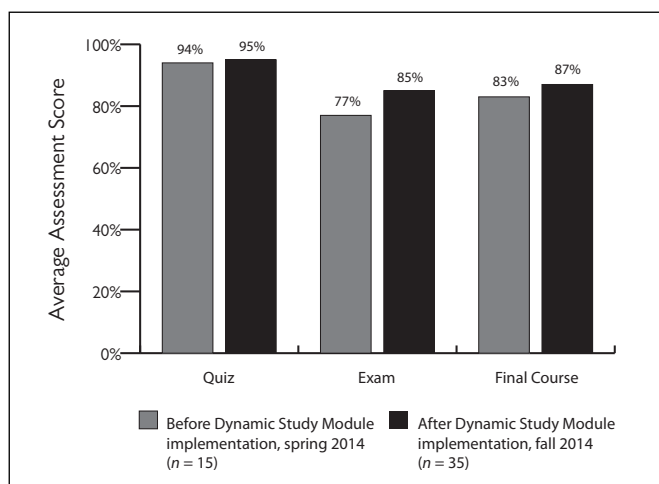


Figure 1. Average Assessment Scores before and after Implementation of Dynamic Study Modules, Spring–Fall 2014 (n = 50)

#### Assessments

- 50 percent Exams (three)
- 25 percent MyEconLab quizzes (20)
- 15 percent MyEconLab homework (20)
- 10 percent Discussion participation

#### Results and Data

After adding Dynamic Study Modules to his course (but keeping all other assignments and assessments the same), Lovell's average quiz, exam, and final course grades improved compared to the previous semester (Figure 1).

**11%** Percentage increase of average exam grades

**5%** Percentage increase of average final course grades

Figures 2–5 (on the following page) are correlations that measure the strength of the relationships among average MyEconLab homework scores, average Dynamic Study Module scores, average MyEconLab quiz scores, and average exam scores. The corresponding *p* value measures the statistical significance/strength of this evidence, with *p* < .01 considered strong evidence.

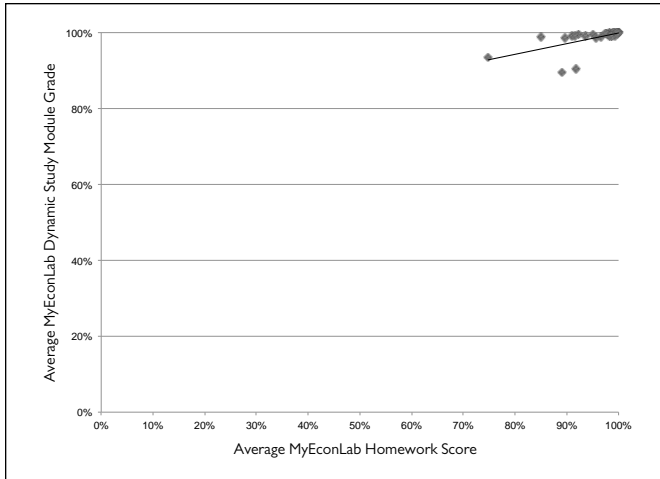


Figure 2. Correlation between Average MyEconLab Homework Scores and Average Dynamic Study Module Scores, Fall 2014 ( $n = 35$ )

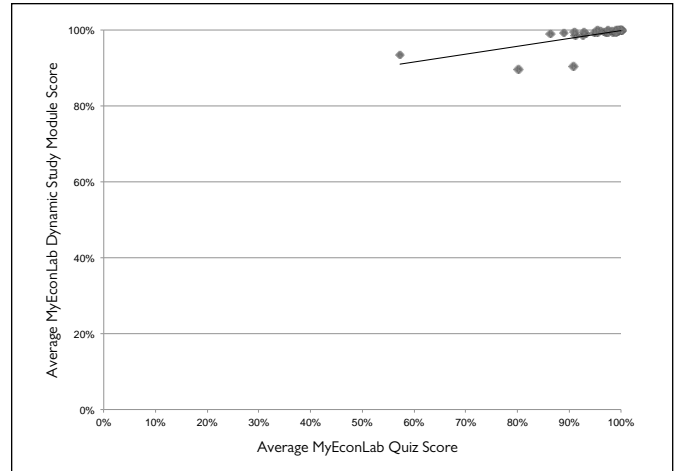


Figure 3. Correlation between Average MyEconLab Quiz Scores and Average Dynamic Study Module Scores, Fall 2014 ( $n = 35$ )

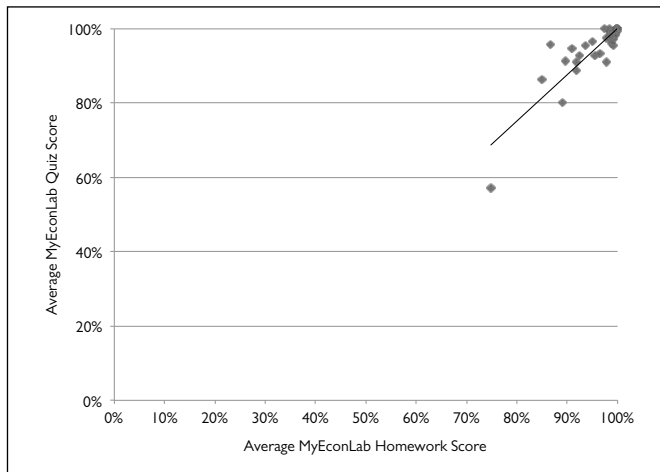


Figure 4. Correlation between Average MyEconLab Homework Scores and Average MyEconLab Quiz Scores, Fall 2014 ( $n = 35$ )

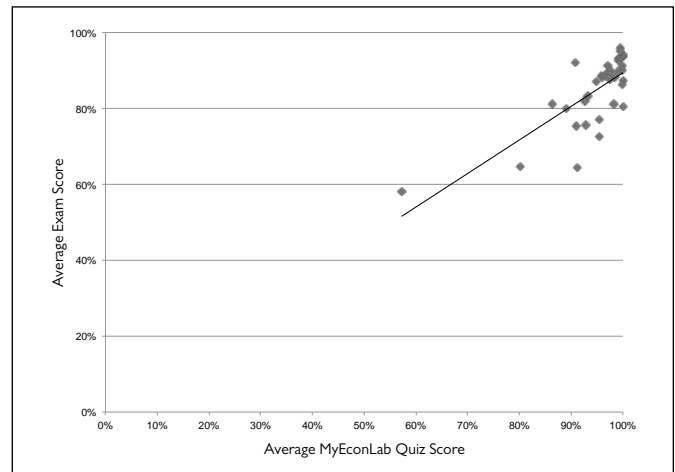


Figure 5. Correlation between Average MyEconLab Quiz Scores and Average Exam Scores, Fall 2014 ( $n = 35$ )

- Average Dynamic Study Module score and average MyEconLab homework score: strong positive correlation where  $r = .61$  and  $p < .01$ .
- Average Dynamic Study Module score to average MyEconLab quiz score: strong positive correlation where  $r = .67$  and  $p < .01$ .
- Average MyEconlab quiz score to average MyEconLab homework score: very strong positive correlation where  $r = .87$  and  $p < .01$ .

- Average MyEconLab quiz score to average exam score: very strong positive correlation where  $r = .76$  and  $p < .01$ .

For students, their MyEconLab homework and Dynamic Study Module scores may help them identify where they stand in terms of successfully completing future course assessments. As a best practice, instructors may use the MyEconLab homework and Dynamic Study Module scores to help identify students early on who may need intervention.

*“I owe my success to the Help Me Solve This feature.”*

—Student

## The Student Experience

In fall 2014, students were asked to participate in a voluntary, 13-question, end-of-semester survey. The survey was administered by Lovell and covered use of MyEconLab and its impact on their learning and assessment. Of the 49 percent of students who responded:

- 71%** Agree or strongly agree that their understanding of the course material increased as a result of using MyEconLab.
- 71%** Agree or strongly agree that the use of MyEconLab positively impacted their quiz and exam scores.
- 59%** Agree or strongly agree that the Dynamic Study Modules pattern of test/learn/retest helped them retain information about important course concepts.

On the same survey, when asked what they liked best about MyEconLab, student answers included the following:

*“I owe my success to the Help Me Solve This feature. With pencil and paper, if I can’t figure something out I have to wait until I can discuss things with my professor or a tutor. The Help Me Solve This feature took me step by step through problems so I could fully understand concepts.”*

*“That I could do homework problems until I got them right. Some things were difficult, but having more chances helped me grasp the concepts.”*

*“The study and practice exam questions helped me to get an idea of what to expect on the quizzes and also gave me additional information. Sometimes even when I know the topic well, multiple-choice questions can be tricky and confusing when only one word is different. The practice and study I did really helped to resolve that.”*

## Conclusion

Lovell reports that students like the gaming aspect of Dynamic Study Modules. Compared to traditional, multiple-choice questions, the interactive nature of module questions promotes that students think before they respond. He adds that students are gaining “far more” from the Dynamic Study Modules than they would from simply highlighting their textbooks.

Dynamic Study Modules create an environment in which students test, learn, and retest—a best practice for overall course success, and one that is especially critical in online environments. According to Henry L. Roediger III, professor of psychology at Washington University in St. Louis and author of *Make It Stick: The Science of Successful Learning*, “We need to change the way we think about testing. It shouldn’t be a white-knuckle finale to a semester’s work, but the means by which students progress from the start of a semester to its finish, locking in learning along the way and redirecting their effort to areas of weakness where more work is needed to achieve proficiency.”<sup>1</sup> This is Lovell’s goal in requiring Dynamic Study Modules—and data so far shows that it’s working.

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<sup>1</sup> [http://www.nytimes.com/2014/07/20/opinion/sunday/how-tests-make-us-smarter.html?\\_r=0](http://www.nytimes.com/2014/07/20/opinion/sunday/how-tests-make-us-smarter.html?_r=0)



## MyFinanceLab

School Name University of Maryland, College Park, College Park, MD

Course Name Business Finance

Course Format Flipped, blended

### Key Results

Data indicate a strong positive correlation exists between average MyFinanceLab quiz scores and both average MyFinanceLab homework scores and average Learning Catalytics scores. In addition, students who showed content mastery by earning an A, B, or C average quiz grade earned Learning Catalytics scores 30 percent higher than students who earned a D or F average quiz grade. Also, students who completed an optional Study Plan with more than the average number of points earned average exam grades 11 percent higher than students who earned fewer points in the Study Plan.

### Submitted by

Karen Hallows, Lecturer

### Course materials

MyFinanceLab and *Fundamentals of Corporate Finance* (custom), Berk, DeMarzo, and Harford

### Setting

University of Maryland, College Park, the flagship institution for the University System of Maryland, is a four-year public university located in suburban Prince George's County, just outside Washington, D.C. As the largest university in both the state and the D.C. metro area, the university serves more than 35,000 students a year: 92 percent attend full-time, 73 percent receive some kind of financial aid, and 45 percent identify as minorities.

Business Finance is a one-semester, three-credit course required by business administration students—approximately 1,000 students per semester. Topics include the principles and practices involved in organizing, financing, and rehabilitating business enterprises; types of securities and their use in raising funds, apportioning income, and risk and control; intercorporate relations; and new developments. Emphasis is placed on solutions to the financial policy problems faced by management.

### Challenges and Goals

Students had been coming to lecture unprepared for class, so in 2013, Karen Hallows, lecturer, sought a new digital course component that would help motivate students and improve their preparedness for lecture. She sought an integrated platform that could include homework, quizzes, study aids, and other learning resources. After receiving a grant to redesign the course, she attended a course redesign workshop where Pearson was presenting. Hallows implemented MyFinanceLab in fall 2013.

### Implementation

In Hallows' flipped and blended classroom, use of both MyFinanceLab and Learning Catalytics is required. The flipped/blended format offers students the best of both worlds: students can work online any time on lecture material plus attend face-to-face classes for numeric problem and other content review.

Course content, including detailed instructions and a step-by-step video on how to register for MyFinanceLab, is located on ELMS, the university's learning management system. For courses serving 1,000 students and more each semester, this best practice is critical to ensuring that all students get quickly up and running on MyFinanceLab. Pearson encourages all instructors to do something similar.

Hallows encourages students to follow her format for course success:

**Chapter online introduction videos.** For each chapter, students are required to watch a short video and complete a five-question video quiz prior to lecture. Students' 12 highest video quiz scores are averaged and recorded in the gradebook.

**MyFinanceLab.** Students use MyFinanceLab to complete required homework and quizzes, extra credit Study Plan assignments, and optional Dynamic Study Modules. For homework, all learning aids are turned on so students can receive instant feedback when struggling. In an end-of-semester survey, 74 percent of students responded that they always or usually used learning aids when they were unable to start or complete a problem.

- **Homework.** Homework scores are not recorded for a grade, but students must earn at least 80 percent in order to take a chapter quiz. Failure to earn at least 80 percent earns a student a zero for that week's quiz. Students have

*The flipped/blended format offers students the best of both worlds:  
students can work online any time on lecture material plus attend face-to-face classes  
for numeric problem and other content review.*

one homework assignment each week comprising 5–8 multiple-choice questions; they are allowed unlimited attempts. Due dates are assigned; no late homework is accepted for any reason.

- **Study Plan.** Use of the Study Plan is optional, and extra credit is offered for mastery points. First, students take a pretest. The adaptive system uses their test results + MyFinanceLab homework scores to identify areas of weakness; it then continually generates new Study Plan problems. Students receive 1 extra-credit point for every 4 mastery points earned, up to a total of 20 points (or 2 percent of the final grade). Only Study Plan points earned by an end-of-semester due date are eligible for extra-credit points.
- **Quizzes.** For each chapter, students complete one quiz comprising five multiple-choice questions. Students are allowed 2 attempts at quizzes; each student's highest 10 scores are averaged and recorded for their final MyFinanceLab quiz grade. Due dates are assigned; no late quizzes are accepted for any reason.

Learning Catalytics is a bring-your-own-device student engagement, assessment, and classroom intelligence system. Hallows asks three to eight questions each class period to confirm that students are keeping on track with the course content, and students respond using their mobile devices: smartphones, tablets, or laptops. Hallows then shows students the distribution of answers (instant feedback) so they can see what they don't understand. Students earn participation points for simply answering the question, and receive performance points for answering the question correctly; these two grades are averaged for a daily Learning Catalytics grade. Each student's highest 12 grades are entered in the gradebook as their final Learning Catalytics grade.

Students complete three midterm exams, each comprising multiple-choice questions, numeric problems, and essays; students are allowed 90 minutes for completion. Exams are paper and pencil, and taken in the evening of exam dates. Exam questions are a combination of Pearson test bank questions and questions Hallows creates herself. In addition, each of

Hallows' 10 teaching assistants contributes two questions for each exam in order to create a larger question pool. Because exams are posted online after completion and used as exam preparation for subsequent semesters, a large variety of questions are needed.

The final exam is optional. If students are satisfied with their three midterm scores, they can opt out of the final. If a student chooses to take the final exam, its score replaces their lowest midterm score; if the final score is lower than all three midterm scores, the final exam does not count. Students who miss the midterm exam must take the final.

#### Assessments

|            |  |
|------------|--|
| 75 percent | Exams (three) + optional final exam        |
| 10 percent | MyFinanceLab homework and quizzes          |
| 10 percent | Finance project (set of three assignments) |
| 5 percent  | Learning Catalytics and video quizzes      |

#### Results and Data

Figures 1 and 2 (following page) are correlation graphs that indicate the strength of the relationship between average MyFinanceLab quiz scores and both average MyFinanceLab homework scores and average Learning Catalytic scores. Correlations do not imply causation but instead measure the strength of a relationship between two variables. The  $p$  value measures the statistical significance/strength of this evidence (the correlation);  $p$  value  $< .01$  is considered strong evidence. A very strong positive correlation where  $r = .81$  and  $p < .01$  exists between MyFinanceLab homework and quiz scores, and a strong positive correlation where  $r = .56$  and  $p < .01$  exists between MyFinanceLab quiz scores and average Learning Catalytics scores. MyFinanceLab grades may help students identify where they stand in terms of quiz and exam preparation and may be indicative of further course assessment success (a more rigorous study might develop and test this concept further). As a best practice, MyFinanceLab grades may help instructors identify students in need of assistance or more immediate intervention.

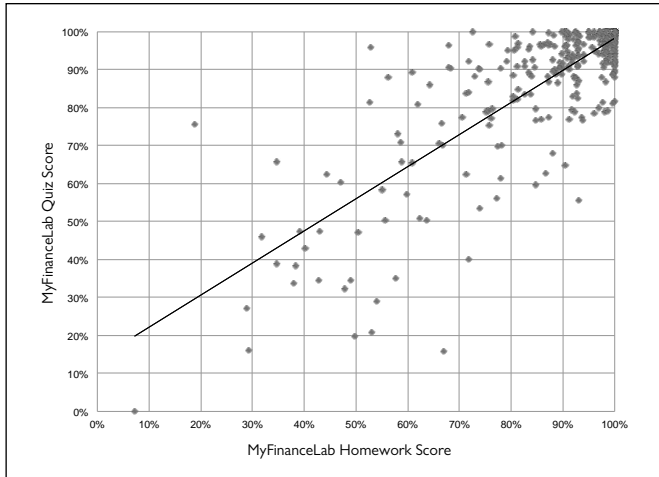


Figure 1. Correlation between Average MyFinanceLab Homework and Average Quiz Scores, Spring 2015 ( $n = 358$ )

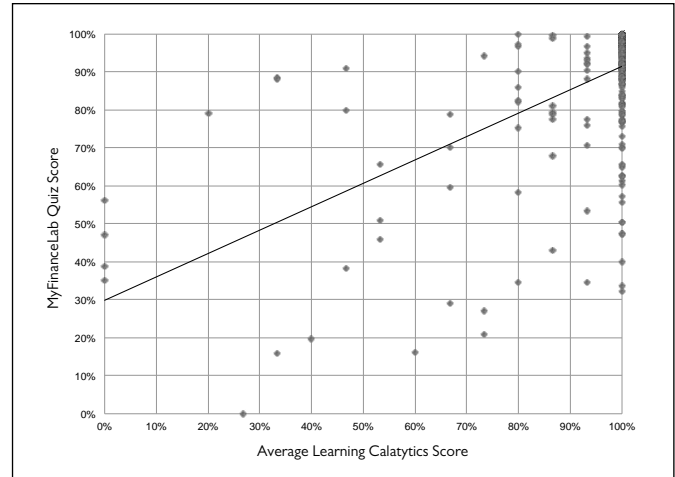


Figure 2. Correlation between Average MyFinanceLab Quiz Scores and Average Learning Catalytics Scores, Spring 2015 ( $n = 358$ )

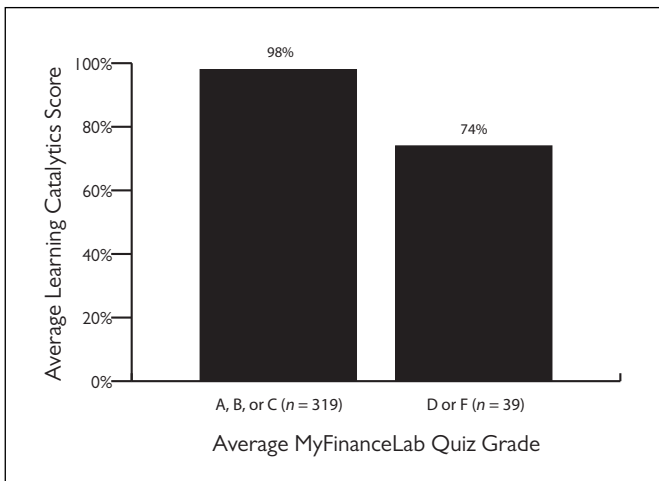


Figure 3. Average Learning Catalytics Scores and MyFinanceLab Quiz Grades, Spring 2015 ( $n = 358$ )

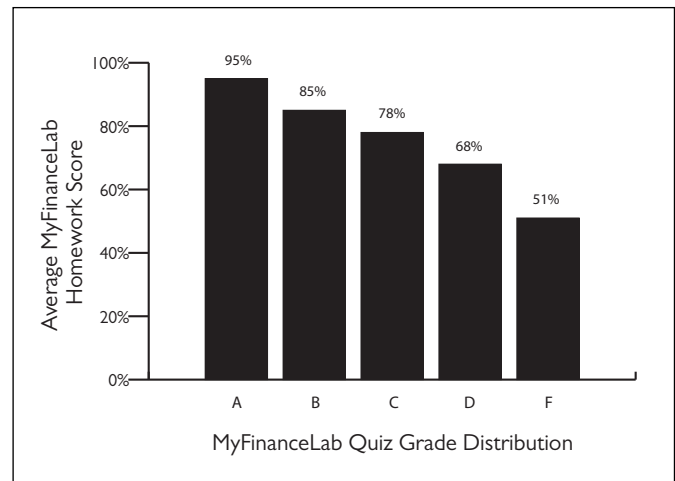


Figure 4. Average MyFinanceLab Homework Scores by MyFinanceLab Quiz Grade Distribution, Spring 2015 ( $n = 358$ )

Data indicate that students who show mastery of course content by earning an A, B, or C average MyFinanceLab quiz grade achieve Learning Catalytics scores 30 percent higher than students who earn a D or F average MyFinanceLab quiz grade (Figure 3).

- Students who earn an average MyFinanceLab quiz grade of A scored an average Learning Catalytic quiz score of 99 percent ( $n = 319$ ).

Figure 4 shows average MyFinanceLab homework and quiz grades. Students who earned higher homework grades also earned higher overall quiz grades, which suggests that when best practices are followed and MyFinanceLab homework is

used as a formative assessment, students might perform better on summative course assessments, such as quizzes.

Use of the optional Study Plan for extra credit encouraged students to do additional MyFinanceLab work. Students were grouped according to the average number of points earned in the Study Plan to assess its impact on exam grades (Figure 5).

- Average Study Plan points earned: 10.9 out of 20
- Students who scored 11 or more Study Plan points ( $n = 181$ ) scored 11 percent higher on average on exams than students who scored 10 or fewer points ( $n = 177$ ).

Students were also grouped according to MyFinanceLab homework completion (Figure 6).

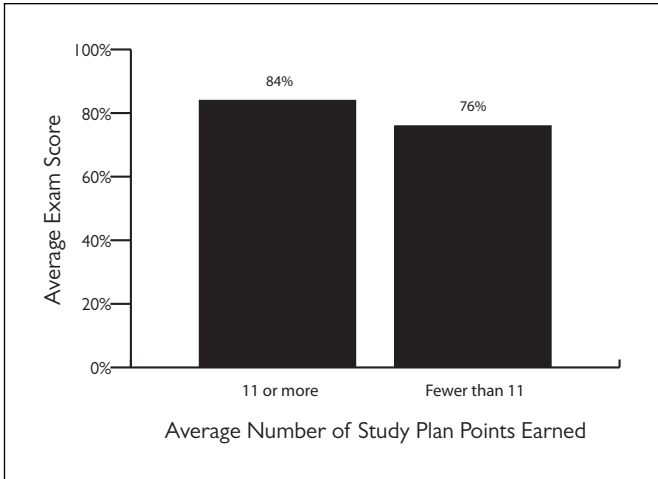


Figure 5. Average Exam Scores by Average Number of Study Plan Points Earned, Spring 2015 (n = 358)

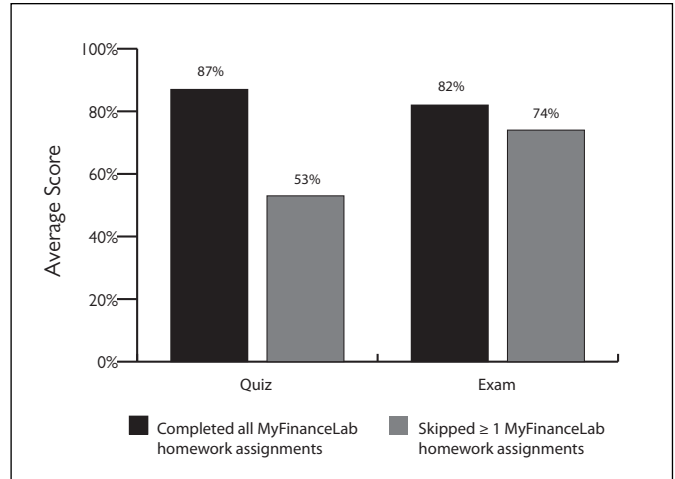


Figure 6. Average Quiz and Exam Scores by MyFinanceLab Homework Completion, Spring 2015 (n = 358)

- The majority (63 percent) of students completed all assignments.
- The average number of skipped assignments: 1

Students who completed all assignments (n = 224) earned average quiz scores 64 percent higher and average exam scores 11 percent higher than students who skipped one or more assignments (n = 134).

### The Student Experience

Responses from a voluntary, spring 2015 student survey administered by Hallows indicate that the majority of students surveyed recognize the value of MyFinanceLab.

- 80%** Agree or strongly agree that their understanding of the course material increased as a result of using MyFinanceLab.
- 70%** Agree or strongly agree that the use of MyFinanceLab positively impacted their quiz and exam scores.
- 77%** Agree or strongly agree that the Learning Catalytics questions helped their understanding of the lecture content or helped them identify misconceptions they may have had about the lecture material.
- 79%** Agree or strongly agree that MyFinanceLab provided additional resources that helped them learn more than they would have from more traditional pencil-and-paper homework.

On the same survey, when asked what they liked best about MyFinanceLab, student answers included the following:

*“I really liked that [MyFinanceLab] forced me to study the material and read the chapters. I also really liked the Study Plans—they were a big help when studying.”*

*“If I wasn’t able to start or continue a problem on my own, I was able to consult the Help Me Solve This function.”*

*“[MyFinanceLab] provides a way to gain a better understanding of the material, whether or not a professor is around to assist you.”*

*“It was incredibly helpful come exam time!”*

### Conclusion

Hallows’ redesign was driven by a lack of student preparation when attending lecture. The flipped classroom enables her to assign work prior to lecture, which helps students become familiar with course content before they attend lecture, where the focus is on problem solving. Learning Catalytics helps students identify content areas where they are weak, and helps them to focus on areas of remediation before MyFinanceLab homework assignments and quizzes.

However, it is the time and effort spent in the Study Plan that helps many students truly identify where they lack mastery. In the end-of-semester survey, student comments included, “[The Study Plan] had a lot of useful practice questions that helped me understand the material,” and “I liked the Study Plan (best) because it allowed me to try similar problems before taking homework and quizzes.” By creating a personalized learning path for each student, the Study Plan offers students material that is tailored to them; its personalized feedback helps students master concepts, not just guess at answers.

## MyFinanceLab

School Name University of Texas at Arlington, Arlington TX

Course Name Business Finance

Course Format Flipped, lecture

**Key Results** Data show strong positive correlations between average MyFinanceLab homework scores and both average Learning Catalytics and average Dynamic Study Module grades. Also, students who earned higher average Learning Catalytics and Dynamic Study Module grades earned higher average exam scores.

### Submitted by

John Adams, Assistant Professor

### Course materials

MyFinanceLab and *Principles of Financial Management*, Brief

### Setting

University of Texas at Arlington is four-year state university in the Dallas–Fort Worth–Arlington metropolitan area. The second largest campus in the University of Texas system, the school serves approximately 35,000 students: 74 percent are undergraduates, 63 percent attend full time, 58 percent identify as minorities or international, and nearly 70 percent receive need-based financial aid.

Business Finance is a one-semester, three-credit course required of all business majors, generally in their third year. The course presents students with the basic terminology, structure, and importance of corporate finance, emphasizing the finance and investment decisions of a financial manager. Topics include financial statement analysis, working capital management, capital budgeting, and corporate financial planning.

### Challenges and Goals

John Adams, assistant professor, believes in the merits of graded homework. He'd been using a competitor's online homework system in his Business Finance course, but with mediocre results. The problems used for homework were not correlated with the course content—this caused problems when creating assignments and could be confusing to students trying to do homework while following the textbook. Adams needed an online homework system that would free his time to spend on course preparation for a flipped classroom, as well as streamline the course for his students. In 2013, Adams actively sought a digital system that could cover all his needs, including

graded homework that aligned with course content for easier assignment and completion. In fall 2014, he implemented both MyFinanceLab and the flipped classroom.

### Implementation

In a flipped classroom model, students take responsibility for their learning outside the classroom so critical thinking and conceptual learning can take place in the classroom. For this model to be successful, students need the tools to learn on their own. Adams implemented MyFinanceLab and its Dynamic Study Modules for work outside the classroom; he employs Learning Catalytics for in-class learning.

Dynamic Study Modules were first created to leverage the latest findings in neurobiology, cognitive psychology, and game theory toward the creation of personalized learning that both decreases study time and increases knowledge acquisition and retention. Each module begins with a set of questions for students to answer, even if they haven't completed the required textbook reading. Research has found that asking questions first triggers the brain to learn faster, and that real-time feedback heightens curiosity and enhances long-term memory. Completion of the Dynamic Study Modules prior to lecture offers students the first exposure to material that review and assessment in lecture will clarify and confirm.

Learning Catalytics is a bring-your-own-device student engagement, assessment, and classroom intelligence system whereby students engage with open-ended, instructor-led questions designed to develop critical-thinking skills and encourage students to work together, fostering teamwork and collaboration skills. Learning Catalytics responses are in real time; they help Adams identify misconceptions by the class overall and provide immediate feedback.

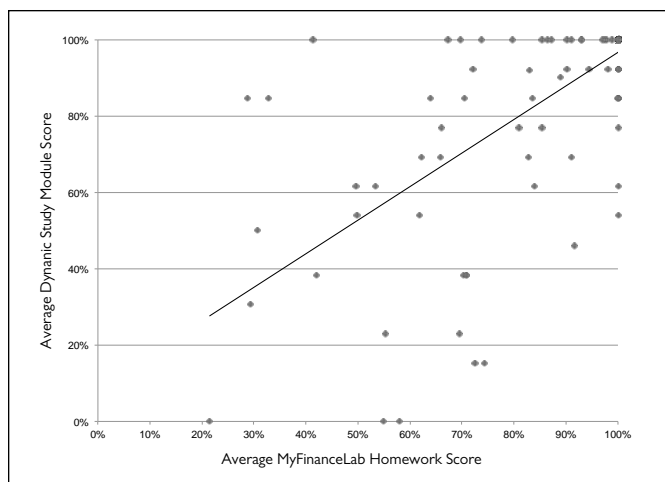


Figure 1. Correlation between Average MyFinanceLab Homework Scores and Average Dynamic Study Module Scores, Spring 2015 ( $n = 141$ )

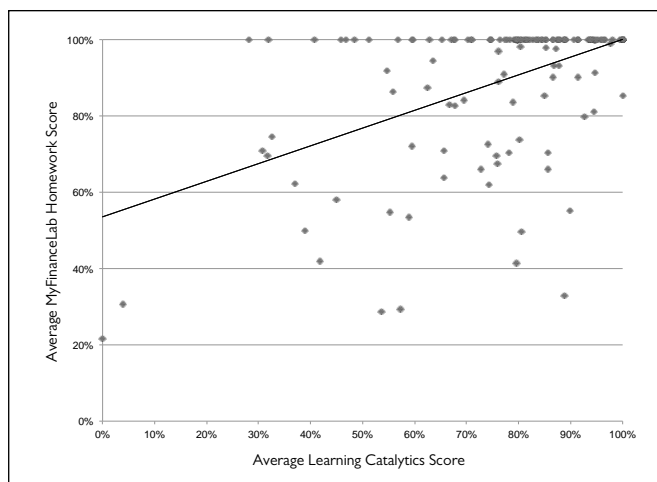


Figure 2. Correlation between Average MyFinanceLab Homework Scores and Average Learning Catalytics Scores, Spring 2015 ( $n = 141$ )

Using these interactive tools both pre- and postlecture, Adams encourages students to follow this pattern:

- Complete required textbook reading.
- Complete the Dynamic Study Modules in MyFinanceLab, due Tuesdays or Thursdays at 8 a.m. prior to the first class meeting for each chapter. Credit is awarded for successful completion.
- Lecture. Twice per week, students receive a broad overview of key concepts, then engage in group activities and exam preparation.
- Learning Catalytics. Questions are a combination of homework-type problems, conceptual questions, and exam problems—mainly multiple choice or numeric response. There are 20 questions per lecture; the class as a whole must score at least 75 percent before Adams moves to the next concept. Students receive .5 points for attempting to answer a question, and .5 points for answering a question correctly. To inspire students to think before responding, if the class earns 100 percent on any Learning Catalytics question, it reappears on the midterm or final exam.
- MyFinanceLab Homework. Approximately 10 questions per assignment with multiple parts. Students are expected to spend about one hour per chapter on MyFinanceLab homework; assignments are due Tuesdays at 11:59 p.m.

#### Assessments

|            |  |
|------------|--|
| 25 percent | Final exam                                   |
| 25 percent | Midterm exam                                 |
| 10 percent | Preclass study (Dynamic Study Modules)       |
| 10 percent | In-class participation (Learning Catalytics) |
| 10 percent | MyFinanceLab postclass homework              |
| 10 percent | WACC project                                 |
| 10 percent | Capital budgeting simulation                 |

#### Results and Data

Figures 1 and 2 are correlation graphs that measure the strength of the relationship between average MyFinanceLab homework scores and use of two of MyFinanceLab's learning tools: Learning Catalytics and Dynamic Study Modules. The corresponding  $p$ -values measure the statistical significance, or strength, of this evidence;  $< .01$  is considered strong evidence. Data show a very strong positive correlation, where  $r = .70$ ,  $p < .01$ , between Dynamic Study Module grades and MyFinanceLab homework scores (Figure 1), and a strong positive correlation of Learning Catalytics scores and MyFinanceLab homework scores, where  $r = .53$  and  $p < .01$  (Figure 2). These formative assessments provide students with information they can use to evaluate their learning and potentially adjust it as it is taking place, before future quizzes and exams. Instructors might also use student grades on the Dynamic Study Modules, Learning Catalytics, and MyFinanceLab homework as an intervention strategy to identify students in need of immediate course assistance.

*Students who completed the most assignments (skipped one or fewer) scored eight percent higher on exams than students who skipped more than the average number of assignments.*

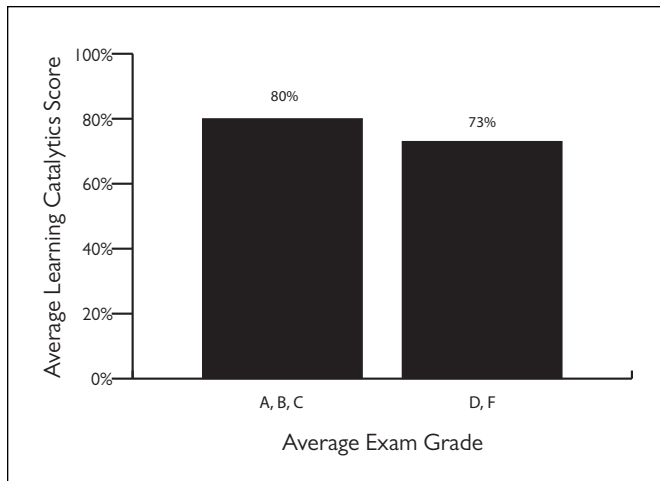


Figure 3. Comparison of Average Exam Grades (High and Low) and Average Learning Catalytics Scores, Spring 2015 ( $N = 141$  total,  $n = 70$  students earning an A, B, or C,  $n = 71$  students earning a D or F)

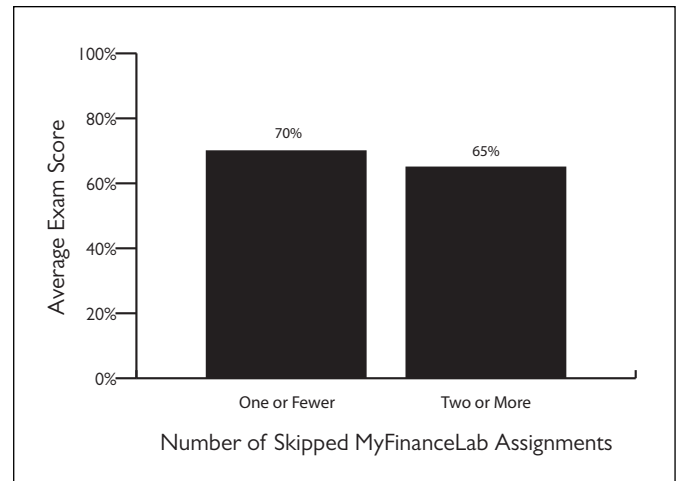


Figure 4. Average Exam Grades by MyFinanceLab Assignment Completion, Spring 2015 ( $N = 141$  total,  $n = 101$  Skipped  $\leq 1$ ,  $n = 40$  skipped  $\geq 2$ )

Students showing mastery of course material by earning an A, B, or C average on exams had average Learning Catalytics scores that were 10 percent higher than those of students who scored a D or F average on exams (Figure 3). Dynamic Study Module scores had similar indications, where students showing course mastering earned Dynamic Study Module scores that were eight percent higher on average than those who did not. Average MyFinanceLab scores were five percent higher for those students whose average exam grades indicated course mastery.

**77%** Average Learning Catalytics score

- Students with a failing exam average scored 11 percentage points lower than the average Learning Catalytics score.

**87%** Average Dynamic Study Modules score

- Students with a failing exam average scored nine percentage points lower than the average Dynamic Study Modules score.

**89%** Average MyFinanceLab homework score

- Students with a failing exam average scored ten percentage points lower than the average MyFinanceLab homework score.

In addition, average exam scores were assessed by grouping students according to assignment completion, where the average student skipped 1.3 assignments (Figure 4). Students who completed the most assignments (skipped one or fewer) scored eight percent higher on exams than students who skipped more than the average number of assignments.

**71%** Average exam grade for students who completed all assignments

**58%** Average exam grade for students who skipped eight or more assignments

The number of students enrolled after the official withdrawal period was 141. Five students (3.5 percent) were not included in the data analysis who did not officially withdraw from the course; they did not complete the course by taking the final exam and two of the five students did not take the midterm. Two students stopped participating in the course by the second week; three students stopped participating by the sixth week.

## The Student Experience

Adams conducted a voluntary end-of-semester student survey in spring 2015 regarding the use of MyFinanceLab and its impact on student learning and assessment. Responses include the following:

- 100%** Agreed or Strongly Agreed that their understanding of the course material increased as a result of using MyFinanceLab.
- 85%** Agreed or strongly agreed that the Learning Catalytics questions helped their understanding of the lecture content or helped identify misconceptions they may have had about the lecture material.
- 57%** Agreed or strongly agreed that the Dynamic Study Modules helped them to continuously assess their performance and provide additional practice in the areas where they needed assistance most.
- 85%** Agreed or strongly agreed that the use of MyFinanceLab positively impacted their exam scores.

In the same survey, when asked what they liked best about MyFinanceLab, student answers included the following:

*“I liked that all of the learning tools were located in one place, the calendar with upcoming assignments listed, and solving tips in the homework module.”*

*“I felt like [the tools] were easy to use, that there were not as many errors and quirks as I have seen in other online homework.”*

*“That all information was accessible in one place. If I needed an example, a video, or the book I could easily click on it. It’s also interactive as far as practice and the dynamic study modules.”*

*“I liked the use of it in class. It kept my attention.”*

## Conclusion

Adams reports that employing a flipped classroom using MyFinanceLab, the Dynamic Study Modules, and Learning Catalytics has changed the dynamic in his classroom. The active-learning strategies have promoted more interaction and even more fun—both Adams and his students enjoy in-class time more now. The experience is more engaging for students, they demonstrate better understanding of the material, and they spend less time at his office hours, which gives Adams valuable time for in-class preparation and research.



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## Flipped Classroom Model

**T**HE FLIPPED CLASSROOM IS GAINING IN POPULARITY among instructors seeking to incorporate more 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 teaching, students come to class to get a first exposure to the material through lecture, then try to make sense of that material via 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.”<sup>1</sup>

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

Matt Stoltzfus is a lecturer at Ohio State University who teaches large introductory classes via the flipped classroom model. He describes the impact this approach has on students: “the flipped-classroom model facilitates a deeper, more hands-on, and more-engaging experience for students in the classroom, enabling them to start with lower-level concepts at home and discuss higher-level concepts or areas of struggle in the

*In the flipped model, students take responsibility for their learning outside the classroom, so that critical thinking and conceptual learning can take place inside the classroom.*

classroom. In addition, it provides more meaningful interactions for students and teachers by giving teachers higher-quality face time with students.”<sup>3</sup>

In the flipped classroom model, students take responsibility for their learning outside the classroom, so that critical thinking and conceptual learning can take place inside the classroom. Pearson recognizes that in order for the flipped classroom model to reach its potential, students must have the right tools. On the following pages, you’ll find seven case studies (Delaware Technical and Community College, Ivy Tech Community College System, Radford University, MacEwan University, Northern Illinois University, Oakton Community College, and University of New York) from instructors who use Pearson MyLab digital solutions as the outside-the-class digital components of their flipped classroom redesigns.

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<sup>1</sup> <http://www.cirtl.net/node/7788>.

<sup>2</sup> Rosenberg, T. “Turning Education Upside Down,” *New York Times* (September 9, 2013).

<sup>3</sup> Brian Lukoff and Matthew Stoltzfus, “Professors: Here’s How to Flip Your Classroom,” *eCampus News*, March 24, 2014, <http://www.ecampusnews.com/top-news/professors-flipped-classroom-425/>.

## MyAutomotiveLab

School Name Delaware Technical and Community College, Stanton Campus, Newark, DE

Course Name Introduction to Automotive Technology

Course Format Flipped, lecture

**Key Results** Data show that students who earned a passing score (70 percent or higher) on MyAutomotiveLab posttests earned considerably higher quiz and test scores than did students who earned less than 70 percent or did not take a posttest. In addition, students who achieved an average grade of A, B, C on both quizzes and tests had substantially higher average MyAutomotiveLab homework grades.

### Submitted by

Lou Spinelli, Instructor

### Course materials

MyAutomotiveLab and *Automotive Technology: Principles, Diagnosis and Service*, Halderman

### Setting

Delaware Technical and Community College is a public two-year community college with campuses in Georgetown, Dover, Stanton, and Wilmington. Systemwide, the school serves more than 23,000 students per year; approximately 6,000 attend the Stanton campus. Thirty-two percent of the school's students are 19–21 years of age and 24 percent are more than 30 years of age, 95 percent are Delaware residents, 58 percent attend part time, and 53 percent identify as a minority.

Introduction to Automotive Technology, the first course in the automotive associate degree program, is a one-semester three-credit course that offers students a practical hands-on introduction to the automotive repair industry via classroom instruction, required labs, and an internship with a local business. Students spend two hours per week in lecture and two hours per week in lab. Upon completion of the course, students will have demonstrated mastery of the following objectives.

- Use appropriate automotive diagnostic and service equipment, hand tools, and precision measuring devices to determine and perform necessary repairs.
- Interpret electronic service information, service manuals, and diagnostic charts.
- Document service repair procedures that accurately reference the three Cs: customer complaint verification, correct the problem, and complete the repair.
- Employ service-facility safety practices.
- Practice professional automotive industry conduct.

### Challenges and Goals

The National Automotive Technicians Education Foundation is a nonprofit organization that examines the structure and resources of training programs and evaluates them against nationally-accepted standards of quality. When the organization allowed automotive coursework to be completed online, Spinelli and his colleagues decided to add a digital component to their course. Because of the time constraints in lecture, they realized that an online, outside-of-class component would enable more material to be covered, while also providing students with much-needed reinforcement. In 2011, Spinelli chose MyAutomotiveLab for its interactive activities, including prelecture concept introduction, in-class demonstrations, and postlecture homework and assessments.

### Implementation

In a flipped classroom environment, students perform a series of required activities in MyAutomotiveLab before, during, and after lecture.

#### Before lecture

- Read the chapter content for the week.
- Take the MyAutomotiveLab pretest, which diagnoses comprehension of chapter content and gives immediate feedback and key concept reinforcement.
- Complete a MyAutomotiveLab homework assignment: 10 multiple-choice questions per chapter; may include an essay question.

#### Lecture

- Review the MyAutomotiveLab homework questions.
- Use SmartBoards for MyAutomotiveLab video-based activities that demonstrate difficult skills and concepts and contain voice-over explanations and instructional tips.

*Students who earned an average quiz grade of A, B, or C had an average MyAutomotiveLab homework score 45 percent higher than students who earned an average quiz grade of D or F.*

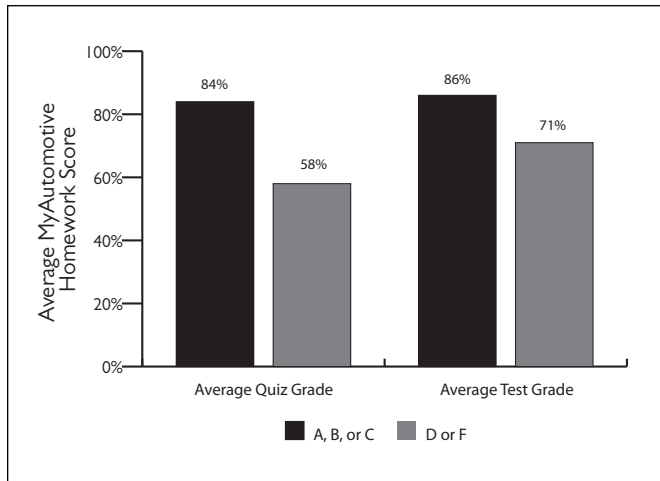


Figure 1. Average Quiz and Test Grades by Average MyAutomotiveLab Homework Scores, Spring 2015 (n = 180)

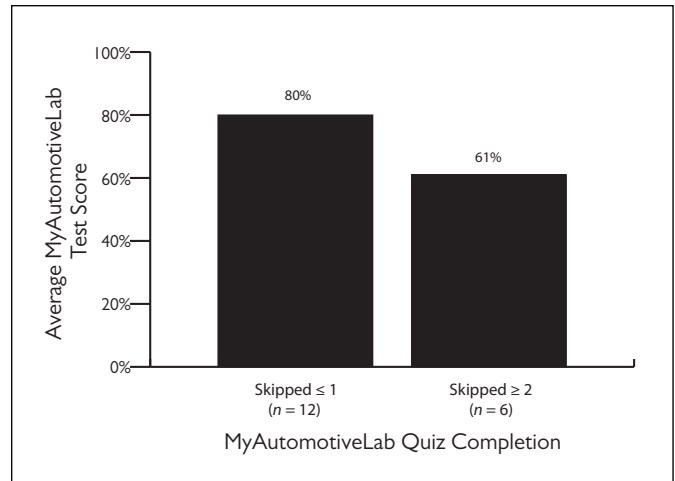


Figure 2. MyAutomotiveLab Quiz Completion by Average MyAutomotiveLab Test Scores, Spring 2015 (n = 18)

#### After lecture

- Complete an optional MyAutomotiveLab posttest, a formative assessment to help students confirm mastery of chapter content before taking higher stakes summative chapter tests.
- Take a MyAutomotiveLab chapter test: 20–30 multiple-choice questions that assess concept mastery.

Because Spinelli uses MyAutomotiveLab to teach much of the chapter content, he can focus more of his time on shop/lab activities. Hands-on midterm and final exams take place in the shop/lab and are designed to demonstrate the ability to apply course content in a real-life setting. Students are also required to contribute to MyAutomotiveLab SmartBoard activities.

#### Assessments

|            |                               |
|------------|-------------------------------|
| 50 percent | Shop/lab skill assessments    |
| 10 percent | MyAutomotiveLab homework      |
| 10 percent | MyAutomotiveLab chapter tests |
| 10 percent | Midterm exam                  |
| 10 percent | Final exam                    |
| 10 percent | Participation                 |

#### Results and Data

Student success on course assessments is generally measured by earning an A, B, or C. Figure 1 shows the average MyAutomotiveLab homework score for students who earned an average grade of A, B, or C on quizzes and tests compared to the average MyAutomotiveLab homework score for students earning average quiz and test grades of D or F.

- Students who earned an average quiz grade of A, B, or C had an average MyAutomotiveLab homework score 45 percent higher than students who earned an average quiz grade of D or F.
- Students who earned an average test grade of A, B, or C had an average MyAutomotiveLab homework score 21 percent higher than students who earned an average test grade of D or F.

MyAutomotiveLab quiz completion rates were analyzed to determine if a relationship exists between quiz completion and test scores (Figure 2). Students were placed into two groups based on the average number of skipped quizzes; students who completed more than the average number of skipped quizzes earned substantially higher average test scores.

- Average number of skipped quizzes: 1

*[D]ata show that students who took the posttest and earned a grade of 70 percent or higher also earned average quiz and test scores that were higher than those of students who took the posttest and scored lower than 70 percent and students who did not take the posttest.*

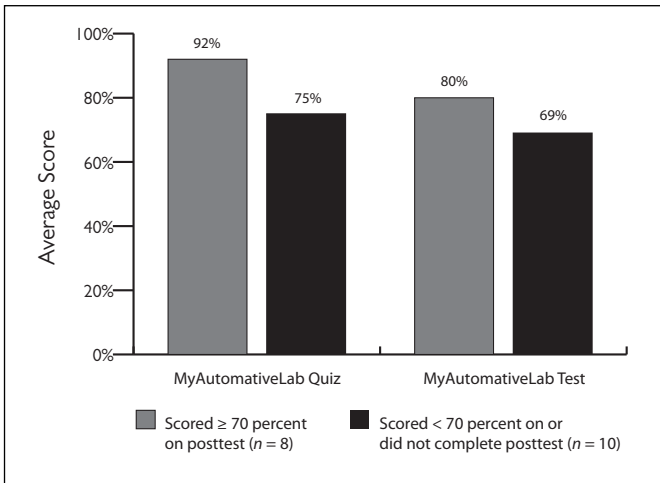


Figure 3. Average MyAutomotiveLab Quiz and Test Scores by MyAutomotiveLab Posttests Scores, Spring 2015 (n = 180)

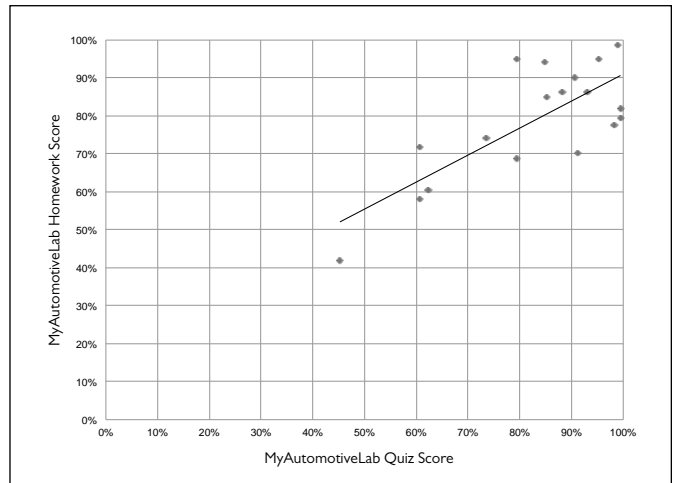


Figure 4. Correlation between Average MyAutomotiveLab Homework Scores and Average MyAutomotiveLab Quiz Scores, Spring 2015 (n = 18)

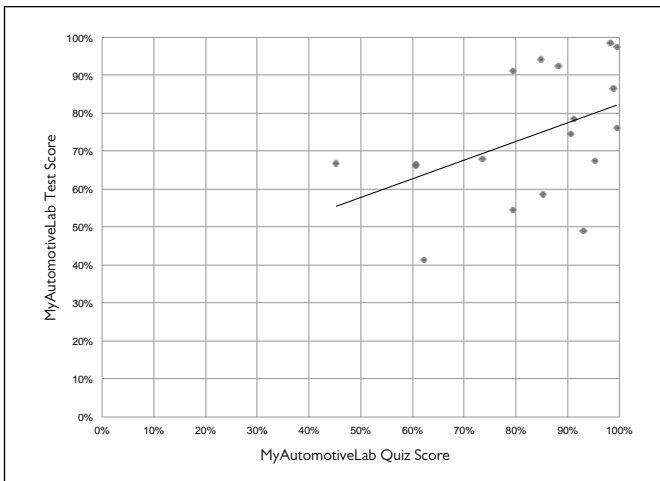


Figure 5. Correlation between Average MyAutomotiveLab Quiz Scores and Average MyAutomotiveLab Test Scores, Spring 2015 (n = 18)

- Percentage of students who completed all quizzes: 56 percent (n = 10)
- Students who skipped 1 or fewer MyAutomotiveLab quizzes earned average test scores 31 percent higher than students who skipped 2 or more quizzes.

While students were not required to take MyAutomotiveLab posttests, data show that students who took the posttest and earned a grade of 70 percent or higher also earned average quiz and test scores that were higher than those of students who took the posttest and scored lower than 70 percent and students who did not take the posttest.

- Students who scored 70 percent or higher on the posttest earned quiz grades an average of 23 percent higher than those of students who scored less than 70 percent and students who did not complete the posttest.
- Students who scored 70 percent or higher on the posttest earned test grades an average of 16 percent higher than students who scored less than 70 percent and students who did not complete the posttest.

Figures 4 and 5 are correlation graphs. Correlations do not imply causation, but instead measure the strength of a relationship between two variables. The  $p$  value measures the statistical significance/strength of the correlation;  $p < .01$  is considered strong evidence. Data show a very strong positive correlation between average MyAutomotiveLab homework scores and average MyAutomotiveLab quiz scores, where  $r = .76$  and  $p < .01$ ; and a strong positive correlation of average MyAutomotiveLab quiz scores and average MyAutomotiveLab test scores, where  $r = .46$  and  $p < .05$ . As a best practice, MyAutomotiveLab scores may help Spinelli identify students early on who are struggling and at risk of poor course performance.

### The Student Experience

In spring 2015, students were asked to participate in a voluntary, end-of-semester survey administered by Spinelli. Survey questions covered students' use of MyAutomotiveLab and its impact on their learning and assessment. Of the students who responded:

- 83%** Agree or strongly agree that their understanding of the course material increased as a result of using MyAutomotiveLab.
- 83%** Agree or strongly agree that the use of MyAutomotiveLab positively impacted their quiz and exam scores.
- 67%** Agree or strongly agree that using MyAutomotiveLab provided additional resources that helped them learn more than they would have from more traditional pencil and paper homework.

On the same survey, when asked what they liked best about MyAutomotiveLab, student answers included the following:

*"I liked that it gave me the correct answer when I got an answer wrong. This really helped correct it in my head and I remembered the correct answer next time."*

*"Very informative, useful information. I highly recommend [MyAutomotiveLab] to future students."*

*"It gave me my score as soon as I completed my work, and it relates to what we do in class."*

### Conclusion

A key motivation for flipping the classroom was to increase student participation during lecture. Spinelli sought a way to improve the typical passive learning of course content for such a tactile career as automotive repair. He reports that since redesigning his course with MyAutomotiveLab in a flipped format, students are more responsible for their learning and come to his class prepared to both participate and discover new material to apply in shop.

*[Spinelli] reports that since redesigning his course with MyAutomotiveLab in a flipped format, students are more responsible for their learning and come to his class prepared to both participate and discover new material to apply in shop.*

Spinelli recommends that instructors apply best practices with MyAutomotiveLab implementations, including using the first day of class to show students where to find MyAutomotiveLab and how to register for the program, and using the program's pretests to establish a baseline for student knowledge. Finally, he says that the MyAutomotiveLab simulations and videos used in his lecture both provide students with a visual review of course content and enable them to see in advance what they will work on during upcoming shop hours.

## MyBizLab

School Name Ivy Tech Community College System, Wabash Valley Region, Terre Haute, IN  
Course Name Introduction to Business  
Course Format Lecture, flipped

**Key Results** Students who achieved higher MyBizLab homework scores also earned higher average final course grades. In addition, data indicated a strong positive correlation between average MyBizLab simulation scores and average quiz scores, and between average total MyBizLab homework scores and average exam scores.

### Submitted by

Sarah Shepler, Associate Professor

### Course materials

*Business Essentials*, Ebert, Griffin

### Setting

Ivy Tech Community College System is Indiana's largest public postsecondary institution and the nation's largest singly accredited statewide community college system. Serving nearly 200,000 students annually, the system comprises 30 campuses in 14 regions. The small-town Wabash Valley campus serves more than 6,000 students. The majority of students (77 percent) identify as white/non-Hispanic and 61 percent attend part time.

Introduction to Business is a one-semester, three-credit gateway course required of all business majors in the Associate Applied Science and Associate Science (for students intending to transfer) programs. The course explores the American business system in relation to economics. Students study business ownership, organization principles and problems, management, control facilities, administration, and the development of American business enterprise practices. Students who successfully complete the course can identify the social, legal, and economic challenges of the business environment; illustrate the impact of ethical practices on business performance; differentiate between the legal forms of business ownership and organizational structures; and describe the marketing mix/marketing concept.

*MyBizLab assignments introduce students to concepts and ideas, so lecture time can be spent enhancing the material and promoting student engagement and understanding.*

### Challenges and Goals

Sarah Shepler, associate professor, began teaching Introduction to Business in fall 2006. She was familiar with Pearson MyLabs as she'd used MyStatLab for a business statistics course with great success—student feedback indicated that students don't want to simply read a textbook and sit passively through lecture. Rather, they want interaction with course material and an understanding of how and why it can be useful beyond the classroom. When Shepler sought to flip her classroom, it was only natural that she turn to MyBizLab.

### Implementation

MyBizLab assignments play a prominent role in Shepler's flipped classroom. Each week, students are required to:

- Read weekly chapter assignments
- Take the chapter quiz
- Complete the chapter simulation

Students have two attempts at quizzes; the higher of the two scores is recorded. Students have one attempt at simulations. And weekly assignments are due each Saturday night. Shepler does not require the Study Plan, but strongly recommends that her students use it.

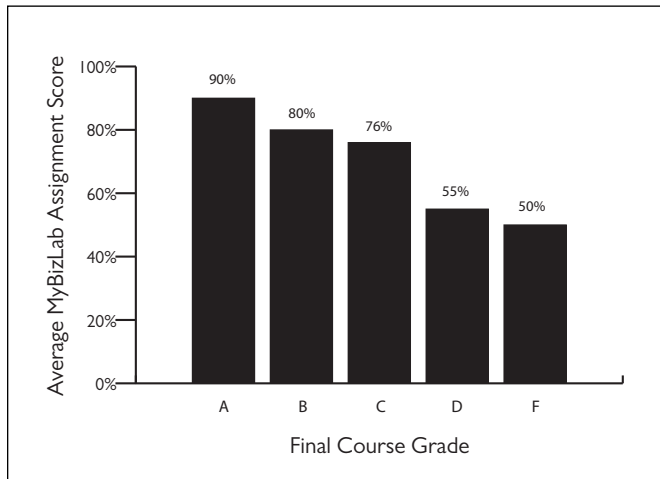


Figure 1. Relationship between MyBizLab Assignment Scores and Final Course Grades, Fall 2014 ( $n = 25$ )

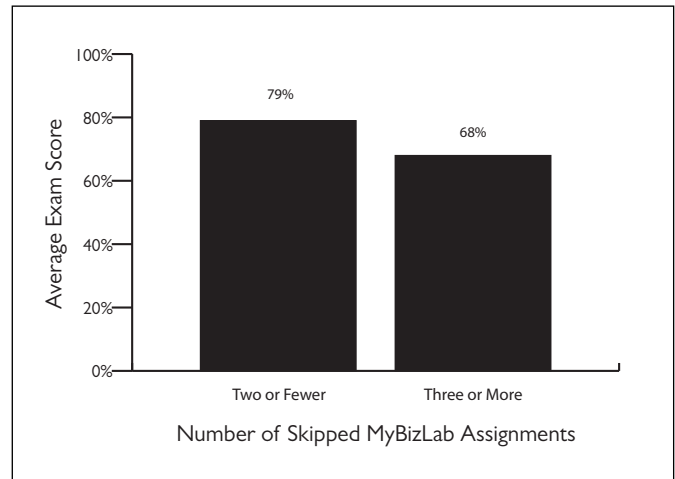


Figure 2. Relationship between MyBizLab Assignment Completion and Average Exam Scores, Fall 2014 (total,  $N = 25$ ; skipped two or fewer,  $n = 19$ ; skipped more than two,  $n = 6$ )

Students are required to complete three writing assignments. All are graded, two are scored, and the third is applied to extra credit or as a makeup writing assignment grade.

Two midterms and a comprehensive final exam are given in class and cover material from the text, lectures, and class discussion. Exams are a mix of multiple-choice, true/false, and essay questions. The final exam is a common in-state final.

Shepler uses in-class time to apply course concepts via small group and individual exercises, videos, and simulations, as well as hands-on and Web-based activities. Since all of her students have laptops in class, Shepler also has them consult the Web for real-time class activities. All in-class activities are turned in for credit before the end of the class session. Little in-class time is spent on traditional lecturing with PowerPoints, as MyBizLab assignments introduce students to concepts and ideas, so lecture time can be spent enhancing the material and promoting student engagement and understanding.

Late assignments are assessed a 5 percent penalty for each day late. After five days, assignments are no longer accepted.

#### Assessments

|            |   |
|------------|---|
| 31 percent | MyBizLab quizzes (15)                         |
| 24 percent | Midterms (two) and a comprehensive final exam |
| 24 percent | MyBizLab simulations (10)                     |
| 13 percent | Participation                                 |
| 8 percent  | Writing assignments                           |

## Results and Data

Figure 1 shows a strong linear relationship of the final course grade distribution per average MyBizLab score. Students who earned higher MyBizLab homework scores generally earned higher final course grades, indicating that success on MyBizLab assignments may be an early indicator of course success (a more rigorous study might explore this concept further). As a best practice, instructors might use MyBizLab scores as a method of early intervention to help identify students at risk of failure on exams or the overall course.

- Students earning a final course grade of A scored an average of 90 percent on MyBizLab assignments.
- Students earning a final course grade of D or F scored 53 percent on MyBizLab homework.

This analysis included only students who received a final course grade (does not include withdrew failing grades,  $n = 6$ ).

MyBizLab assignment completion rates were analyzed to determine the impact of assignment completion on average exam grades (Figure 2). Results show that students who skipped two or fewer homework assignments scored 16 percent higher average exam grades (at least one letter grade) than students who skipped three or more homework assignments ( $p < .03$ , analysis includes only students who received a final course grade).

**2.1** Average number of skipped assignments

**52%** Percentage of students who completed all homework assignments

*MyBizLab assignments introduce students to concepts and ideas, so lecture time can be spent enhancing the material and promoting student engagement and understanding.*

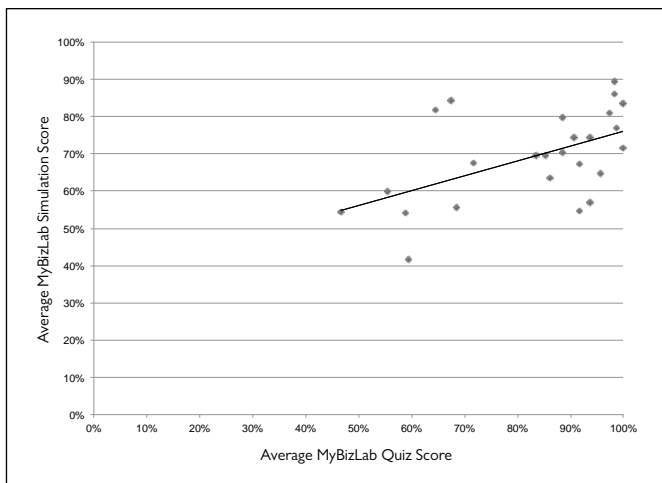


Figure 3. Correlation between Average MyBizLab Quiz Scores and Average MyBizLab Simulation Assignment Scores, Fall 2014 ( $n = 25$ )

Figure 3 shows the correlation between average MyBizLab quiz scores and average MyBizLab simulation exercise scores; a strong positive correlation exists where  $r = .53$  and  $p < .01$ . Similarly, a strong positive correlation exists between total MyBizLab homework scores and average exam scores, where  $r = .47$  and  $p < .01$  (not pictured here). For students, MyBizLab assignment scores may help them identify where they stand in terms of successfully completing other course assessments including quizzes and exams, as well as the overall course.

### The Student Experience

Responses from a fall 2014 student survey indicate that the students surveyed recognize the value of MyBizLab. When asked what they liked best about the program, student answers included the following:

*“It is easy to access assignments and the extra practice helped me a lot.”*

*“I liked that it showed me the correct answers to my wrong quiz questions so I knew the right answers. In other classes, I don’t ever learn what the right answer was.”*

*“I enjoyed doing the simulations, I felt as though it was real life situations.”*

*“[It was] easy to use and to understand, and it helped me prepare for exams.”*

*“It provides feedback to my answers after taking quizzes.”*

### Conclusion

Flipped classrooms require great effort on the instructor’s part. Much of their time is spent seeking new, activity-based material that aligns with course content and further develops course concepts. Making MyBizLab an integral part of her flipped classroom enables Shepler to spend more time preparing in-class activities that enhance the real-world aspect of her course. Because she spends less time grading, she can use that time to search for new and different news articles, videos, and Web assignments to promote greater in-class discussion and engagement. And it’s paid off—in-class participation on these activities has led to a greater understanding of course content and higher exam scores. Data show that students who scored greater than 70 percent for their in-class participation grade earned average exam scores of 81 percent—16 percent higher than students who scored lower than 70 percent on their in-class participation grade.



## MyFinanceLab

School Name Radford University, Radford, VA  
Course Name Introduction to Business Finance  
Course Format Flipped, ebook

**Key Results** Data show strong positive correlations between MyFinanceLab homework scores and MyFinanceLab quiz scores and between average quiz scores and average exam scores. In addition, students who complete all or most MyFinanceLab homework earn higher average quiz, exam, and final course grades than do students who routinely skip MyFinanceLab homework.

### Submitted by

Rodrigo Hernandez, Associate Professor

### Course materials

MyFinanceLab and *Principles of Managerial Finance*, Gitman

### Setting

Radford University is a mid-sized four-year university located in the Blue Ridge Mountains of rural southwest Virginia. From its primarily residential campus, the school serves approximately 10,000 students of which 91 percent are undergraduates, 81 percent are Caucasian, and 77 percent are between the ages of 18 and 21. The school's four-year graduation rate is 41 percent.

Introduction to Business Finance is a one-semester, three-credit, lecture/discussion course required of all business majors and enrolling approximately 450 students per year. Instruction includes demonstrations, in-class exercises, problem assignments, and periodic exams. Instruction is augmented by outside readings and projects covering financial statement analysis, financial management concepts and techniques, and how the principles of finance can be used to enhance the value of a firm. Course learning objectives include understanding the mathematics of interest rates, taxes, and the time value of money, financial statement analysis and forecasting, valuation techniques, the measurement and relationship between risk and expected return, capital investment decisions, and working capital management.

### Challenges and Goals

In 2007, Rodrigo Hernandez, associate professor, sought a fresh perspective for his Business Finance course. He and his colleagues noticed that students showed signs of lack of engagement with the course: they were not purchasing the expensive textbooks required for the course, they were not completing homework assignments, and they were coming to class unprepared. Hernandez and his colleagues reviewed the top three

digital programs available at the time. While graded homework, which is important for content comprehension, was a critical part of their decision, the ability of a program to reach students in their moment of confusion and help them create a path to understanding was equally important. Hernandez and his colleagues chose MyFinanceLab for its ability to provide that additional feedback; the inclusion of an ebook was an additional financial benefit.

### Implementation

Hernandez believed that flipping the classroom—requiring students to do preparatory work before lecture—would also improve student engagement and enable him to bring deeper learning to students' in-class time. Hernandez no longer uses PowerPoint presentations during class; class time is spent on problem solving and covering more-challenging content and homework questions. Lectures often begin with a quiz (usually every other week) followed by a discussion of headline events, review of homework problems, content lecture as needed (minimal), continued problem solving, and a look at future assignments. Classes meet three times per week; students have one or two MyFinanceLab homework assignments per week.

Outside the classroom, students are assigned the following:

#### Prelecture work

- Read the sections/chapter in the ebook.
- Watch the prerecorded video of the chapter (self-created) on the school LMS.
- Complete End of Chapter questions (approximately 10 per chapter).

#### Postlecture assignments and assessments

- Study Plan (optional). Hernandez strongly suggests that students practice the End of Chapter questions before beginning their homework assignments.

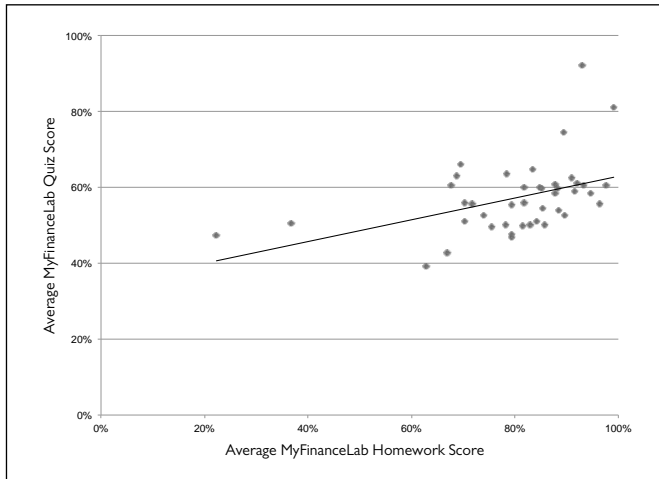


Figure 1. Correlation between Average MyFinanceLab Homework Scores and Average MyFinanceLab Quiz Scores, Fall 2014 ( $n = 42$ )

- MyFinanceLab homework assignment. Each assignment includes six or seven multipart questions; students are allowed two attempts at each question. Assignments are open until the day before each corresponding exam (approximately three and a half weeks).
- MyFinanceLab quizzes. Quizzes generally cover concepts and definitions and include 10 questions. Students are allowed two attempts within two hours. Questions are static and taken from the test bank; they are not algorithmic, but Hernandez uses pooling to increase the variability of questions—students receive one question from a pool of 10–15 questions for each topic—and to reduce the chance of two students receiving the same questions. As with assignments, quizzes are open until the day before each exam on the corresponding chapters (approximately three and a half weeks).
- Exams. The three midterms and final exam are pencil and paper, given in class, and usually cover two chapters each. Students have 50 minutes to complete 5–6 two-part, open-ended midterm problems and 8 similar problems on the final exam. Makeups are allowed only under extreme circumstances.

In-class quizzes are given at the beginning of class and include one problem that should take 10–15 minutes to complete. Quizzes are designed to serve as wake-up calls before exams.

Hernandez drops students' two lowest MyFinanceLab homework scores and five lowest MyFinanceLab quiz scores.

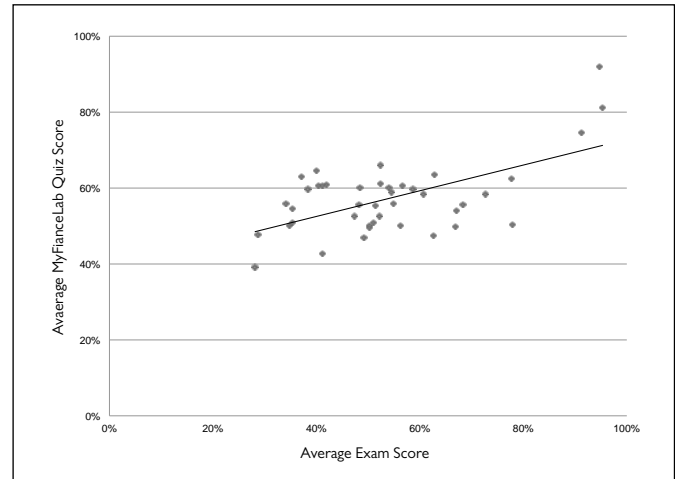


Figure 2. Comparison of Average MyFinanceLab Quiz Scores and Average Exam Scores, Fall 2014 ( $n = 42$ )

#### Assessments

|            |  |
|------------|--|
| 45 percent | Midterm exams (three)                        |
| 20 percent | MyFinanceLab homework (21)                   |
| 20 percent | Quizzes: MyFinanceLab (13), in class (eight) |
| 15 percent | Final exam                                   |

#### Results and Data

Correlations do not imply causation but instead measure the strength of a relationship between two variables.  $P$  value measures the statistical significance/strength of this evidence (the correlation);  $p$  value  $< .01$  is considered strong evidence. Figure 1 shows the correlation between MyFinanceLab homework scores and MyFinanceLab quiz scores, where  $r = .54$  and  $p < .001$ , indicating a strong positive relationship between the two variables. Similarly, a strong positive correlation, where  $r = .59$  and  $p < .001$ , exists for average quiz scores and average exam scores (Figure 2). MyFinanceLab homework scores can potentially help students identify where they stand in terms of quiz and exam preparation; it appears that performance on MyFinanceLab assignments may be indicative of further course assessment success (a more rigorous study might develop and test this concept further). As a best practice, MyFinanceLab grades could help instructors identify early on students who are at-risk and need immediate intervention.

In addition, MyFinanceLab homework completion rates were analyzed to determine the impact of completion on average quiz, exam, and final course grades (Figure 3). Results show that students who completed most assignments scored significantly higher on all three course calculations.

*Students who completed all assignments had average quiz grades 18 percent higher than students who skipped two or more assignments.*

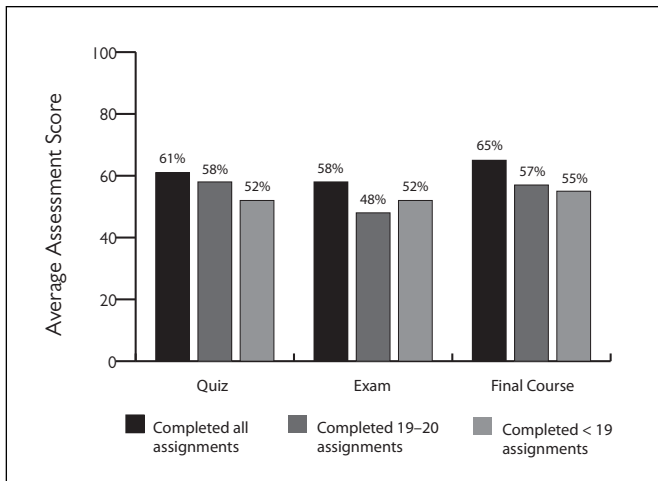


Figure 3. Relationship between MyFinanceLab Homework Completion and Average Quiz, Exam and Final Course Grades, Fall 2014 (n = 42)

- Students who completed all assignments had average quiz grades 18 percent higher than students who skipped two or more assignments.
- Students who completed all assignments had average exam grades 15 percent higher than all other students.
- Students who completed all assignments earned average final course grades 15 percent higher than students who skipped one or two assignments.
- Average number of skipped assignments: 1.6.

Students were grouped according to average scores on each course metric (above or below average): quiz, exam, and final course. Figure 4 shows the average MyFinanceLab score for each group per metric.

- Students who earned above the average quiz score achieved an average MyFinanceLab grade 16 percent higher than students who earned below the average quiz score.
- Students who earned above and below the average exam grade scored the same MyFinanceLab grade (80 percent).

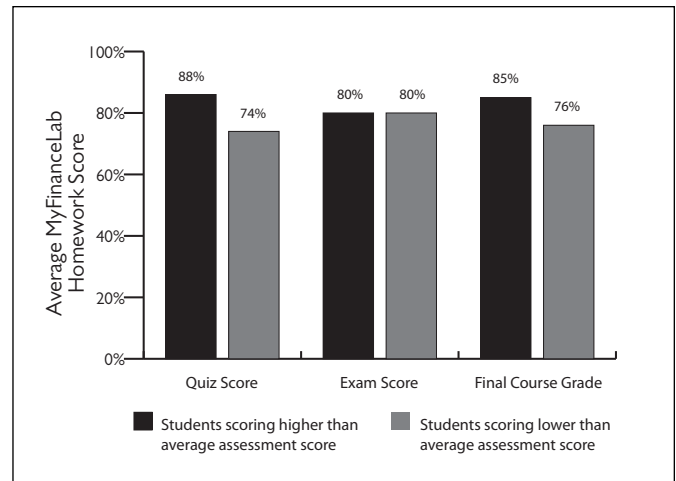


Figure 4. Relationship between Average MyFinanceLab Scores and Course Assessment Scores based on Average Assessment Scores, Fall 2014 (n = 42)

- Students who scored above the average final course grade earned an average MyFinanceLab grade 12 percent higher than students who scored below the average final course grade.

### The Student Experience

Responses from a voluntary, fall 2014 student survey indicate that the students surveyed make the connection between use of MyFinanceLab and increased understanding.

- 90%** Agree or strongly agree that their understanding of the course material increased as a result of using MyFinanceLab.
- 74%** Agree or strongly agree that the use of MyFinanceLab positively impacted their exam scores.
- 93%** Agree or strongly agree that MyFinanceLab provided additional resources that helped them learn more than they would have from more traditional pencil-and-paper homework.

*Hernandez reports that since implementing MyFinanceLab and flipping his classroom, students spend less time at his office hours, come to class better prepared and ready to problem solve, and are generally more engaged during class.*

On the same survey, when asked what they liked best about MyFinanceLab, student answers included the following:

*"[MyFinanceLab] showed me my progress for each assignment on a graph that helped me visualize where I stood with my grades."*

*"I liked the Similar Question aspect on the quizzes. If I didn't know how to do a problem, but grasped the concept, [the program] showed me how to do any problems that weren't straightforward."*

*"I liked the Help Me Solve This tool. I could see how to do the problem and learn from my mistakes."*

*"[MyFinanceLab] was easy to work with. It had many options to help me study."*

## Conclusion

Hernandez reports that since implementing MyFinanceLab and flipping his classroom, students spend less time at his office hours, come to class better prepared and ready to problem solve, and are generally more engaged during class. Because students pick up chapter basics in preclass MyFinanceLab work, Hernandez now is able to spend class time reviewing difficult topics, working through more-challenging homework problems, and pointing out potential pitfalls. This observation is supported by Matt Stoltzfus, a lecturer at Ohio State University who also teaches large, introductory classes via the flipped model. According to Stoltzfus, "The [flipped] model provides more meaningful interactions for students and teachers by giving teachers higher-quality face time with students."<sup>1</sup> In addition, MyFinanceLab enables Hernandez to require that students take responsibility for their learning outside the classroom, so that deeper critical thinking and conceptual learning can take place inside his classroom.

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1. Brian Lukoff and Matthew Stoltzfus, "Professors: Here's How to Flip Your Classroom," eCampus News, March 24, 2014, <http://www.ecampusnews.com/top-news/professors-flipped-classroom-425/>.

## MyITLab

School Name MacEwan University, Edmonton, Alberta, Canada  
Course Name Business Computing  
Course Format Flipped, blended, ebook

**Key Results** Data indicate strong positive correlations between MyITLab training assignments and MyITLab Grader Projects and between MyITLab Grader Projects and average exam grades, suggesting positive relationships exist between successive course assignments. In addition, students who earn higher Grader Project scores perform better on exams and earn higher final course grades.

### Submitted by

Randy Jenne, Associate Professor

### Course materials

*Exploring Microsoft Office 2013, Volume 1 and 2* (ebook), Canadian edition, Poatsy, et al.

### Setting

MacEwan University serves more than 19,000 full- and part-time students across three urban campuses. The largest of the three campuses, City Centre, spans six city blocks in downtown Edmonton. Students are an average of 23 years old; 65 percent are women, 35 percent are men.

Business Computing is a one-semester, three-credit course taken by approximately 700 business certificate and diploma students each year. Students use the Windows operating system to develop foundational skills in the areas of file management, word processing, spreadsheets, presentation software, and emerging technologies to both support them in subsequent courses and prepare them for the business world. Projects emphasize problem solving, data analysis, and the use of Internet communication tools.

### Challenges and Goals

Randy Jenne, associate professor, piloted MyITLab in 2008 after being disappointed by a different online homework management program. Jenne was specifically interested in offering his students training simulations, as well as comprehensive exercises and assignments in Word, Excel, and PowerPoint to enable the kind of rich, hands-on learning that a simple lecture format cannot provide.

### Implementation

Jenne employs a flipped classroom in which MyITLab is used to teach basic concepts, as well as for practice and homework. Students work at their own pace, but have firm due dates for assignment submissions. Students complete required MyITLab Skill Trainings before midnight of each lecture. They have unlimited attempts to complete their assignments, usually four per application. Lectures are conducted in a lab setting—approximately one half is spent addressing challenging chapter content; during the other half, students begin MyITLab Grader Project assignments, which are due at midnight that night and on which they have unlimited attempts. For both Skill Trainings and Grader Projects, all learning aids are turned on and students' highest scores are recorded as their final grades.

After students complete all the chapters (three to four) in a given application, Jenne uses the MyITLab project creation tool to generate a cumulative capstone project that covers all skills and is graded in MyITLab. He also creates an exam that is similar to the capstone project and that requires students to work in Microsoft applications. The exams are hands-on, with students applying the knowledge and skills they've learned using Word, Excel, and PowerPoint.

In addition, Jenne has developed a series of five-minute “how to” videos to explain the most difficult topics in each application. Students are encouraged to use these videos for review, homework, and exam preparation.

By the end of the course, students will have completed a total of 12 simulation trainings, 12 Grader Projects, and 3 exams in MyITLab.

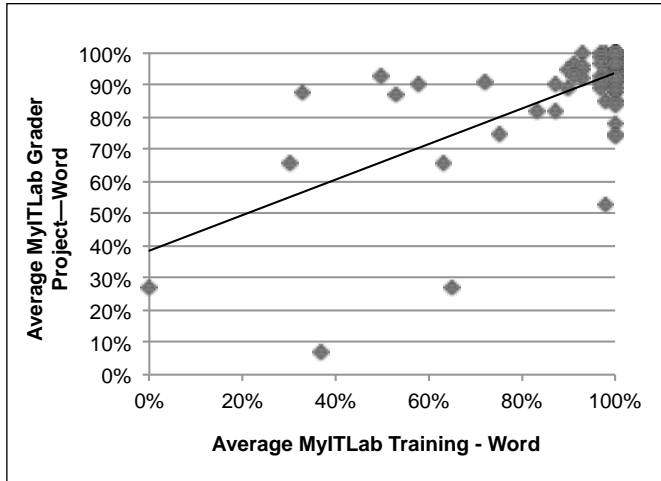


Figure 1. Correlation between Average MyITLab Word Training Simulation and Grader Project Scores, Winter 2015 (n = 76)

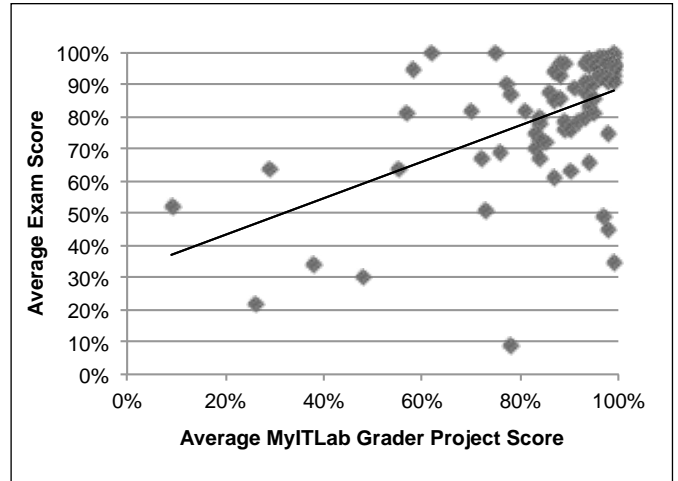


Figure 2. Correlation between Average MyITLab Grader Project Scores and Average Exam Scores, Winter 2015 (n = 76)

**Assessments**

- 18 percent MyITLab Grader Projects
- 17 percent MyITLab trainer activities
- 16 percent Excel exam
- 10 percent PowerPoint exam
- 10 percent Word exam
- 8 percent Excel capstone project
- 5 percent File management capstone project
- 5 percent PowerPoint capstone project
- 5 percent Publisher/emerging technologies capstone project
- 5 percent Word capstone project
- 1 percent Quizzes

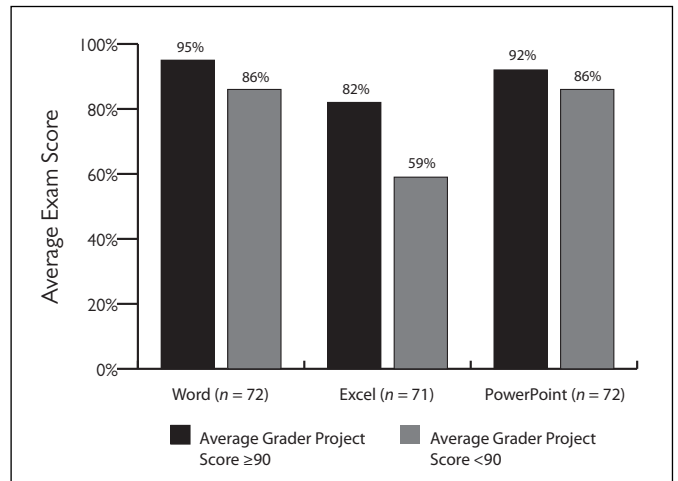


Figure 3. Comparison of Average Exam Scores per Application by Grader Project Scores, Winter 2015 (Word ≥ 90 percent, n = 46, < 90 percent, n = 22; Excel ≥ 90 percent, n = 30, < 90 percent, n = 39; PowerPoint ≥ 90 percent, n = 56, < 90 percent, n = 15)

**Results and Data**

Student performance data from Word training simulations and Grader Projects indicate a strong, positive correlation where  $r = .65$ ,  $p$  value  $< .001$ , suggesting a positive relationship between success on the simulation trainings and the Grader Projects (Figure 1).

Figure 2 shows a strong, positive correlation ( $r = .52$ ,  $p$  value  $< .001$ ) of overall average MyITLab Grader Project scores to average exam scores. Jenne chose 90 percent as the cut point for his analysis and split the class into two groups: students who earned 90 percent or higher on Grader Projects, and students who earned less than 90 percent. Students who earned, on average, greater than 90 percent on Grader Projects also

earned higher average exam scores on all three applications (Figure 3). This suggests that working to achieve higher scores on Grader Projects may successfully prepare students for MyITLab application exams. (Only students who completed Grader Projects and took the corresponding exams were included in this analysis.)

Data also indicate a very strong, positive correlation between the number of completed MyITLab assignments and a student’s final course grade (Figure 4). Skipping training assignments and student final grades show a very strong correlation ( $r = .90$ ,  $p$  value  $< .01$ ), as did skipping exams ( $r = .93$ ,  $p$  value  $< .01$ ), and Grader Projects ( $r = .77$ ,  $p$  value  $< .01$ ). On average, students

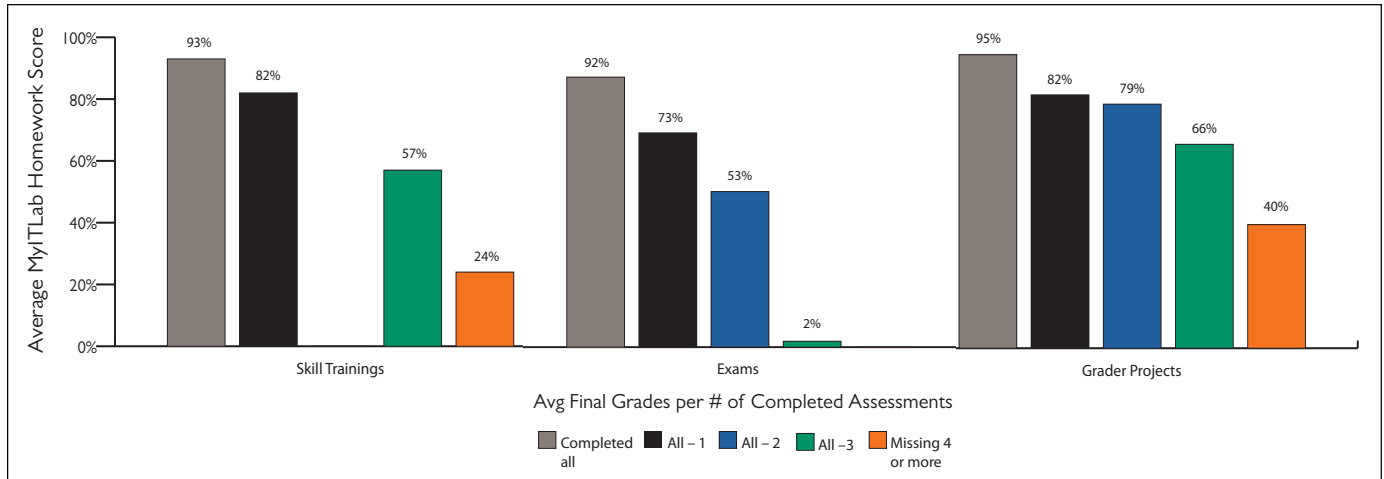


Figure 4. Correlation between Number of Completed Assignments and Students' Grades per Type of Assessment, Winter 2015 ( $n = 76$ )

who missed three or more out of a total of 22 assignments received a failing grade in the course while, on average, students who missed three or fewer assignments received a passing grade in the course. Those students who completed all 22 assignments consistently scored the highest final grades.

### The Student Experience

At the end of the fall 2014 semester, students were asked to participate in an eight-question survey about their use of MyITLab and its impact on their learning and assessments. Twenty percent of the students agreed to participate in the survey.

**100%** Agreed or strongly agreed that their understanding of course material increased as a result of using MyITLab.

**95%** Agreed or strongly agreed that the use of MyITLab positively affected their quiz and exam scores.

When asked what they liked best about MyITLab, student responses included the following:

*"The [skill trainings]. It was great to be able to go back and watch how to do things."*

*"MyITLab was easy to follow. It showed me how to complete steps when I was stuck. I took full advantage of these features and would recommend them to anyone taking a course with MyITLab."*

*"The learning aids. There is no way to not understand a subject if a student uses them. They make studying fun."*

*"The marked-up report because it showed me in detail what areas I needed improvement on."*

*Students who earned, on average, greater than 90 percent on Grader Projects also earned higher average exam scores on all three applications. This suggests that working to achieve higher scores on Grader Projects can successfully prepare students for MyITLab application exams.*

### Conclusion

Implementing MyITLab in a flipped classroom has changed how Jenne teaches. Because many of today's students are less willing to passively sit through a PowerPoint lecture or even read a textbook, Jenne requires assignments be completed *prior* to lectures. Knowing that MyITLab has covered the basics enables him to focus lectures on the course's most challenging topics.

Thanks to Jenne's clear schedule and mandatory timetable for assignment completion, students are able to work more independently. Jenne reports that some students complete assignments well ahead of the due dates. In fact, Jenne also reports that students in the flipped/blended environment attend class less frequently because their work in MyITLab takes the place of learning concepts via lecture. "The need for lecture depends on what type of learner the student is," says Jenne. "With MyITLab, traditional lecture is no longer the only—or even the best—way to teach this course." As a result of fewer students attending lectures, Jenne's future plans include possibly scheduling two sections at the same time.

## MyITLab

|               |  |
|---------------|--|
| School Name   | Northern Illinois University, DeKalb, IL     |
| Course Name   | Introduction to Business Information Systems |
| Course Format | Flipped, hybrid, ebook only                  |

**Key Results** Data indicate that MyITLab homework scores may be an indication of future success on quizzes, final exams, and final course grades. Students who earned higher MyITLab scores had consistently higher letter grades across all course assessments. MyITLab completion rates are also indicative of higher quiz and final exam scores.

### Submitted by

Chuck Downing, Presidential Teaching Professor

### Course materials

MyITLab and *Exploring 2013*, Vol. 1 (eText), Poatsy

### Setting

Northern Illinois University is a four-year public university in a college-town setting. The school serves more than 21,000 students from a main campus in DeKalb and satellite centers in Hoffman Estates, Naperville, Rockford, and Oregon, Illinois. The average undergraduate age is 22.6 years, 75 percent attend full time, and 40 percent identify as a minority.

Introduction to Business Information Systems is a one-semester, three-credit course enrolling approximately 1,000 students per year. Required by all students in the School of Business, the course emphasizes technology literacy to enhance business decision making, provide business intelligence, and improve organizational efficiency and effectiveness. The course employs Microsoft desktop applications and a variety of Web applications.

Introduction to Business Information Systems is a Course Transformation Project (CTP), a course redesign intended to promote higher-level learning outcomes via increased student engagement. The course includes interactive exercises designed to help students better learn and understand the material, as well as interactive lectures and experiential activities. To enable increased interaction, a significant amount of class materials are administered via MyITLab, which is designed to make class more enjoyable and effective and to facilitate hands-on learning with less classroom attendance. Students must be present for specific classes to complete experiential activities and participate in lectures; other classes are optional.

### Challenges and Goals

In 2010, the College of Business identified a need for a new Information Systems course that would provide their business students with the background in Excel and Access necessary to pursue and complete the courses that comprise their 4 year business curriculum. Many business courses were spending too much time teaching students how to use these common desktop applications and not getting to the more important course content. Being designated as part of the CTP, 30% of the course content had to be available in a media rich online environment so students could complete pre-work before attending lecture. Additionally, lectures were to be more interactive and engaging, and the digital program chosen would need to provide instructors with in-class activities as well. Downing and his colleagues would be working with large sections, being tasked with doing more with less, so the digital resource adopted would be used for grading and testing, too. Ultimately, MyITLab was chosen for its simulated environment and its ability to provide comprehensive application projects that could be used as both homework and assessment.

### Implementation

#### MyITLab assignments

- Skill Based Trainings: Students are allowed unlimited attempts, contributes 10 percent of the MITL grade, due Wednesdays at 12 a.m.
- Grader Project homework: Contributes 10 percent of the MITL grade, due Wednesdays by 12 a.m.
- Skill Based Exams: Contributes 40 percent of the MITL grade, due Thursdays by 12 a.m.
- Grader Project Assessment: Students are allowed two attempts, contributes 40 percent of the MITL grade, due Thursdays by 12 a.m.



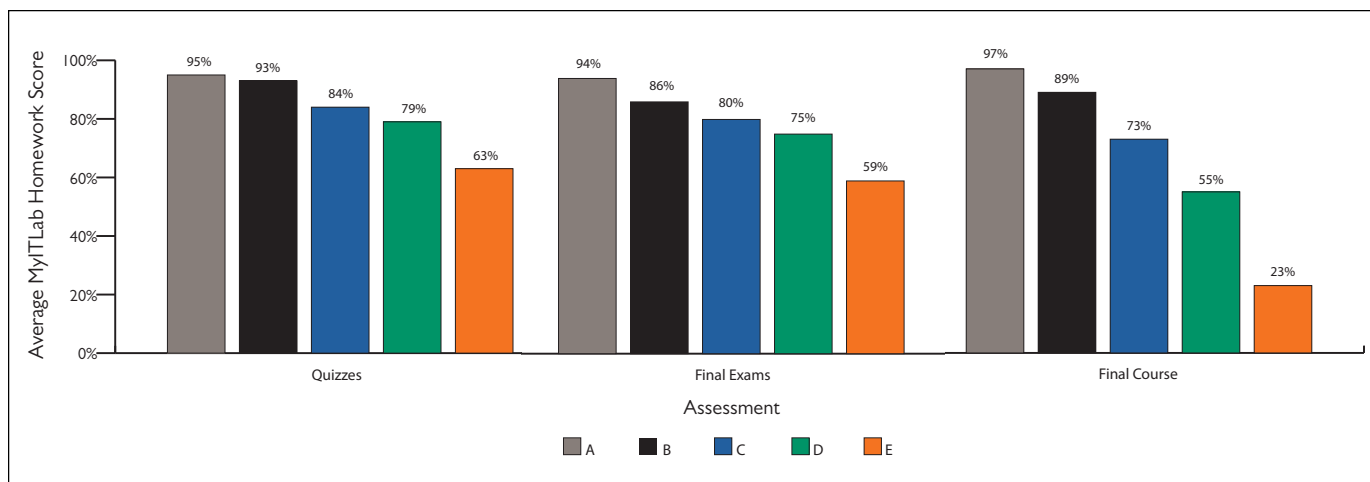


Figure 1. Grade Distribution by Average MyITLab Homework Scores per Average Quiz, Final Exam, and Final Course Grades, Fall 2014 ( $N = 288$ ; quizzes:  $A n = 48$ ,  $B n = 135$ ,  $C n = 79$ ,  $D n = 17$ ,  $F n = 38$ ; final exams:  $A n = 19$ ,  $B n = 103$ ,  $C n = 116$ ,  $D n = 41$ ,  $F n = 9$ ; final course:  $A n = 12$ ,  $B n = 49$ ,  $C n = 107$ ,  $D n = 82$ ,  $F n = 9$ )

Students may opt not to complete initial Skill Based Trainings and Grader Project homework. If so, their Skill Based Exam and Grader Project assessment scores will count for 50 percent of their MITL assignment grades. Students are encouraged, however, to complete the trainings and the Grader Project homework as the option to skip these assignments is intended for more-advanced students who already know much of the material. In addition, if the Skill Based Exam or Grader Project assessment grade is higher than the corresponding Skill Based Training or Grader Project homework grades, the Skill Based Exam or Grader Project assessment grade will count as 50 percent.

### Quizzes

Students complete seven in-class, paper-and-pencil quizzes worth 25 points each. Quizzes are based primarily on MyITLab assignments, but also include content from lecture. Students receive a zero for missed quizzes, there are no make-ups, and the lowest quiz grade is dropped before calculation of the final quiz grade.

### Final exam

The final exam is a cumulative, in-class, paper-and-pencil exam; the design is similar to that of the quizzes.

### Participation

Despite being a hybrid course—leading to the potential for less in-class time—much of the learning in the course is designed to come from a thoughtful exchange of ideas during class. To promote participation, use of a personal response system was instituted and responding to clicker questions is required. Approximately 10 questions are asked per lecture; students may discuss answers with peers, but their responses must be recorded within 30 seconds. Participation grades are based on

correct responses; the lowest 10 percent of the total scores is dropped. Downing reports that the use of clickers has resulted in students paying closer attention to lecture content and engaging more in class.

### Assessments

|            |                                   |
|------------|-----------------------------------|
| 25 percent | MyITLab exercises and exams       |
| 25 percent | Quizzes (seven)                   |
| 25 percent | Final exam                        |
| 15 percent | Participation                     |
| 10 percent | Group process: technology project |

## Results and Data

A comparison of total average MyITLab homework scores and average quiz, final exam, and final course grades suggests that MyITLab homework scores may be good indications of future assessment grades (Figure 1).

- Students earning an A average on quizzes had total average MyITLab homework scores of 95 percent.
- Students earning a D or F average on quizzes had total average MyITLab homework scores of 74 percent.
- Students earning an A average on the final exam had total average MyITLab homework scores of 94 percent.
- Students earning a D or F average on the final exam had total average MyITLab homework scores of 72 percent.

Figures 2 and 3 (on the following page) are correlations that measure the strength of the relationship between total average

*Students who completed more than the average number of skipped assignments had both higher quiz averages and higher final exam grades.*

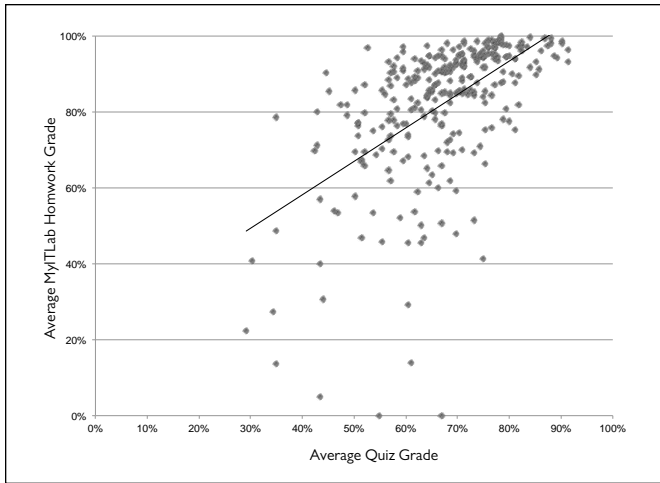


Figure 2. Correlation between the Average MyITLab Homework Grades and Average Quiz Grades, Fall 2014 (n = 288)

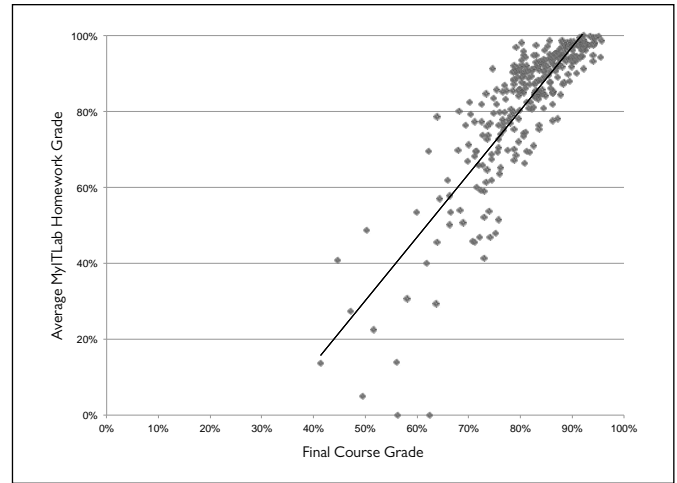


Figure 3. Correlation between the Average MyITLab Homework Grades and Final Course Grades, Fall 2014 (n = 288)

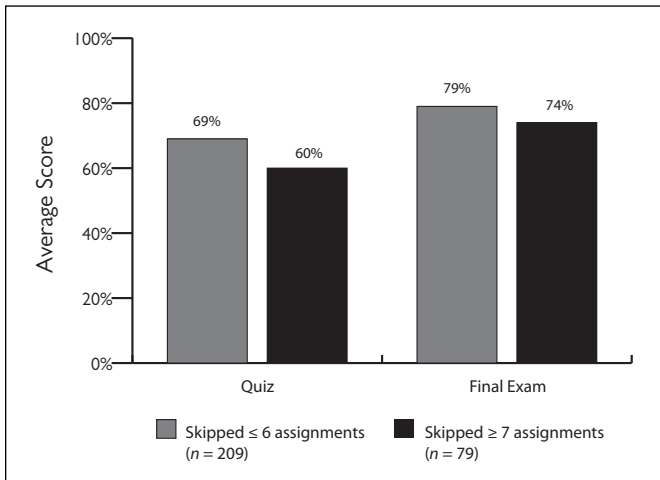


Figure 4. Relationship of Homework Completion Rates to Average Quiz and Final Exam Grades, Fall 2014 (n = 288)

MyITLab homework grades to average quiz and final course grades. Correlations do not imply causation but instead measure the strength of a relationship between two variables. The *p* value measures the statistical significance/strength of this evidence (the correlation); *p* value < .01 is considered strong evidence. A strong positive correlation where  $r = .56$ , *p* value < .01 exists for MyITLab homework to average quiz grade and a very strong positive correlation where  $r = .85$ , *p* value < .01 exists for MyITLab homework to final course grade. Instructors may find the MyITLab scores an indication of students in need of additional support or under course stress and in need of intervention.

MyITLab assignment completion was also assessed. Figure 4 shows a positive relationship between the number of completed assignments and a student's average quiz and final exam grades. Students were placed into two groups based on the average number of skipped assignments (seven). Students who completed more than the average number of skipped assignments had both higher quiz averages and higher final exam grades.

- Average number of skipped assignments: 7
- Students who skipped six or fewer assignments had average quiz scores 15 percent higher than students who skipped seven or more assignments.

- Students who completed all assignments had average quiz grades 20 percent higher than students who skipped seven or more assignments.
- Students who completed all assignments had average final exam grades 8 percent higher than students who skipped seven or more assignments.

## The Student Experience

In fall 2014, students were asked to participate in a voluntary, 10-question, end-of-semester survey administered by Downing. Survey questions covered students' use of MyITLab and its impact on their learning and assessment. Of the 87 percent of students who responded:

- 88%** Indicate that they always or usually used the available learning aids in MyITLab when unable to start or complete a homework assignment.
- 79%** Agree or strongly agree that MyITLab provided additional resources that helped them learn more than they would have from traditional paper and pencil homework.
- 76%** Agree or strongly agree that their understanding of the course material increased as a result of using MyITLab.
- 61%** Agree or strongly agree that they would recommend MyITLab for other courses for which it is available.
- 50%** Agree or strongly agree that the use of MyITLab positively impacted their quiz and exam scores.

*[T]he interactive nature of MyITLab was a contributing factor in helping the university to redesign the course and to achieve its goals of increased student engagement, improved learning outcomes, and greater interaction and collaboration during in-class sessions.*

## Conclusion

In his flipped, hybrid course environment, Downing reports that MyITLab is a critical component of the course implementation. "I wouldn't teach this course without MyITLab," he says. While homework and repetitive practice is the key to learning Microsoft applications, the interactive nature of MyITLab was a contributing factor in helping the university to redesign the course and to achieve its goals of increased student engagement, improved learning outcomes, and greater interaction and collaboration during in-class sessions.

## MyManagementLab

School Name Oakton Community College, Des Plaines, IL

Course Name Introduction to Global Studies

Course Format Lecture, flipped

**Key Results** Students who earned higher MyManagementLab homework scores also earned higher average exam scores. In addition, data indicate very strong positive correlations between average MyManagementLab homework scores and average exam scores, as well as between average MyManagementLab video quiz scores and average MyManagementLab Simulation scores.

### Submitted by

Lisa Cherivtch, Associate Professor

### Course materials

MyManagementLab and *International Business: The Challenges of Globalization*, Wild and Wild

### Setting

Oakton Community College is a two-year community college serving Chicago's North Shore suburbs. From campuses in Des Plaines and Skokie, the college offers associate's degree programs and noncredit courses to more than 11,000 students per year. Fifty-five percent of the school's students are between the ages of 18 and 24, 73 percent attend part time, and approximately 50 percent are from minority backgrounds.

Introduction to Global Business is a one-semester, three-credit course open to all students, but of most interest to those seeking additional business electives. The course offers students a solid foundation for further global business studies. Topics include current world trade activities and practices, government aids, and barriers to trade. Also covered are economic, geographic, political, and transportation issues, cultural differences affecting trade and traffic, and the documentation, financing, and marketing of international business.

### Challenges and Goals

Final course grades in Associate Professor Lisa Cherivtch's Introduction to Global Business course were lower than she desired. Having previously used MyBizLab in another course, she was familiar with the range of pre- and post-lecture activities available in the MyLab programs and sought a similar digital product to encourage greater student engagement with her course content. She implemented MyManagementLab in 2010.

### Implementation

Students perform the following activities in MyManagementLab before each lecture:

- Read a textbook chapter.
- View a video exercise and answer the five questions that follow it.
- Complete a simulation and take a 10 question quiz.

To promote increased exposure to the material, greater opportunities for practice, and to support lecture activities and group work, Cherivtch offers credit for completed homework. In addition, students are allowed multiple attempts and are not penalized for incorrect responses. Accurate scores are managed in the MyManagementLab gradebook, which in turn facilitated the data analyses on the following pages.

Assessments outside of MyManagementLab include four exams, two case studies, and in-class mini projects. For an international element, Cherivtch has her students collaborate with students in Austria on a project regarding global issues in the work environment, such as time zones, working via the Internet, and partnering in groups while working remotely.

Late assignments are assessed penalties: 10 percent for up to 12 hours late, 25 percent for up to 24 hours late, and so forth. No work is accepted more than 72 hours past the deadline.

### Assessments

|            |  |
|------------|--|
| 33 percent | Exams (four)                               |
| 20 percent | In-class activities (mini projects)        |
| 16 percent | Training project                           |
| 12 percent | MyManagementLab video quizzes (15)         |
| 11 percent | MyManagementLab simulation quizzes (seven) |
| 8 percent  | Case studies (two)                         |

*Students who skipped three or fewer homework assignments earned an average of eight percent (six percentage points) higher exam grades than did students who skipped four or more homework assignments—the letter grade difference between a B and a C.*

## Results and Data

Figure 1 shows that those students who earned higher MyManagementLab homework scores generally earned higher average exam grades. Students who earned A exam averages scored an average of 93 percent on their MyManagementLab homework. Similarly, students who earned D exam averages scored an average of 67 percent on their MyManagementLab homework.

MyManagementLab homework completion rates were analyzed to determine if a relationship exists between completion and exam grades. Figure 2 shows that students who skipped three or fewer homework assignments earned an average of eight percent (six percentage points) higher exam grades than did students who skipped four or more homework assignments—the letter grade difference between a B and a C.

- 3.7** Average number of skipped assignments
- 84%** Average exam score for students who did not skip any assignments
- 74%** Average exam score for students who skipped at least one assignment
- 67%** Average MyManagementLab score for students who earned an exam average of D or F
- 65%** Percentage of students who skipped at least one homework assignment

Figure 3 shows the correlation between average MyManagementLab Video Exercise scores and average MyManagementLab Simulation Exercise scores: a very strong positive correlation exists where  $r = .84$  and  $p$  value  $< .001$ . Similarly, a strong positive correlation exists between MyManagementLab homework scores and average exam grades, where  $r = .54$  and  $p$  value  $= .01$  (Figure 4). These results suggest that MyManagementLab scores may help students identify where they stand in terms of exam and overall course success, and may help instructors identify students who are struggling and at risk of poor overall course performance.

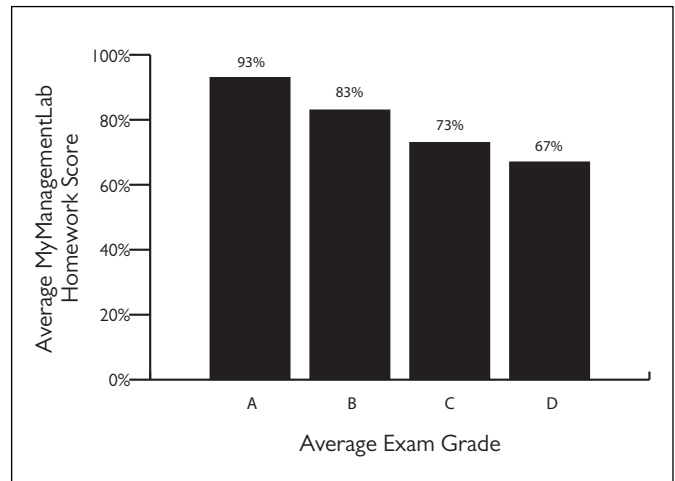


Figure 1. Relationship between MyManagementLab Homework Scores and Average Exam Grades, Fall 2014 ( $n = 20$ )

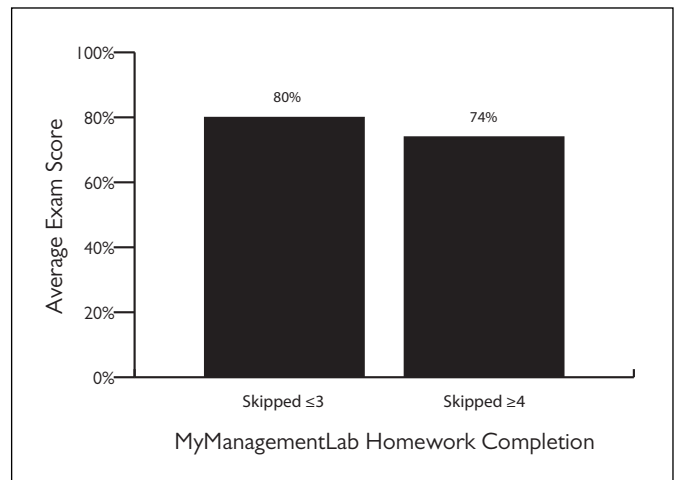


Figure 2. Relationship between MyManagementLab Homework Completion and Average Exam Scores, Fall 2014 ( $n = 20$ )

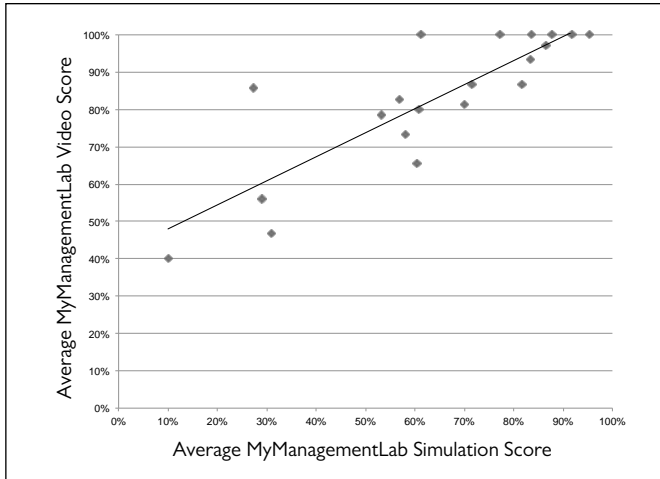


Figure 3. Correlation between Average MyManagementLab Video Assignment Scores and Average MyManagementLab Simulation Assignment Scores, Fall 2014 ( $n = 20$ )

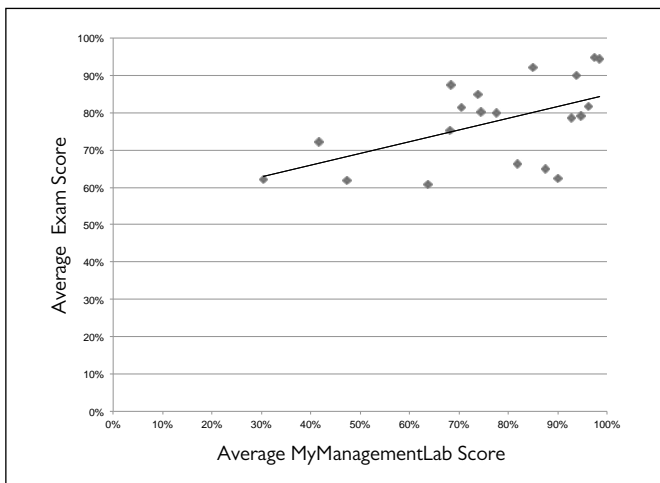


Figure 4. Correlation between Average MyManagementLab Homework Scores and Average Exam Scores, Fall 2014 ( $n = 20$ )

## The Student Experience

Responses from a fall 2014 end-of-semester student survey indicate that the majority of students recognize the value of MyManagementLab.

**64%** of participating students said they would recommend MyManagementLab for courses in which it is available.

On the same survey, when asked what they liked best about MyManagementLab, student answers included the following:

*“It had good video presentations and was very straightforward.”*

*“It grades everything right away instead of having the professor take a week or more to get it graded.”*

*“It is very easy to use and simple.”*

*“The idea of doing homework online was interesting to me.”*

## Conclusion

MyManagementLab provides a variety of benefits to both Cherivtch and her students. Because she comes from an industry background, Cherivtch knows first-hand the value of exposing students to real-world situations. By bringing the world of international business into the classroom, the program enables Cherivtch to be more than just a lecturer—she can share and extend her rich experience in business with her students and involve them in real-world decision-making and critical-thinking processes. Now that students learn core concepts via MyManagementLab before lecture, Cherivtch reports that she needs only 35–40 minutes for traditional lecturing and can spend the remaining time on creative, interactive, and group activities.

Cherivtch also reports that her students come to class more informed since she implemented MyManagementLab and a flipped classroom approach, that the quality of their questions is more advanced, and that student engagement has improved. MyManagementLab’s rich media elements facilitate the quick and easy incorporation of new activities and lecture add-ons.

Future plans include the possibility of incorporating the newest components of MyManagementLab to homework assignments.

## NovEx

School Name State University of New York, Suffolk County Community College, Suffolk, NY  
Course Name Adult Physical Health Nursing I  
Course Format Web-enhanced lecture, flipped, clinical

**Key Results** Data indicate that students using the NovEx program earned ATI scores five percent higher than students who did not complete the course using NovEx. In addition, the percentage of students earning a level 2 or 3 on the ATI test was 20 percent higher than the previous cohort which did not use NovEx, indicating that more students are likely to achieve higher scores on the NCLEX exam.

### Submitted by

Sue McCabe, Associate Professor  
Helene Winstanley, Professor

### Course materials

NovEx cases used for oxygenation topics (pneumonia, tuberculosis, asthma, COPD, tracheostomy), immune topics (immune excess, sepsis) and perfusion topics (hypertension)

### Setting

Suffolk County Community College, sponsored by the State University of New York and Suffolk County, is a two-year public college on Long Island, NY, with three campuses: Brentwood, Riverhead, and Selden. Its School of Nursing prepares students for associate nursing degrees via both day and evening programs at the Selden campus. Students form a diverse demographic: baby boomers to millennials and tech savvy to digitally naïve; the average student age is 35 years. The school is fully accredited by the Accreditation Commission for Education in Nursing.

Adult Physical Health Nursing I is a five-credit course required of all nursing majors and comprising 2.5 hours of lecture, 2 hours of nursing lab, 1 hour of clinical simulation, and 3.5 hours of clinical. It is the first course of a two-semester, medical-surgical sequence and enrolls 170 students per year. This course continues student learning around the delivery of patient- and family-centered care with an emphasis on critical thinking to plan and prioritize individual adult health care needs. The application of emerging concepts in pharmacology, nursing process, caring, health promotion and maintenance, communication, documentation, teaching and learning, teamwork and collaboration, legal and ethical principles, evidence-based practice, quality improvement, and informatics are incorporated into the course.

### Challenges and Goals

Sue McCabe, associate professor, Helene Winstanley, professor, and their colleagues embraced the Carnegie Foundation report by Dr. Patricia Benner that called for changes in nurse education, emphasized stronger integration of clinical and classroom instruction, and stressed more rigorous scholarship demands on nursing students in several content areas, including nursing science and technology. They agreed that a more active learning environment could decrease the knowledge gap between what students learned about nursing from books and real nursing practice. Furthermore, McCabe and Winstanley recognized that the bedside experience during clinical provides the richest learning environment for nursing students. In spring 2015, McCabe and Winstanley piloted a redesigned flipped classroom model using NovEx and its unique case format.

### Spring 2015 pilot

The purpose of the pilot was to determine the efficacy of technology-assisted situated coaching using NovEx Cases and to measure its impact on outcomes in nursing knowledge, clinical reasoning, clinical competency, and ethical comportment in Adult Physical Health Nursing I students.

Nursing knowledge was assessed by standardized assessment; clinical reasoning, clinical competency, and ethical comportment was assessed in clinicals using the Creighton Competency Evaluation Instrument (CCEI) and in simulations using the Lasater clinical judgment rubric (LCJR).

Evidence-based rubrics were used to measure performance in clinicals and simulations. Participating faculty completed required training, leveling, and testing at various proficiency levels to ensure the interreliability of tool/rubric scores. Collected data was analyzed to determine if the use of NovEx cases in Adult Physical Health Nursing I impacted outcomes in these areas.

*NovEx was used to teach students new concepts and enable them to practice what they were learning both at home and in class. The instructor's role was to assign content, introduce new concepts, and support active learning activities in class.*

## Implementation

NovEx is a digital, situated-learning solution that helps move students beyond the development of critical-thinking skills to the clinical-reasoning and problem-solving skills required of professional nurses. The program enmeshes lecture with clinical, bringing clinical information into the classroom. NovEx cases provided students with practice-centered experiences that were aligned with evidence-based content designed to enhance clinical knowledge.

### Teaching methods

Teaching methods included NovEx cases, unfolding case studies using situated coaching where students worked collaboratively in the role of a registered nurse and responded to the patient situation. In addition, online resources, clinical experiences, clinical simulations, and a clinical skills labs were utilized.

NovEx was used to teach students new concepts and enable them to practice what they were learning both at home and in class. The instructor's role was to assign content, introduce new concepts, and support active learning activities in class. Program components in the classroom included the following:

- **NovEx lessons.** Digital lessons designed to replace text-book readings and classroom lectures. Students completed two to four lessons per week as lecture prep in the flipped classroom. Students were expected to spend up to two hours per topic in NovEx before each lecture.
- **NovEx cases.** Cases included patient evaluations after intervention and were based on real patient situations.
- **NovEx coaching cases.** Coaching cases were used in lecture and included one to three context-specific questions per week embedded in e-cases. Coaching cases encourage students to think like nurses and help McCabe and Winstanley share their clinical experiences.

Students worked in teams on simulation activities that promoted quality and safety. Before the use of clinical simulations, students might have done incorrect or inappropriate things during clinicals, as the professor could not oversee everyone at the same time. Simulation activities engaged students and helped them develop reasoning and imagination skills; the

team format offered an opportunity for peer assessment and facilitated student preparation.

### Approach to case coaching

Case coaching was completed in several steps. First, students were debriefed using prep practice cases. Faculty then outlined what students should anticipate in caring for the client in the coaching case presented in class. Students mentally rehearsed/visualized their patient approach and any patterns of potential complications or concerns. They then guided the actions of a nurse in coaching cases and were encouraged to speak in the voice of a nurse in response to faculty-guided questions. Over time, students began to value listening to a patient before checking the vital signs. They were then debriefed on coaching cases with regard to strengths, weaknesses, and areas for improvement. Finally, instructors and students reviewed case reports, summaries of nursing actions submitted during the case, to learn what could be done better the next time.

### Instruments used for evaluation

- ATI Fundamentals Content Mastery Series® NCLEX 2013 test plan
- Pearson ReadyPoint Basic med-surg assessment (clinical reasoning, competency, and ethical comporment)
- CCEI
- LCJR

### Faculty training for instruments

- A faculty training video for CCEI and LCJR
- CCEI and LCJR discussion sheets for scoring simulation and clinical following training
- LCJR faculty scorers limited to three coinvestigators, who frequently partnered to score students' final simulations
- Simulation lab faculty were mentored by LCJR mentors from the study team.
- Clinical faculty were mentored by CCEI mentors from the study team.
- Student training video integrated into lab and clinical orientation



Students completed three faculty-developed exams: the first two comprised approximately 50 multiple-choice questions and/or alternate-item questions, the third comprised 75 multiple-choice questions. Questions mirrored NCLEX questions; content included material from both lecture and lab.

Dosage calculation students completed a dosage calculation test during the course. They were required to score at least 80 percent on their first attempt; if they did not, they could retake the exam once, and were required to score at least 90 percent on the subsequent exam.

Students needed to earn an average grade of at least a C (69.5 percent) in order to progress to the next level.

**Assessments**

- 95 percent Exams (multiple choice, three)
- 5 percent ATI Fundamentals Assessment Examination
- Pass/fail Laboratory skill competencies
- Pass/fail Clinical evaluation tool
- Pass/fail Written clinical assignments
- Pass/fail Dosage calculation test

Failing any course component resulted in failing the course.

**Results and Data**

McCabe and Winstanley modeled their pilot after a National Council of State Boards of Nursing (NCSBN) simulation study that compared simulation activities as a replacement for 10, 25, and 50 percent of clinical hours. Nursing knowledge was measured using both the ATI Fundamentals Content Mastery Assessment and a computer-based formative assessment available in Pearson’s Ready Point™ application. Clinical reasoning, competency, and ethical comportment were measured using the Creighton Clinical Competency Tool (CCEI) at each clinical session; the Lasater Clinical Judgment Rubric (LCJR) was scored at each simulation session.

*[A]fter implementation of NovEx in spring 2015, ATI scores increased five percent over fall 2014 ATI scores.*

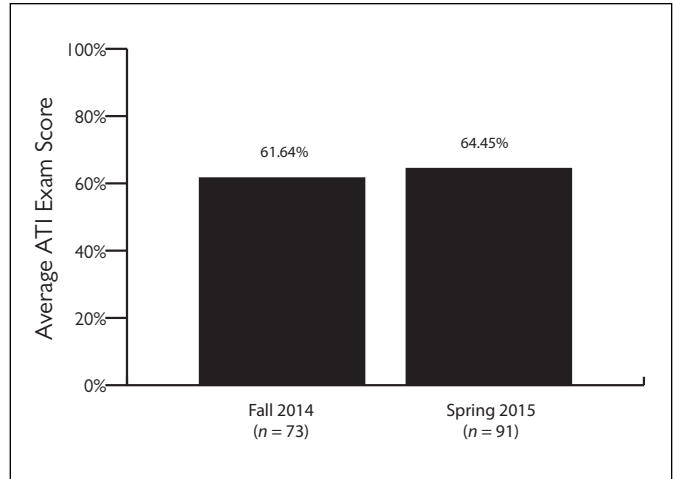


Figure 1. Average ATI Exam Scores, Fall 2014 and Spring 2015

|                     | Fall 2014 ATI<br>(n = 73) | Spring 2015 ATI<br>(n = 91) |
|---------------------|---------------------------|-----------------------------|
| Mean                | 62%                       | 64%                         |
| Variance            | 0.8%                      | 0.7%                        |
| Standard Deviation  | 9%                        | 8%                          |
| Observations        | 73%                       | 91%                         |
| Pooled Variance     | .07%                      |                             |
| df                  | 162                       |                             |
| t Stat              | -2.07                     |                             |
| P(T ≤ t) one-tail   | 0.02                      |                             |
| t Critical one-tail | 1.65, significant at .05  |                             |

Table 1. ATI Exam Grade t-Test (Two-Sample Assuming Equal Variances), Fall 2014 and Spring 2015

Fall 2014 students who did not use NovEx were scored in clinical, simulation, and proctored computer-based testing at the end of the semester. Their scores in nursing knowledge, clinical competency, clinical reasoning, and ethical comportment represented the control group. Students enrolled in Adult Physical Health Nursing I in spring 2015 used NovEx and participated in NovEx cases. They were scored in clinical, simulation, and proctored computer-based testing at the end of the semester.

After implementation of NovEx in spring 2015, ATI scores increased five percent over fall 2014 ATI scores (Figure 1). Students from spring 2015 (M = 64 percent, SD = 8 percent, n = 91) earned higher ATI scores than did students in fall 2014

*Students using NovEx scored a combined average of 22 percent higher on all 11 dimensions of the LCJR rubric than did students who took the course without NovEx.*

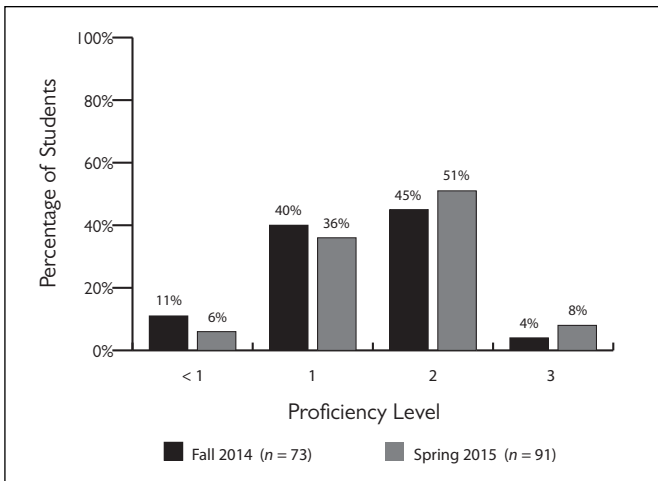


Figure 2. Proficiency Levels before and after Implementation of NovEx, Fall 2014 and Spring 2015

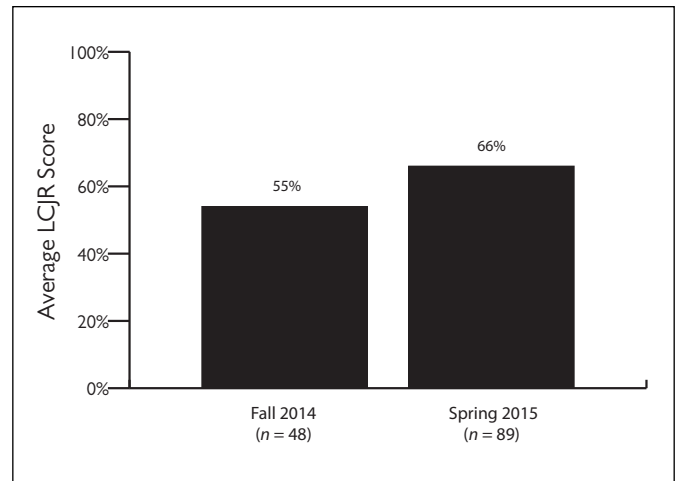


Figure 3. Average LCJR Scores before and after Implementation of NovEx, Fall 2014 and Spring 2015

( $M = 62$  percent,  $SD = 9$  percent,  $n = 73$ ). The increase is statistically significant where  $t(162) = -2.07$  and  $p < .05$  (Table 1).

According to ATI Testing, students who score a level two or three at the ATI proficiency level are expected to readily meet or exceed NCLRX-RN expectations for the content area. The percentage of students earning a two or three on the ATI test was 20 percent higher in spring 2015 after NovEx implementation (Figure 2), indicating that students in the pilot section were more likely to achieve higher scores on the NCLEX exam. The level 2 cut point is 63.3 percent.

The LCJR was scored at each simulation session and calculated for 11 dimensions with a maximum score of 4 per dimension. Figure 3 shows the average LCJR score before and after NovEx implementation. Students in spring 2015 (after implementation,  $n = 89$ ,  $M = 65.99$ ,  $SD = 11.07$ ) scored a combined total of 20 percent higher on all 11 dimensions on the LCJR rubric than did students who took the course without NovEx ( $n = 48$ ,  $M = 55.35$ ,  $SD = 7.01$ ). There was a significant effect for the intervention group,  $t(135) = 6.032$ ,  $p < 0.0001$ . In fall 2014, 48 students were scheduled for the simulation sessions due to time constraints; in spring 2015, 89 students (all but two absent students) were scored.

### The Student Experience

In spring 2015, students were asked to participate in a voluntary, end-of-semester survey administered by McCabe and Winstanley. Survey questions covered students' use of NovEx and its impact on their learning and assessment. Of the students who participated:

- 74%** Responded Yes when asked if their understanding of course material improved as a result of using NovEx for the full course.
- 67%** Responded Yes when asked if they would recommend NovEx to students taking this course in the future.
- 52%** Responded Yes when asked if their clinical confidence improved as a result of using NovEx.

In the same survey, McCabe's and Winstanley's students shared the following positive comments about NovEx.

*"I liked the scenarios that require critical thinking."*

*"It was very interactive and looked like a real hospital setting."*

*"It was interactive. I liked that I was able to gain clinical experience and knowledge by working through the cases."*

*McCabe and Winstanley believe that NovEx is helping them to diminish the practice–education gap that currently exists in nursing.*

*“My favorite part about NovEx was how realistic the case studies were. I thought the hospital room setup was very beneficial to my learning.”*

*“I liked how interactive the program was. Being able to click here and there and have several treatment options was beneficial to my learning because it allowed me to think critically.”*

### Conclusion

McCabe and Winstanley believe that NovEx can help them to diminish the practice–education gap that currently exists in nursing. In today’s highly specialized world, where no one faculty member can cover all areas of a course at an expert level, they rely on the learning aids in NovEx to help fill any gaps and integrate the online, classroom, and clinical learning experience.

### Best practices identified

- Leverage screencast video or equivalent to reinforce core content and support technology implementation.
- Provide video training for faculty on use of instruments and written, leveled, discussion sheets outlining performance requirements at each level.
- Make use of GOTO meeting or equivalent for study debriefing and clarification.
- Use study team members to function as CCEI and LCJR mentors to support faculty.
- Limit the number of CCEI and LCJR raters for simulation to minimize concerns with scoring.

### Lessons learned and future considerations

- Consider rewarding students who complete practice cases (participation points).
- Work with small groups doing practice cases for students who are struggling and timing out.
- Have an IT support plan for faculty and students and expect to a lot of initial handholding.
- Develop a communication plan to keep faculty consistently aware of study progress.
- When possible, consider the use of standardized assessments with extensive psychometric data.
- Consider providing an algorithm worksheet as a reference for students doing practice cases.

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## Fully Online Model

**C**OLLEGE STUDENTS LOGGING ON TO FULLY ONLINE courses bring with them a variety of instructional and personal experiences: some are taking their first online course, others have taken online courses before. Some students log on regularly, others access courses asynchronously, and still others check in less frequently. Many students never see one another, or their instructors, or even the physical campus associated with their institution. Some are self-disciplined about their schoolwork, and others lack self-direction.<sup>1</sup> Fortunately, online education has evolved beyond the static presentation of course materials that was typical in the earliest generations 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.<sup>2</sup> The challenge that remains, however, is to provide engaging, interactive tools that promote personal responsibility for learning and that motivate students to participate.

Creating an online course from scratch can be time consuming and expensive. Generally, both a subject matter expert and graphic designer are needed to help an instructor construct a professional-grade course that includes the following accepted best practices:<sup>3</sup>

- PowerPoints to share and explain concepts
- Hands-on activities, including demonstrations and simulations
- Graphics that portray steps in a process or pieces of a concept
- Learning games that keep students engaged, thinking critically, and having fun
- Course assessments that certify learning gains, including case studies and video assignments, custom feedback, and automatic and immediate scoring

*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. 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.*

When universities create online courses, the results can be erratic. Publishing companies have filled this gap by using their vast resources and textbook content and investing heavily in the creation of state-of-the-art digital technology. According to a recent survey, 34 percent of the 21 million students enrolled in degree programs in fall 2012 took at least one online course; one can understand why instructors are increasingly working with publisher content.<sup>4</sup> The six case studies on the following pages (College of Western Idaho, St. Philip's College, West Kentucky Community and Technical College, Georgia Regents University, Boise State University, and Zane State College) share the experiences of instructors who use a Pearson MyLab for their online course delivery.

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<sup>1</sup> A. 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.

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

<sup>3</sup> <http://elearningbrothers.com/ten-online-training-dos-and-donts/>.

<sup>4</sup> [http://www.slate.com/articles/life/education/2014/09/online\\_college\\_classes\\_textbook\\_companies\\_offer\\_courses\\_with\\_minimal\\_university.html](http://www.slate.com/articles/life/education/2014/09/online_college_classes_textbook_companies_offer_courses_with_minimal_university.html).

## MyAccountingLab

School Name College of Western Idaho, Nampa, ID  
Course Name Managerial Accounting  
Course Format Online

**Key Results** Data indicate very strong positive correlations between average MyAccountingLab homework scores and average MyAccountingLab quiz scores and between average MyAccountingLab quiz scores and average exam grades. In addition, students who completed all quizzes earned exam scores an average of six percentage points higher than those of students who skipped one or more quizzes.

### Submitted by

Joe Welker, Professor and Online Chair, Department of Business

### Course materials

MyAccountingLab and *Horngrén's Financial and Managerial Accounting*, Nobles, Harrison, and Oliver

### Setting

Established in 2007, College of Western Idaho is a two-year community college with main campus locations in the cities of Boise and Nampa. The college enrolls more than 20,000 students, half of which classify as for-credit. The majority of students (66 percent) attend part time; 45 percent are between the ages of 18 and 25; and 20 percent identify as Hispanic.

Managerial Accounting is a sophomore-level, three-credit course taken online over 16 weeks by approximately 50 students per semester. The course is required of all general business majors and Financial Accounting is a prerequisite. Course topics include an introduction to cost accounting principles and the use of such information in making business decisions with an emphasis on the use and analysis of accounting information. After completion of the course, successful students will understand how to communicate accounting information in writing; identify the major differences and similarities between financial and managerial accounting; and understand the cost behavior and computation of fixed, variable, and mixed costs, as well as the budgeting process and preparation of performance reports.

### Challenges and Goals

In 2011, Professor Joe Welker and his colleagues began transitioning the school's accounting program to include online courses. Top priority was finding an online resource that could offer students the practice and repetition they need to successfully master complex accounting skills, plus provide instructors both assessment options and grading functionality. Welker chose MyAccountingLab for its depth of multimedia assets and flexibility in terms of assignments and problem types.

### Implementation

Welker offers students 12–15 hours of course activities per week: reading text, viewing related media tools, completing homework, participating in online discussion board forums, and taking online quizzes and exams. Required weekly homework and assessments are completed in MyAccountingLab. Content is both opened and closed each Sunday at 11:59 p.m., giving students one week to complete all work for each chapter.

In order to open MyAccountingLab homework assignments, students must first view the Chapter Learning Objectives Outline in BlackBoard (summarized in the Instructor's Manual), review MyAccountingLab audio PowerPoint documents, and complete MyAccountingLab Demo Docs. Homework assignments may include a combination of multiple-choice questions, analytical scenarios, and Excel-based problems. Students are allowed unlimited attempts on homework—this is the repetition work that is critical to their learning and comprehension. Once students score at least 80 percent on their homework, they can opt to take the weekly MyAccountingLab quiz. Note that while students are only required to score 80 percent, Welker reports that during fall 2014, the average score was 96 percent—a powerful testament to the effort his students put into MyAccountingLab.

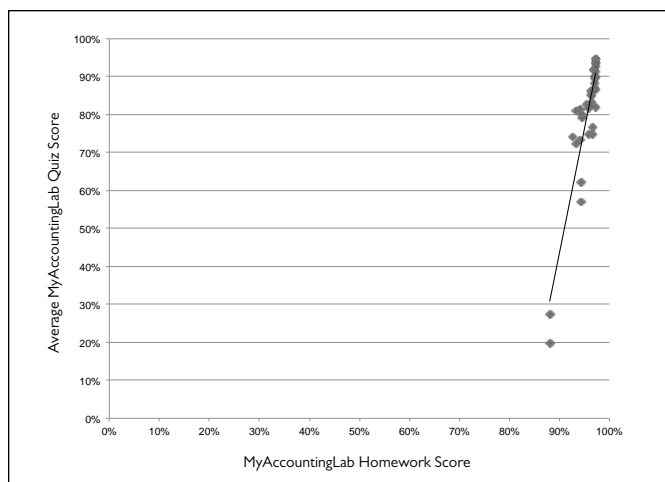


Figure 1. Correlation between Average MyAccountingLab Homework and Quiz Scores, Fall 2014 ( $n = 36$ )

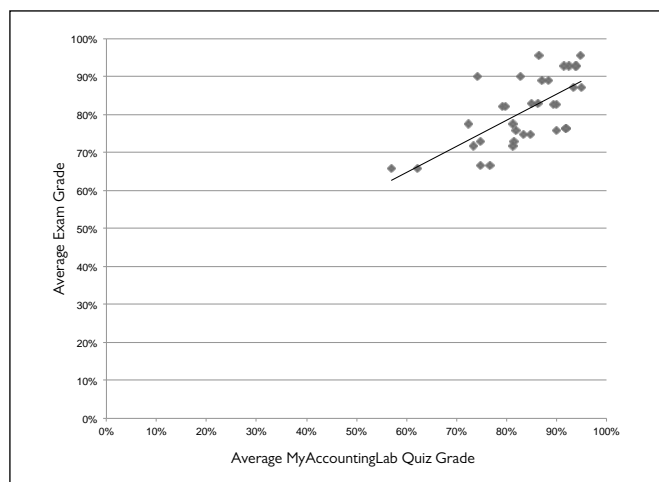


Figure 2. Correlation between Average MyAccountingLab Exam and Quiz Scores, Fall 2014 ( $n = 36$ )

Once students complete all review and homework assignments, they are eligible to take MyAccountingLab quizzes. They are allowed one attempt and one hour in which to complete each quiz.

Exams are taken in MyAccountingLab and created primarily from test bank questions, which Welker modifies to specifically align with his course content and terminology. Questions are randomized and generally total seven comprehensive accounting problems covering topics from the chapter learning objectives. Students have a 48-hour window during which to take the exam and 90 minutes to complete the exam once it has been opened. The exam cannot be reopened after the extended time period, and there are absolutely no retakes. The second exam, which covers chapters 17 and 18, is taken at the campus Testing Center in the presence of a proctor.

Because of the amount of time most students already spend in MyAccountingLab, Welker makes the Study Plan optional. For those struggling, however, it is an integral aspect of the course.

#### Assessments

|            |  |
|------------|--|
| 80 percent | MyAccountingLab exams (four)                       |
| 10 percent | MyAccountingLab homework (11) and discussion board |
| 10 percent | MyAccountingLab quizzes (12)                       |
| 1 percent  | Online participation and extra credit              |

## Results and Data

Figures 1 and 2 show the correlations between average MyAccountingLab homework and quiz scores and average MyAccountingLab quiz and exam scores. A very strong positive correlation exists between average MyAccountingLab homework and quizzes, where  $r = .9$  and  $p < .001$ . Similarly, a strong positive correlation exists between average MyAccountingLab quiz and exam scores, where  $r = .68$  and  $p < .001$ . (This analysis includes all students who finished the course with a letter grade and recorded a score for each of the four exams.)

MyAccountingLab quiz scores may help students identify where they stand in terms of successfully completing exams; data indicate that performance on MyAccountingLab homework and quizzes could be a leading indicator<sup>1</sup> of exam and course success. Similarly, MyAccountingLab scores can help instructors quickly identify students who are struggling and at risk of poor exam and course performance.

Quiz completion rates were analyzed to determine if a relationship exists between quiz completion and average exam grades (Figure 3). Results show that students who completed all quizzes earned considerably higher average exam grades.

<sup>1</sup><http://annenberginstitute.org/pdf/LeadingIndicators.pdf>

*“MyAccountingLab has been a very positive addition to our online course,” says Welker.*

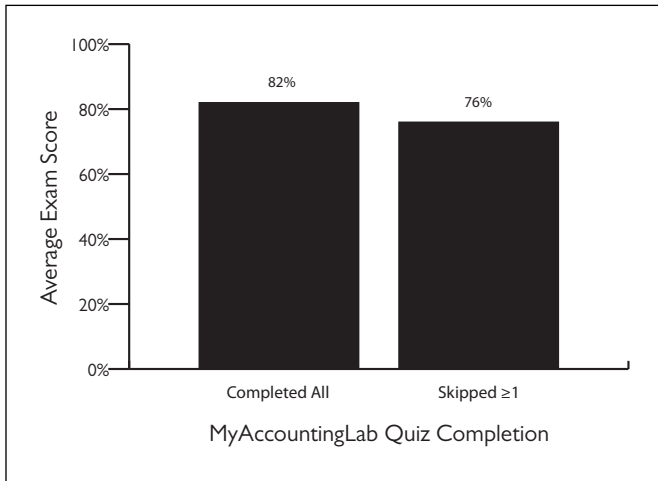


Figure 3. MyAccountingLab Quiz Completion and Average Exam Scores, Fall 2014 (Completed All,  $n = 25$ ; Skipped  $\geq 1$ ,  $n = 11$ )

- 1** Average number of skipped quizzes
- 31%** Percentage of students who skipped at least one quiz
- 24%** Percentage of students who did not skip any quizzes and who earned an average grade of A on all exams
- 40%** Percentage of students who skipped more than one quiz and earned an average of less than 70 percent (failing) on exams

In addition, students who skipped more than one quiz scored an average of 71 percent on exams—15 percent less than did students who completed all quizzes.

### The Student Experience

Outside of the college, results from national end-of-semester surveys given to student users of MyAccountingLab in spring 2015 indicate that students recognize the value of the program and make the connection between its use and improved performance in their courses.

- 92%** Agree or strongly agree that the learning aids in MyAccountingLab helped them with homework completion and comprehension; 84% reported that the Help Me Solve This function was the most helpful.
- 89%** Agree or strongly agree that the use of MyAccountingLab positively impacted their quiz and exam scores.
- 89%** Agree or strongly agree that they would recommend MyAccountingLab for future use by their instructor.

### Conclusion

“MyAccountingLab has been a very positive addition to our online course,” says Welker. A winning multimedia combination of Learning Objectives Outlines, audio PowerPoints, and video Demo Docs provides students with multiple options for learning course content, plus presents the kind of repetition and practice opportunities Welker demanded and students need. Online students specifically benefit from learning aids that show step-by-step how to complete challenging problems in the moment that students are struggling.

Welker believes student performance has improved with the use of MyAccountingLab. Analyses of the correlations between homework, quiz, and exam scores indicate strong and positive relationships among these key assessment variables, thereby providing students with a way to identify where they are and what they need to address to succeed in the course.

## MyCulinaryLab

School Name Alamo Colleges, St. Philip's College, San Antonio, TX

Course Name Introduction to Foods

Course Format Hybrid, online

**Key Results** Data show a very strong positive correlation between average MyCulinaryLab grades and average test grades: students who earned higher average MyCulinaryLab grades also earned higher average test grades.

### Submitted by

Cris Goloby, Chef and Instructor

### Course materials

MyCulinaryLab and *On Cooking*, Labensky and Hause

### Setting

St. Philip's College, part of the Alamo Community College District, is a public community college with two major campuses and seven subsidiary locations. The school's main campus is in downtown San Antonio; another campus is located outside San Antonio and serves as a hub for technical training programs. The school serves more than 10,000 students on campus, plus more than 7,000 via distance learning programs. A full 85 percent of its students attend part-time, 40 percent are more than 25 years of age, 11 percent are first-time college students, and 71 percent identify as minorities (51 percent as Hispanic). It is the only college to be federally designated as both a historically black college and a Hispanic-serving institution.

Introduction to Foods is a one-semester, three-credit course required of all culinary arts students and an open elective for all other students. The course introduces students to the composition of food and the chemical and biological changes that occur during food storage and processing. Course topics also include preparation techniques and selection principles. Students who successfully complete the course will be able to explain the aesthetic values applied to food preparation; acid/base characteristics; the use of heat in cookery; protein properties; the composition of milk, egg, cheese, meat, and fish; the properties of starch foods; what makes a solution; the definition of carbohydrates, lipids, and objective food analysis; the standards of fruit and vegetable selection; approved measuring techniques, microwave cookery, and cooking principles for cereal, pasta, starch, plant protein, fruit, vegetables, cheese, poultry, fish, meat and sauces; and the principles of dough products, quick and yeast breads, and cooking with fat.

### Challenges and Goals

In fall 2012, Introduction to Food had too many students and not enough seats. Cris Goloby, chef and instructor, sought a way to make the course more available and at more convenient times for its largely part-time student population. Goloby and her colleagues created hybrid and online sections and implemented MyCulinaryLab both to create uniformity across sections and to address the alternate learning styles of their diverse student body.

### Implementation

Goloby requires students to use MyCulinaryLab videos, quizzes, and tests.

- MyCulinaryLab videos. Videos walk students through proper culinary techniques and are used both for homework assignments and during lecture.
- MyCulinaryLab quizzes. Weekly quizzes are prebuilt, made available to students each Monday, and are due the following Monday. Students are allowed unlimited attempts with no time limit; the highest grade earned is scored. Completion is a prerequisite for the MyCulinaryLab test.
- MyCulinaryLab tests. Prebuilt tests are made available to students each Friday and are due the following Monday. Tests are not timed; students are allowed one attempt.

In hybrid sections, in-class assessments may include additional tests, a critical-thinking assignment, a writing assignment, and/or a scavenger hunt in which students visit a physical grocery store—all of which are linked to course learning objectives.

The final exam is optional. It comprises two questions from each chapter and is worth 100 points. Students may choose to replace their lowest test score with the final exam score.

Culinary arts students must earn at least a B in the course to receive credit and progress to culinary lab work.



*Goloby and her colleagues created hybrid and online sections and implemented MyCulinaryLab both to create uniformity across sections and to address the alternate learning styles of their diverse student body.*

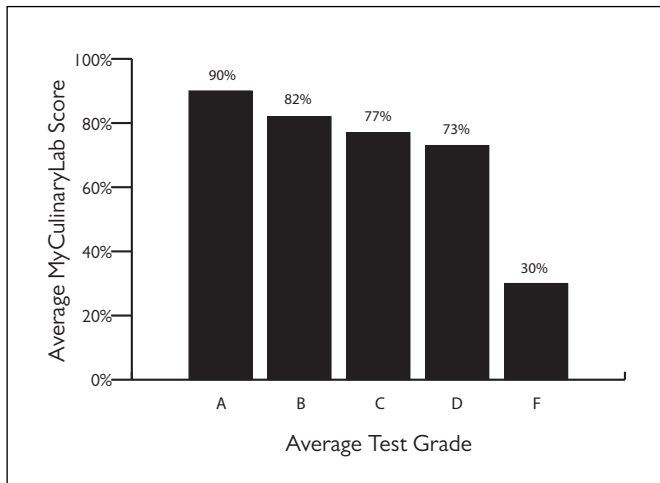


Figure 1. Grade Distribution of Average Test Grades and Average MyCulinaryLab Grades, Spring 2015 ( $n = 53$ )

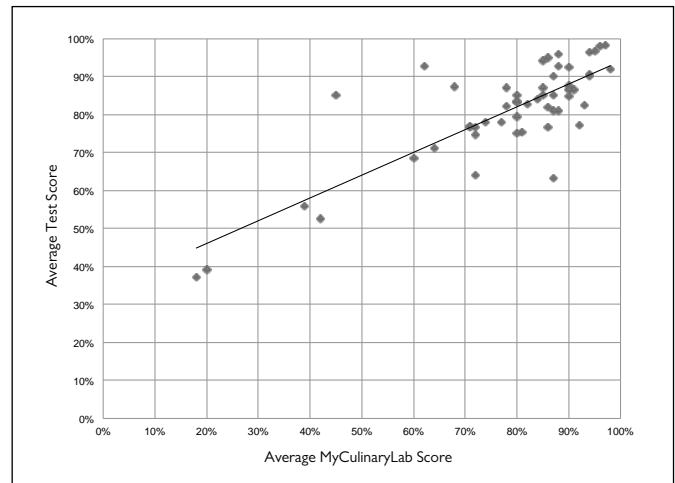


Figure 2. Correlation between Average MyCulinaryLab Scores and Average Test Scores, Spring 2015 ( $n = 53$ )

### Assessments

50 percent MyCulinaryLab homework, quizzes, tests

50 percent In-class exams, projects, written assignments

### Results and Data

An assessment of average MyCulinaryLab grades and average test grades show that students who earned higher average MyCulinaryLab grades also earned higher average test grades (Figure 1).

**81%** Average test grade

**78%** Average MyCulinaryLab grade

Correlations do not imply causation but instead measure the strength of a relationship between two variables. The  $p$  value measures the statistical significance/strength of this evidence (the correlation);  $p < .01$  is considered strong evidence. Figure 2 shows the correlation between average MyCulinaryLab scores and average test scores; a very strong positive correlation exists where  $r = .81$  and  $p < .01$ . For students, MyCulinaryLab scores are intended to identify where they stand in terms of successfully completing both future tests and the course itself (additional research may develop and test this concept further). As a best practice, MyCulinaryLab scores are intended to help Goloby quickly identify students who are struggling and might be at risk of poor course performance. This analysis does not include two students who stopped working in the course after the second test and did not finish the course work.

*Adding MyCulinaryLab to her online and hybrid sections has enabled Goloby and her colleagues to offer the course to more students at more convenient times.*

### The Student Experience

In spring 2015, students were asked to participate in a voluntary, end-of-semester survey administered by Goloby. Survey questions covered students' use of MyCulinaryLab and its impact on their learning and assessment. Of the students who responded:

- 86%** Agree or strongly agree that use of MyCulinaryLab positively impacted their quiz and exam scores.
- 81%** Agree or strongly agree that their understanding of the course material increased as a result of using MyCulinaryLab.
- 71%** Agree or strongly agree that they would recommend MyCulinaryLab to other students for courses in which it is available.

On the same survey, when asked what they liked best about MyCulinaryLab, student answers included the following:

*"I liked that there were videos we could watch."*

*"I liked the [learning] modules and the multimedia area in MyCulinaryLab."*

*"I liked the availability of the eBook and the videos that expanded on the eBook's information."*

### Conclusion

Adding MyCulinaryLab to her online and hybrid sections has enabled Goloby and her colleagues to offer the course to more students at more convenient times. In addition, the program provides students with homework and other course assessments that offer data-driven guidance and help students better understand difficult topics.

MyCulinaryLab's interactive learning tools help Goloby and her colleagues address the diversity of their online audience by appealing to a wide range of learning styles, including visual, practical, and auditory. Since students are unlikely to do work unless required to do so, Goloby uses the program's prerequisites to ensure that her students stay on track. This use of prerequisites is a best practice that Goloby encourages for all MyCulinaryLab users.

## MyFinanceLab

School Name West Kentucky Community and Technical College, Paducah, KY  
Course Name Personal Finance  
Course Format Online

**Key Results** Students who complete all or most MyFinanceLab homework assignments earn average exam scores and final course grades that are 40–50 percent higher than those of students who skip homework assignments. In addition, data show a very strong positive correlation between MyFinanceLab homework assignments and average exam scores, where  $r = .75$ .

**Submitted by**  
Sueann Hely, Professor

**Course materials**  
MyFinanceLab and *Personal Finance*, Madura

### Setting

West Kentucky Community and Technical College, one of 16 schools in the Kentucky Community and Technical College System, is a public, two-year, degree-granting institution. Situated in a large-town, suburban setting, the school serves more than 7,000 total students, 62 percent of which attend part time. The average student age is 25 years; the student-to-teacher ratio is 20:1; and 48 percent of first-time, full-time students graduate or transfer within three years, compared to the national average of 40 percent.

Personal Finance is a one-semester, three-credit course taken by nontransfer business prep students as an elective, along with students from health care fields, enrolling approximately 20 students per semester. The course provides information needed to make intelligent choices and to take effective action in the management of personal resources. Students who successfully complete Personal Finance will demonstrate an understanding of basic financial planning terms and concepts related to personal financial planning, including financial statement preparation, tax and estate planning, money and credit management, risk management through insurance, and investment basics.

### Challenges and Goals

Professor Sueann Hely began using MyFinanceLab in 2008. She previously used MyAccountingLab with great success and believed that a resource with the same kind of rich media assets and homework help, such as the Help Me Solve This learning aids, would be critical to the success of her online students. To promote communication with her students, she sought a program that also included the ability for them to contact her at the exact moment they were struggling. MyFinanceLab's Ask The Instructor function creates and sends screenshots of the specific problems students request help on, so she is able to provide the most precise and detailed assistance in the teachable moment.

### Implementation

Hely provides her students with a clear and comprehensive syllabus that outlines exactly how the course will function. It includes a detailed description of each assignment and course assessment, including how many questions and time limitations students can expect, as well as specifics about the discussion board. Because success in an online course hinges on a student's ability to remain organized and on schedule, Hely requires completion of a syllabus quiz during the first week of class to confirm that students understand the course requirements. To ensure participation in the quiz, Hely does not allow access to the MyFinanceLab course code until the quiz is completed.

MyFinanceLab homework assignments cover one to two chapters each. They are due weekly, but are open throughout the course so students can work ahead, thereby eliminating the need for extensions due to upcoming personal events; exceptions are made only in extreme circumstances. Each MyFinanceLab assignment consists of problem-solving, multiple-choice, and fill-in-the-blank questions. Students have three attempts at each question so they can use the automated feedback to its fullest advantage.

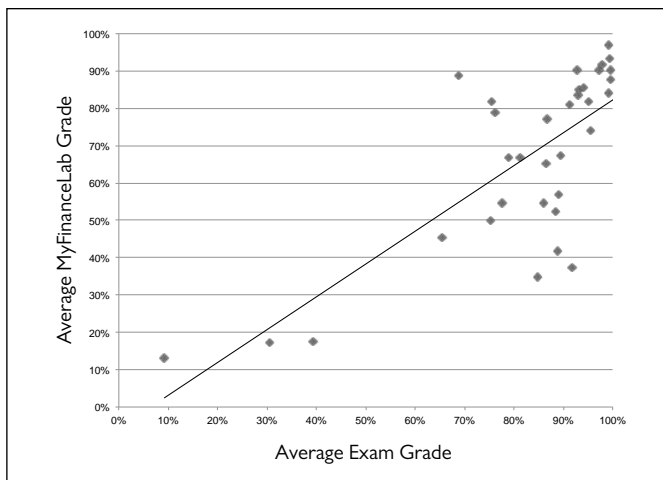


Figure 1. Correlation between Average MyFinanceLab Homework Score and Average MyFinanceLab Exam Grade, Spring 2014 ( $n = 25$ ) and Fall 2014 ( $n = 13$ )

Unit exams are administered via MyFinanceLab. They are given every five chapters and are worth 54–58 points each. Students have a three-day window in which to take each exam; once opened, exams must be completed within 90 minutes. The final exam is also administered via MyFinanceLab, but is proctored and taken on campus. It comprises 150 multiple choice and true/false questions and students have 120 minutes to complete it.

Additional assessments include a budgeting assignment to help students practice and analyze personal financial planning, as well as required weekly responses to 1–2 questions posted on the Blackboard discussion board. Responses are due at the end of the week, and late responses are not eligible for credit.

**Assessments**

|            |                                |
|------------|--------------------------------|
| 46 percent | MyFinanceLab homework          |
| 24 percent | MyFinanceLab unit exams (four) |
| 16 percent | MyFinanceLab final exam        |
| 8 percent  | Discussion board               |
| 5 percent  | Budgeting assignment           |
| 1 percent  | Syllabus quiz                  |

**Results and Data**

Figure 1 shows the correlation between MyFinanceLab homework grades and average exam grades for those students who completed the course and took all four exams, where  $r = .75$  and  $p$  value  $< .001$ , indicating a very strong positive relationship between the two variables. Note that fall 2014 and spring 2015

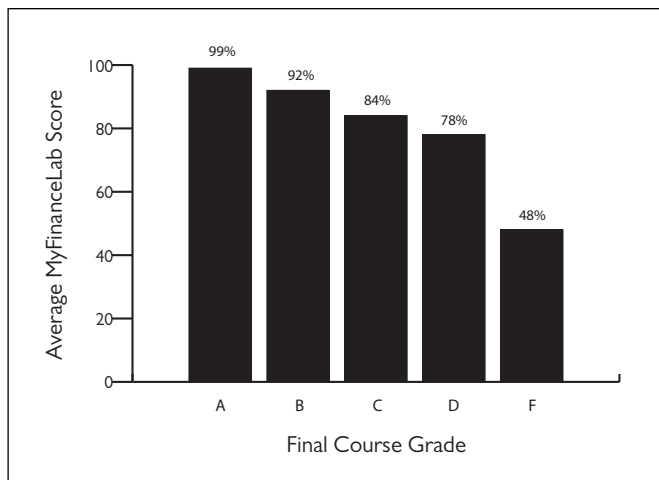


Figure 2. Comparison of Average MyFinanceLab Homework Scores and Final Course Grades, Spring 2014 and Fall 2014 ( $n = 40$ )

sections were combined and the implementation was the same for both groups. MyFinanceLab homework grades can help students identify where they are in terms of exam preparation; data suggest that performance in MyFinanceLab is a leading indicator<sup>1</sup> of course success. Similarly, MyFinanceLab scores can help instructors quickly identify students who are struggling and at risk of poor exam and course performance.

- Students who earned an average grade of A on their exams scored an average of 98 percent on their MyFinanceLab homework assignments.
- Students who earned an average grade of D or F on their exams scored an average of 68 percent on their MyFinanceLab homework assignments.

Figure 2 shows the final course grade distribution per average MyFinanceLab homework score. As expected, students earning an A or B for their final course grade also earned a higher overall MyFinanceLab score. Although MyFinanceLab is a significant portion of the final grade, data show that students who put the effort into their homework are rewarded with higher exam and final course grades.

- Students who earned a course grade of A scored an average of 99 percent on their MyFinanceLab homework assignments.
- Students who earned a course grade of D or F scored an average of 63 percent on their MyFinanceLab homework assignments.

<sup>1</sup><http://annenberginstitute.org/pdf/LeadingIndicators.pdf>

*Results show that students who completed most assignments scored significantly higher on both exams and final course grades.*

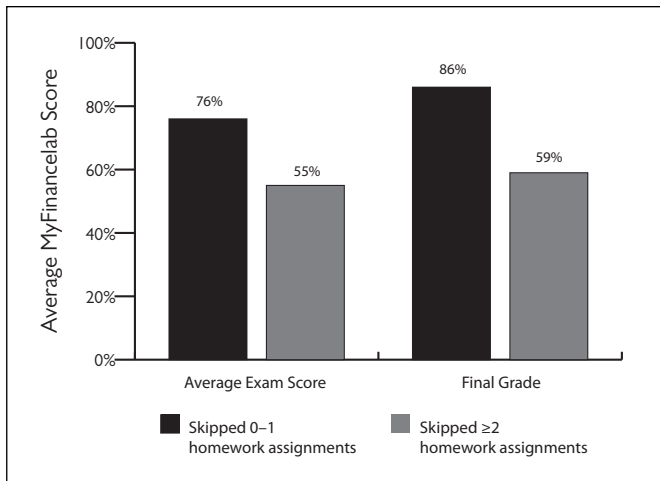


Figure 3. Relationship between MyFinanceLab Homework Completion and Average Exam Grades and Final Course Grades, Spring 2014 and Fall 2014 (n = 40)

MyFinanceLab homework completion rates were analyzed to determine if a relationship exists between homework completion and both average exam grades and final course grades (Figure 3). Results show that students who completed most assignments scored considerably higher on both exams and final course grades.

- Students who skipped one or zero assignments earned average exam grades that were 39 percent higher than those of students who skipped two or more assignments.
- Students who skipped one or zero assignments earned final course grades that were 50 percent higher than those of students who skipped two or more assignments.
- One hundred percent of the students who earned an average exam grade of A skipped one or zero assignments.
- The average number of skipped assignments was 1.9.

### The Student Experience

Responses from a fall 2014 student survey indicate that students make the connection between use of MyFinanceLab and increased course performance.

**100%** of students surveyed indicated the use of MyFinanceLab positively impacted their exam scores.

**100%** of students surveyed said they would recommend MyFinanceLab in courses for which it is available.

On the same survey, when asked what they liked best about MyFinanceLab, student answers included the following:

*“It helped me understand the small and the big mistakes I’d made.”*

*“I really enjoyed the schedule layout on the home page. It helped me see all the assignments I needed to finish.”*

*“The ease of use and the immediate scoring. It was nice to see all of my grades and percentages at anytime.”*

*“Efficiency. MyFinanceLab allowed me to pick and choose which subjects I should deeply study and which ones I could simply skim before testing.”*

### Conclusion

“MyLabs drive my adoption decisions,” says Hely. The additional resources in MyFinanceLab, including videos and simulations, lend real-world applications to discussion board topics. And with such a wide variety of material to choose from, students have both weekly assignments for practice and study, as well as options for additional learning if they choose to invest the time. Online students specifically benefit from the program’s self-paced scheduling, which enables them to work around their busy lives and work ahead, if desired.

## MyITLab

School Name Georgia Regents University, Augusta, GA  
Course Name Microcomputer Applications  
Course Format Online

**Key Results** Data indicate strong positive correlations between MyITLab Training assignments and MyITLab Grader Projects and between MyITLab Grader Projects and average exam grades, showing a building relationship of success among consecutive course components. In addition, students who earn higher Grader Project scores in this implementation earn higher exam and final course grades.

**Submitted by**  
Buffie Schmidt, Lecturer

**Course materials**  
MyITLab; *GO! With Office 2013*, Volume I, Gaskin, Vargas, and McLellan; and *Tech in Action*, Evans, Martin, and Poatsy

### Setting

Georgia Regents University, one of four public research universities in Georgia, serves approximately 8,500 students across four local campuses. The average age of the school's full-time students is 23 years old, 49 percent are minorities (20 percent are African American), and 63 percent receive need-based financial aid.

Microcomputer Applications is a one-semester, three-credit course that enrolls approximately 700 students per year; it is an area F requirement for University System of Georgia schools and is a required course for students in 7–10 different majors. The course is a hands-on introduction to microcomputer applications that support business functions: word processing, spreadsheets, and graphics. Course learning objectives include understanding the use of operating systems, electronic communication, basic computing concepts, and social networking.

### Challenges and Goals

Buffie Schmidt, lecturer, first piloted MyITLab in 2013 as part of a course redesign aimed at increasing success rates. She chose MyITLab primarily for its simulation feature; it was important that her online students be able to work within the framework of a computer application while learning it. This type of hands-on experience with applications provides the richer learning environment necessary for distance education students. Having successfully used MyEconLab in previous classes, Schmidt was confident that she could replicate her success using MyITLab.

### Implementation

Within the first five days of the semester (before attempting any work in MyITLab), students review an online Orientation document created by Schmidt to acclimate them to online resources, course policies, and other course material, including MyITLab. Students must then pass an Orientation quiz with a score of at least 90 percent to gain access to course content. This grade is not calculated into the final course grade. Pearson has identified this type of activity as a MyLab best practice—providing detailed instructions about the program, registration process, and general tools of working within the program sets students up for a positive and confident experience from the initial launch.

To ensure that students are familiar with the Windows environment and software they'll be using for the next three modules, students complete an Office Basics quiz immediately following the Orientation quiz. The quiz includes 16 questions, has a 30-minute time limit, and students are allowed two attempts.

Schmidt's course is divided into four modules: Word, Excel, PowerPoint, and Concepts. Each module has weekly required due dates based on the chapter content covered, either Tuesdays or Thursdays at 5 pm. Resource items are ungraded, but are available to students for review prior to homework and to assist students with various learning styles. They include videos, chapter PowerPoints, interactive video tutorials, and Skill Based Trainings.

Although Skill Training Simulations are optional, Schmidt strongly encourages students to complete them before the Skill Exam. Because frequent practice is critical to learning, she employs no time limit for Skill Trainings and students are allowed unlimited attempts.

Required graded assessments for the software modules are completed in the following order:

1. **Skill Based Training Exam.** Similar to optional Skill Training Simulations, one per chapter, students have 75 minutes for

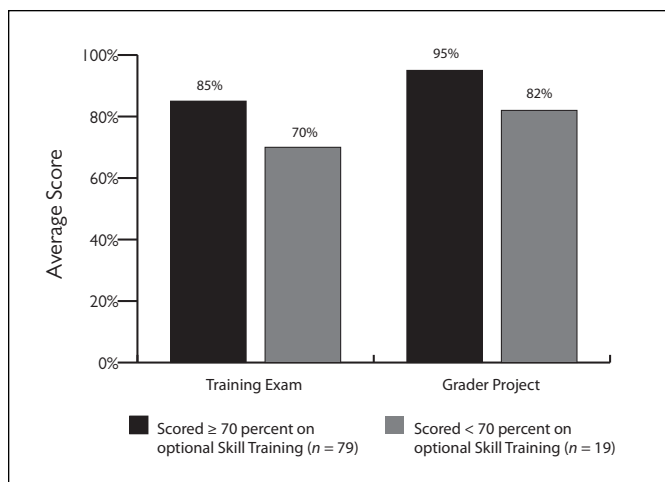


Figure 1. Average Training Exam and Grader Project Scores per Optional Skill Based Training Simulation Score, Fall 2014 (n = 98)

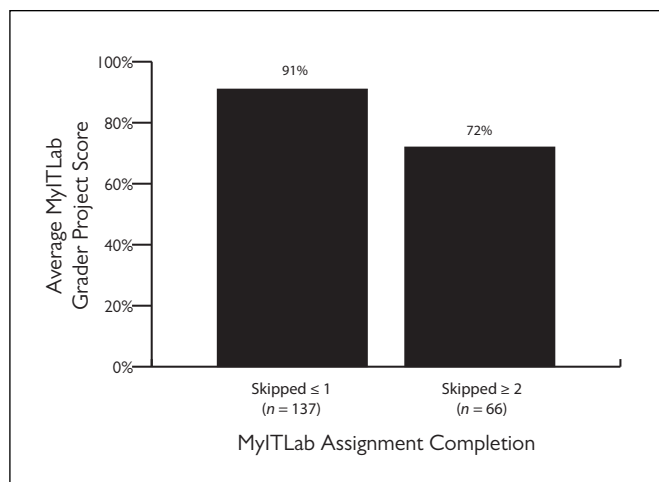


Figure 2. Relationship between Assignment Completion and Average MyITLab Grader Project Score, Fall 2014 (n = 203)

completion and are allowed three attempts. The highest score is recorded.

- Grader Project.** One per chapter, there is no time limit, and students are allowed two attempts. Students download and complete their own files or receive a zero (0) for the assignment; the MyITLab Integrity Violations report determines that students are doing their own work.
- Capstone Grader Project.** A comprehensive Grader Project, one per module/application, there is no time limit, and students are allowed two attempts. The highest score is recorded for a grade.

The Concepts module of the course covers hardware, software, the Internet, email, and ethics. MyITLab resources, including videos, simulations, multimedia lessons, and games, are available for review prior to completion of chapter Check Your Understanding quizzes. Each chapter includes two quizzes of seven or eight questions each. Students have 15 minutes and are allowed two attempts; the highest score is recorded.

#### Assessments

|            |   |
|------------|---|
| 60 percent | MyITLab Grader Projects                             |
| 16 percent | MyITLab Grader Project Capstones                    |
| 14 percent | Skill Training exams                                |
| 8 percent  | MyITLab Check Your Understanding quizzes (Concepts) |
| 2 percent  | Office Basics quiz                                  |

## Results and Data

Figure 1 shows the scores on the first Grader Project due for Word, Chapter 1, only. Schmidt encourages her students to complete optional Skill Based Training Simulations before taking the Training Simulation Exam or starting the chapter Grader Project. Fifty-seven percent of students skipped the simulation and jumped right to the Grader Project assessment (n = 105).

- Students who completed the optional Skill Training Simulation with a score greater than 70 percent scored an average of 21 percent higher on the Skill Training Exam than did students who scored less than 70 percent on the simulation.
- Students who completed the optional Skill Training Simulation with a score greater than 70 percent scored an average of 16 percent higher on the Grader Project than did students who scored less than 70 percent on the simulation.

Schmidt shared the data in Figure 1 with her students after they had completed the first Grader Project. By the end of the semester, the percentage of students who completed the Skill Training Simulation for each chapter prior to attempting the Grader Project increased from an average of 43 percent to 70 percent.

Students were grouped according to MyITLab homework completion rates (the number of MyITLab assignments that were skipped). Grader Project scores were an average of 26 percent (two letter grades) higher for those students who completed most MyITLab assignments (skipped 1 or fewer). This analysis included only students who completed at least one Grader Project (Figure 2).

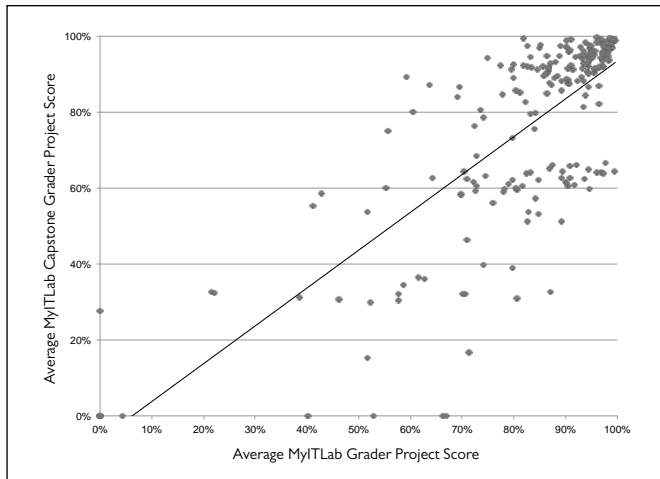


Figure 3. Correlation between Average MyITLab Grader Project Scores and Average MyITLab Grader Project Capstone Scores, Fall 2014 ( $n = 221$ )

#### 1.4 Average number of skipped assignments

**46%** Percentage of students who completed all assignments ( $n = 93$ )

**33%** Percentage of students who skipped more than one assignment

Correlations do not imply causation but instead measure the strength of a relationship between two variables.  $P$  value measures the statistical significance/strength of this evidence (the correlation);  $p$  value  $< .01$  is considered strong evidence. An evaluation of student performance on average Grader Project scores and average Capstone Grader Projects identifies a very strong positive correlation, where  $r = .74$ ,  $p < .001$  (Figure 3), indicating a positive relationship between success on the Grader Projects and the Capstone Graders. Similarly, there is a very strong positive correlation ( $r = .87$ ) between average Skill Training Exam scores and average Grader Project scores. Students can self-identify if they are at risk of failure based on their MyITLab scores and create interventions with their instructors. This analysis included all students who completed the course for a grade.

## The Student Experience

Responses from a voluntary fall 2014 student survey indicate that students make the connection between use of MyITLab and increased learning gains.

**96%** Agree or strongly agree that their understanding of the course material increased as a result of using MyITLab.

**88%** Agree or strongly agree that the use of MyITLab positively impacted their quiz and exam scores.

On the same survey, when asked what they liked best about MyITLab, student answers included the following:

*“The different learning resources that were available for each chapter section. I had the option to take a more in depth resource when the material became complicated.”*

*“Being able to do the assignments anytime—at my convenience as long as it was before the due date. Going to both work and school full time can be stressful, so this was very helpful.”*

*“I really like the hands-on activities that came with the course, along with the videos. They really helped me understand the material and how to use the software.”*

*“It was simple to use. I am now using the things I learned in MyITLab in real world presentations to stand out.”*

## Conclusion

Schmidt believes that students gain the most from a course when its material relates to real life and that in order for a course to be a life-impacting experience, it cannot simply be a series of tests in which students recount memorized material. To that end, Schmidt’s class comprises a range of participatory learning activities that promote valuable, retainable learning: interaction, discussion, raising questions, and engaging the instructor and other students in lively debate and discourse. MyITLab supports her vision by offering live simulation activity in each application and by driving students to become more active participants in their learning. MyITLab offers multiple ways for students to learn and engage with course content. Student comments on the fall 2014 survey reflect their appreciation of the program’s ability to help them in their unique styles. “MyLab provided many different resources for help when I needed it,” responded one student. “I could choose what resource was best for me to help with my problems.”



## MyMedicalTerminologyLab

School Name [Boise State University, Boise, ID](#)  
Course Name [Medical Terminology](#)  
Course Format [Online](#)

**Key Results** Data show that students who complete most of their MyMedicalTerminologyLab assignments earn appreciably higher average quiz, exam, and final course grades.

### Submitted by

Jeff Anderson, Associate Professor and Director of Clinical Education

### Course materials

MyMedicalTerminologyLab and *Medical Language: Immerse Yourself* (custom), Turley

### Setting

Boise State University is a four-year public institution located in downtown Boise. The school serves more than 22,000 students: 87 percent are undergraduates, 63 percent are age 18–24, 60 percent attend full time, 59 percent receive some need-based financial assistance, and 16 percent identify as minorities.

Medical Terminology is a one-semester, three-credit course that is required of health career majors and an elective for criminal justice and English majors. As such, a diverse group of more than 200 freshman through seniors take the course each semester. Students explore the vocabulary used by medical personnel and are introduced to Greek and Latin prefixes, suffixes, and the combining forms and roots used in medical terminology. The course also includes the study of anatomical, physiological, and pathological terms, clinical procedures, abbreviations and lab tests according to systems of the body. Course learning objectives include demonstrated ability to spell and pronounce medical terms correctly and knowledge of medical terms related to the structure and function of the human body. Clinical application is stressed.

### Challenges and Goals

Prior to implementing MyMedicalTerminologyLab in spring 2013, Jeff Anderson, associate professor and director of clinical education, and his colleagues chose to offer their large-enrollment Medical Terminology course online. Faced with creating the course from scratch, the department sought an

existing media-rich, online support program with the resources required for out-of-the-classroom learning in a framework that would maintain structure in the course. Because online students juggle many responsibilities, they need flexibility and options in self-paced course materials. The self-study tutorials, chapter review options, and variety of exercises offered in MyMedicalTerminologyLab gave the Boise faculty the range of alternatives for both homework and assessment that they desired.

### Implementation

Anderson expects students to spend approximately nine hours per week on his course in order to be successful. Assignments are divided into weekly lessons comprising the following:

- **Lesson introductions.** Anderson provides learning outcomes for each lesson, as well as an overview, Strategies for Success (a summary of actions to be taken), and a suggested schedule to balance the workload.
- **Reading assignment for each lesson.** Textbook reading prior to assignments.
- **Case studies.** These self-made case studies are a direct result of Anderson's bedside clinical background. Students work through two or three captured-video cases each week using the textbook to translate terms presented on a provided .pdf worksheet.
- **Vocabulary review.** All the vocabulary in the chapters covered each week is covered in a lesson specifically for this review. Anderson highly recommends that students generate flash cards for vocabulary practice.
- **MyMedicalTerminologyLab activities.** For each chapter, six MyMedicalTerminologyLab exercises are assigned: Labeling, Matching, Medical Language Spoken Here, Word Surgery, Popping Words, Spelling Challenge, as well as Self-Paced Study, Self-Paced Study Review Questions, and the Exam Review.

- **Weekly group activities/discussion board and Collaborate sessions.** Students are required to participate in one of two activities: a live class meeting via Collaborate or a discussion board activity that requires one startup comment and at least one response to a peer’s post. Students may alternate between the options throughout the semester.
- **Weekly wrap-up.** A recap of the week and an introduction to the following week’s material, including reading and preparation to discuss a provided journal article (via Collaborate or the discussion board).

Additional assessments include:

- **Exams (three).** Exams are posted to BlackBoard on Mondays and students have until 12 p.m. on Saturday of that week to complete them. Exams comprise approximately 50 multiple-choice and matching questions created by Anderson, are limited to 35–40 minutes (depending on the exact number of questions, and the exam closes immediately when the time limit is reached). An optional final exam is offered to students who are not satisfied with their current exam scores.
- **Quizzes (three).** Approximately 15 multiple-choice and matching questions created by Anderson; students have 10–12 minutes and the same weekly constraints as exams.
- **Career project.** Students pursuing a health science career identify three journals in their professional field of interest. Using an article from one of the journals, students write a 400-word summary and translate a minimum of ten medical terms from the article. Students who are not studying a health science curriculum search for a disease state that interests them and completes the same written assignment.

Note: There are 90 MyMedicalTerminologyLab assignments, and they only count 5 percent toward the final course grade. Anderson awards all students the full 5 percent (25 points) if at least 80 percent of students complete the end-of-semester student survey. MyMedicalTerminologyLab’s gradebook captures all data; the analysis that follows is based on actual student MyMedicalTerminologyLab assignment scores and completion rates.

**Assessments**

- 65 percent Exams (three)
- 21 percent Quizzes in BlackBoard (three)
- 5 percent MyMedicalTerminologyLab assignments
- 5 percent BlackBoard discussions
- 4 percent Career project

**Results and Data**

MyMedicalTerminologyLab homework completion rates were analyzed to determine the impact of homework completion on quiz and exam scores (Figure 1). Because the 90 required MyMedicalTerminologyLab activities account for just 5 percent of a student’s overall course grade, many students did not complete a significant number of the assignments. For this analysis, students were put into three groups: those who skipped no more than 30 assignments, students who skipped 31–60 assignments, and students who skipped 61 or more assignments. Results show that students who completed more assignments earned appreciably higher quiz and exam scores; students who skipped the MyMedicalTerminologyLab work performed poorly on average on course assessments.

- Students who completed all assignments ( $n = 20$ ) earned average quiz scores of 82 percent and average exam scores of 81 percent. The course average quiz score was 66 percent, the course average exam score was 70 percent ( $n = 193$ )
- Students who skipped up to 30 assignments had average exam grades 35 percent higher than students who skipped 61 or more assignments.
- Students who skipped up to 30 assignments had average quiz grades 60 percent higher than students who skipped 61 or more assignments.

In addition, data show that final course grades decreased as students skipped more assignments (Figure 2). This is meaningful because although MyMedicalTerminologyLab homework counts for a very small percentage of the final grade, a strong

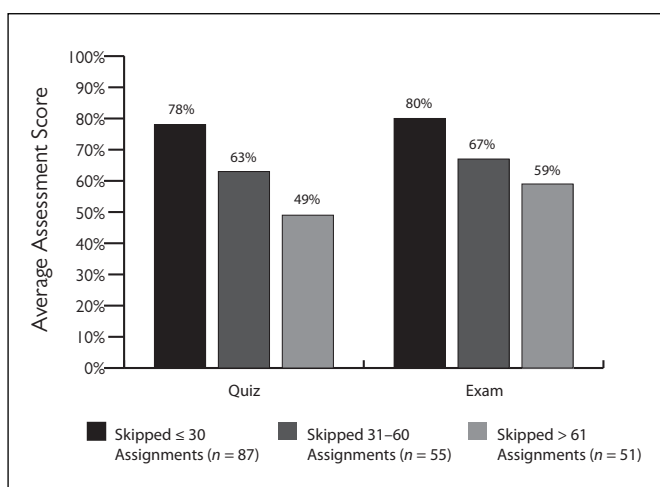


Figure 1. Average Quiz and Exam Scores by MyMedicalTerminologyLab Assignment Completion, Fall 2014 ( $n = 193$ )

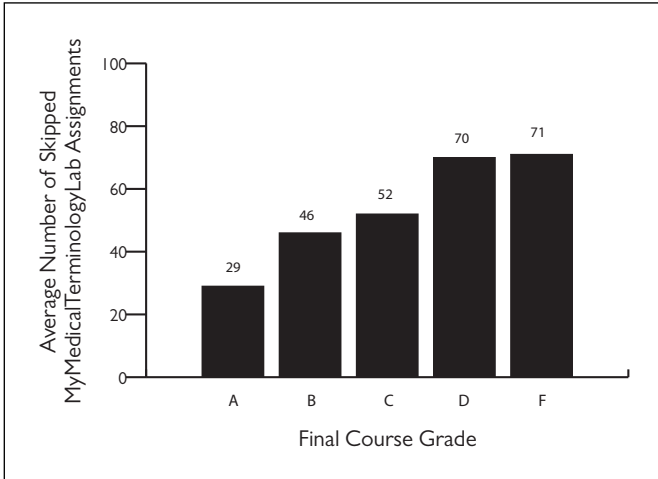


Figure 2. Average Number of Skipped MMTL Assignments per Final Course Letter Grade, Fall 2014 (n=193)

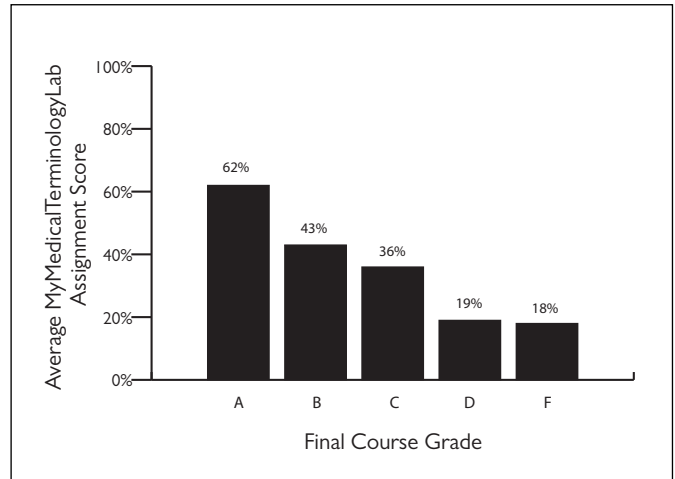


Figure 3. Grade Distribution by Performance on Average MMTL Homework Grade, Fall 2014 (n=193)

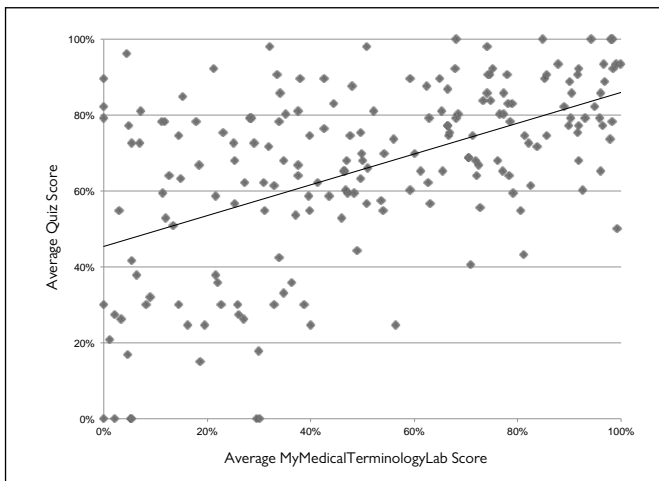


Figure 4. Correlation between Average MyMedicalTerminologyLab Assignment Scores and Average Quiz Scores, Fall 2014 (n = 193)

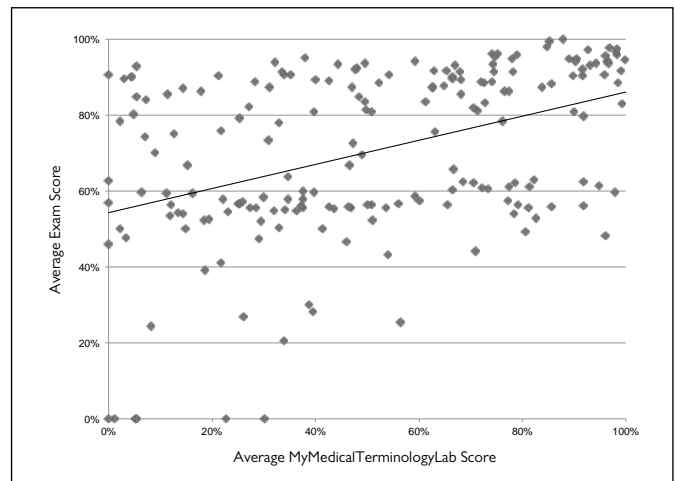


Figure 5. Correlation between Average MyMedicalTerminologyLab Assignment Scores and Average Exam Scores, Fall 2014 (n = 193)

linear relationship exists between homework completion and final course grades. A comparison of MyMedicalTerminologyLab assignments scores and final course grades indicates that raw MyMedicalTerminologyLab homework scores may be a strong predictor of both overall course success and final course grades (Figure 3).

Figures 4 and 5 are correlation graphs that measure the strength of the relationship between MyMedicalTerminologyLab assignment scores and quiz and exam scores. The corresponding  $p$  values measure the statistical significance, or strength, of this evidence;  $p < .01$  is considered strong evidence. Both correlations indicate a strong positive relationship where  $r = .52$

(quiz correlation) and  $r = .42$  (exam correlation) and  $p$  value  $< .01$ . MyMedicalTerminologyLab assignment scores may help students in an online course identify where they stand in terms of preparation for quizzes and exams. As a best practice, MyMedicalTerminologyLab assignment scores may help instructors identify early on those students who are struggling and at risk of poor course performance.

*Practice and review in MyMedicalTerminologyLab helped students master material, as indicated by the higher quiz, exam, and final course grades achieved by students who completed more MyMedicalTerminologyLab homework assignments.*

## The Student Experience

In spring 2015, students were asked to participate in a voluntary end-of-semester survey administered by Anderson. Students were asked to rate statements on a scale of 0 (strongly disagree) to 5 (strongly agree). Following are a sample of average statement scores:

- 4.23** MyMedicalTerminologyLab matching activities significantly helped me to master the chapter content.
- 4.04** Using the Dynamic Study Modules was far more helpful to me than any of the other MyMedicalTerminologyLab activities.
- 4.03** MyMedicalTerminologyLab self-paced study activities significantly helped me to master the chapter content.

On the same survey, when asked what aspects of the course were most valuable to the overall learning experience, student responses included:

*“The MyMedicalTerminologyLab was the best thing for my learning, without which I would have struggled on examinations.”*

*“The activities online really helped me understand the content more. It was nice that we could do the activities more than once, because doing it over and over helped me learn the material.”*

*“MyMedicalTerminologyLab were probably the most effective. They allowed me to practice what I had learned.”*

*“MyMedicalTerminology Lab was very useful in quizzing myself over the learning objectives.”*

## Conclusion

Online courses pose significant challenges for instructors, not the least of which is that students are juggling work, school, families and other responsibilities, and time is at a premium. MyMedicalTerminologyLab assignments allow students to work through challenging course material at their own pace and as time permits. Practice and review in MyMedicalTerminologyLab helped students master material, as indicated by the higher quiz, exam, and final course grades achieved by students who completed more MyMedicalTerminologyLab homework assignments.

Although his students already had MyMedicalTerminologyLab assignments to complete on a weekly basis, midway through the spring 2015 semester, Anderson added another layer of the MyMedicalTerminologyLab program to the course: Dynamic Study Modules. Dynamic Study Modules continuously assess student performance and activity. It then uses data and analytics to develop personalized medical terminology content for each student. Dynamic Study Modules help students become more-effective and more-efficient learners by analyzing accuracy and confidence and delivering the exact content each learner needs, when they need it. According to Anderson’s students, the Dynamic Study Modules were an effective way to learn content and review material. When asked what they liked most in their online learning experience, one student replied, “the Dynamic Study Modules!”

## MyMedicalTerminologyLab

School Name Zane State College, Zanesville, OH

Course Name Medical Terminology

Course Format Hybrid

### Key Results

Data show a strong positive correlation between MyMedicalTerminologyLab homework scores and quiz, exam, and course grades. Students who completed all or most MyMedicalTerminologyLab assignments achieved 40 percent higher quiz grades and 23 percent higher exam grades than did students who skipped more assignments.

### Submitted by

Kelli Wehr, Adjunct Instructor

### Course materials

MyMedicalTerminologyLab and *Medical Terminology for Health Care Professionals*, Rice

### Setting

Zane State College is two-year public college serving nearly 3,000 students from two small-town campuses in central Ohio. The school offers more than 40 associate degree programs, certificates, workshops, and occupational skills training in a wide range of studies. Forty-three percent of the school's students are nontraditional students of more than 25 years of age.

Medical Terminology is a one-semester, two-credit course required of all health care majors, including physical therapy, occupational therapy, and health information management. The course provides a study of the vocabulary used by medical personnel with an emphasis on basic prefixes, suffixes, root words, and combining vowels.

### Challenges and Goals

Medical Terminology was a high enrollment, high failure course with both low pass and success rates. Kelli Wehr, adjunct instructor, and her colleagues sought a new course format and text to help increase student engagement in course content and promote application of course topics to real-world situations. Wehr chose to pilot MyMedicalTerminologyLab for its range of interactive games built around the spelling and pronunciation of complex medical language.

### Implementation

Wehr teaches a 16-week hybrid class in which eight weeks are spent fully online, eight weeks are spent in the classroom (one day per week for two hours), and all assignments are delivered via MyMedicalTerminologyLab. Before each lecture, students are assigned a textbook portion so they are familiar with the ideas and material to be presented. Wehr uses lecture time to introduce new chapter content via group work and hands-on activities. By assigning MyMedicalTerminologyLab outside of lecture, and thereby ensuring that students spend sufficient time with basic course content, Wehr is able to focus on practical applications and career options in class.

Homework assignments are due biweekly and consist of six kinds of interactive games: matching, spoken language, word surgery (to dissect words), popping words, spelling challenge, and exam review. Each game is worth five points, and students have unlimited attempts to complete them. Assignments are open for two weeks, before and during the lecture period for completion; if requested, assignments are reopened for exam review. Wehr also suggests that students create flash cards to review any challenging vocabulary.

Students are eligible to take quizzes after they've completed homework assignments on or before the date and time they are due; late assignments receive a grade of zero. Quizzes are multiple choice, cover one to three chapters each (but are comprehensive), and have a 30-minute time limit. Students who exceed the time limit receive a grade of zero. Students have three attempts at each quiz, and the highest score is recorded as the final quiz grade.

A comprehensive midterm exam covers chapters 1–4 and 8–11. It is a scantron, multiple-choice exam taken on campus. The comprehensive final exam covers all chapters (1–18) and comprises 100 multiple-choice questions. There are no makeups allowed for either exam.

*Students who completed the most MyMedicalTerminologyLab assignments earned significantly higher quizzes, exams, and final course grades.*

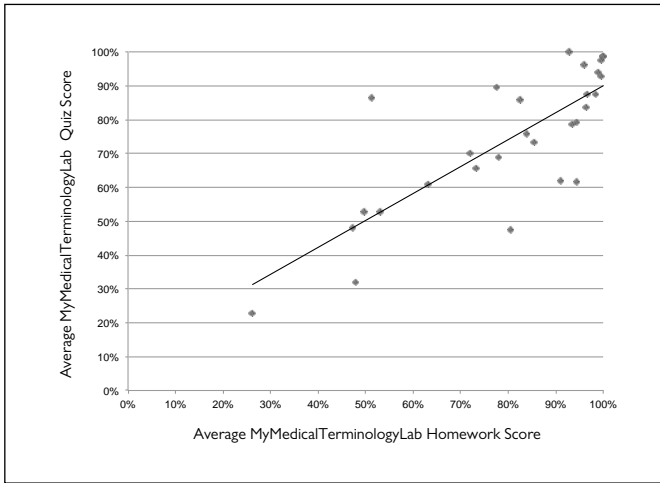


Figure 1. Correlation between Average MyMedicalTerminologyLab Homework Scores and Average MyMedicalTerminologyLab Quiz Scores, Fall 2014 (n = 29)

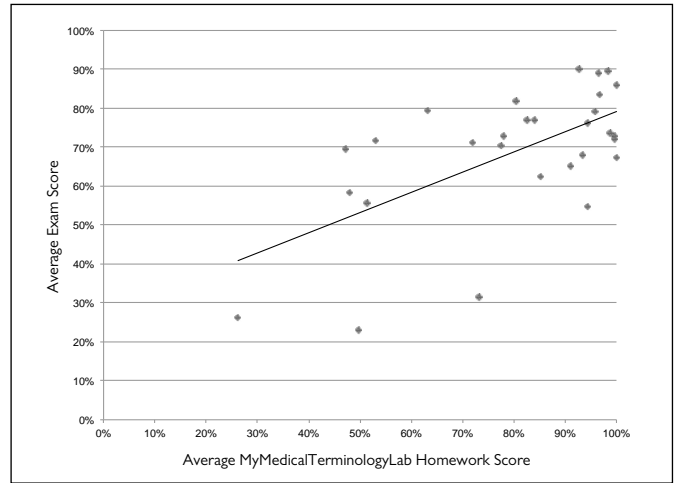


Figure 2. Correlation between Average MyMedicalTerminologyLab Homework Scores and Average Exam Scores, Fall 2014 (n = 29)

**Assessments**

- 29 percent Final exam
- 25 percent MyMedicalTerminologyLab homework (eight)
- 25 percent MyMedicalTerminologyLab quizzes (eight)
- 21 percent Midterm exam

**Results and Data**

Figure 1 shows a very strong positive correlation between MyMedicalTerminologyLab homework scores and average quiz scores where  $r = .79$  and  $p$  value  $< .001$ . Figure 2 shows a strong positive correlation between MyMedicalTerminologyLab homework scores and average exam scores where  $r = .62$  and  $p$  value  $< .001$ . MyMedicalTerminologyLab homework scores can help students identify where they stand in terms of quiz and exam preparation. Data suggest that student performance on MyMedicalTerminologyLab assignments is a leading indicator<sup>1</sup> of future assessment success. Similarly, MyMedicalTerminologyLab scores can help instructors identify early on struggling and at-risk students. In addition, data indicated a strong correlation

between average MyMedicalTerminologyLab quiz and exam scores, where  $r = .52$ ,  $p < .01$  (not depicted here).

- 96%** Average MyMedicalTerminologyLab score for students earning an average exam grade of A.
- 57%** Average MyMedicalTerminologyLab score for students earning an average exam grade of F.

In addition, MyMedicalTerminologyLab homework completion rates were analyzed to determine if a relationship exists between completion rates and average quiz, exam, and final course grades (Figure 3). Results show that those students who completed the most MyMedicalTerminologyLab assignments earned considerably higher quizzes, exams, and final course grades. The average number of skipped assignments was six.

- Students who skipped five or fewer assignments had 40 percent higher average quiz grades than did students who skipped six or more assignments.
- Students who skipped five or fewer assignments had 23 percent higher average exam grades than did students who skipped six or more assignments.

<sup>1</sup><http://annenberginstitute.org/pdf/LeadingIndicators.pdf>

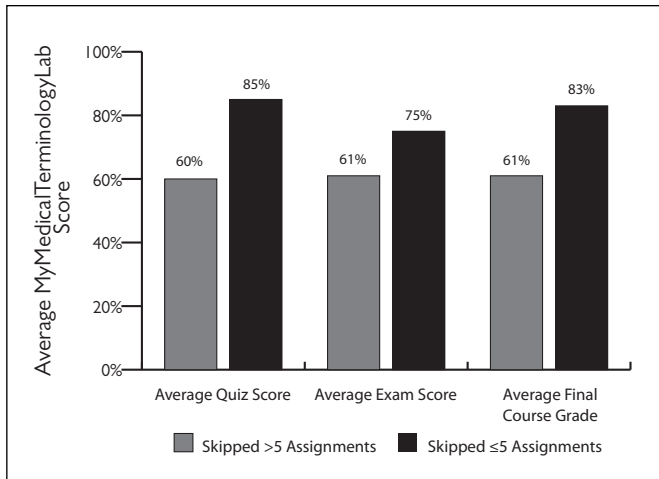


Figure 3. Average Quiz, Exam, and Final Course Grade by MyMedicalTerminologyLab Homework Score, Fall 2014 ( $n = 29$ )

- Students who skipped five or fewer assignments had 36 percent higher average final course grades than students who skipped six or more assignments.

Wehr allows students to retake quizzes up to three times to help them continue the learning process while also exhibiting proficiency. Students were grouped into two categories based on the mean number of attempts (the average number of attempts was 2.9). Figure 4 shows that students who used more than one attempt on at least three or more quizzes earned average exams scores that were 17 percent higher than students who did not use the extra attempts.

## The Student Experience

In a fall 2014 end-of-semester survey, students were asked to rate MyMedicalTerminologyLab in terms of how much it helped them learn course material (5 = extremely helpful, 1 = extremely unhelpful). Results indicate that students overwhelmingly value the program.

- 4.35** Average student rating of MyMedicalTerminologyLab.
- 52%** Percentage of students who rated MyMedicalTerminologyLab *extremely helpful*.
- 88%** Percentage of students who responded “Yes” when asked if they would recommend MyMedicalTerminologyLab to another student.

In the same survey, Wehr’s students shared the following positive comments about MyMedicalTerminologyLab.

*“It is a great system. I learned so much by using it.”*

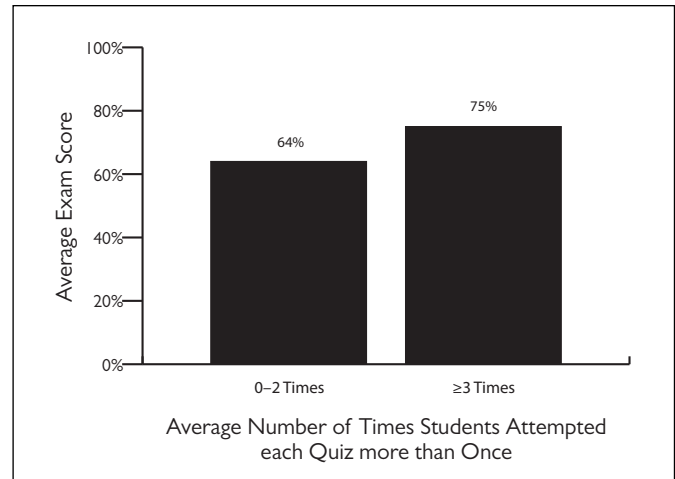


Figure 4. Exam Performance Based on Number of MyMedicalTerminologyLab Quiz Attempts, Fall 2014 ( $N = 29$ ,  $n = 16$  students who attempted two or fewer quizzes more than one time,  $n = 13$  students who attempted three or more quizzes more than one time)

*“I really like this program. It helps me to study and learn the material efficiently.”*

*“I like it much better than having tons of paper homework to do. I like that I get instant feedback/answers so I can correct my mistakes immediately and know that I am studying the correct definitions.”*

*“I spend at least three hours a week in MyMedicalTerminologyLab. I go over the self-paced portions and most of the mastery items.”*

*“[The homework assignments] were all so helpful. The more I did them, the better I got and the more familiar with the words I got.”*

*“[The labelling exercises] are very important. In the medical world, one of the most important points of information is knowing the location of body parts.”*

## Conclusion

By requiring students to complete work in MyMedicalTerminologyLab in conjunction with attending lecture, Wehr believes she has successfully increased student engagement in course content and facilitated more participation in lecture activities. Data suggest that students who routinely spend time in the program achieve greater quiz and exam success than those who do not. In addition, students who complete most of the assignments and frequently redo quizzes earn higher quiz and exam scores than those who do not.

In spring 2015, the department agreed to continue using MyMedicalTerminologyLab, with plans to revise some of the program’s interactive games. Future plans include monitoring pass rates as MyMedicalTerminologyLab is more fully implemented beyond the current pilot.

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# Best Practices: 10 Steps to Success with Your MyLab Implementation

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

**1. Identify the problems you want to solve.** An examination of the most successful MyLab 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 MyLab 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 MyLab 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 MyLab 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 MyLab users recommend that you count MyLab 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 materials and assignments they’ll be responsible for. Visit [www.pearsonmylabandmastering.com/educators/support](http://www.pearsonmylabandmastering.com/educators/support) for details.

**7. Connect and engage with students.** Educators implementing MyLab 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 MyLab 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. MyLab 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.



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## Conclusion

**M**ORE THAN SUCCESSFUL IMPLEMENTATIONS, THE COURSES, PROGRAMS, and initiatives described in this report 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 participating institutions 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 generated by 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 Web 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>.

### 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 we hope you'll want to include your experience in the next MyLab & Mastering report. To tell us about your success, contact Candace Cooney, efficacy results manager, at [candace.cooney@pearson.com](mailto:candace.cooney@pearson.com).

### HELPFUL PEARSON LINKS

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

#### MYLAB & MASTERING: 10 BEST PRACTICES

[www.pearsonmylabandmastering.com/northamerica/educators/results/](http://www.pearsonmylabandmastering.com/northamerica/educators/results/)

#### COURSE REDESIGN

[www.pearsoncoursere redesign.com](http://www.pearsoncoursere redesign.com)

#### FACULTY ADVISOR NETWORK

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

#### RESULTS LIBRARY

[www.pearsonmylabandmastering.com/results](http://www.pearsonmylabandmastering.com/results)

#### TEACHING & LEARNING BLOG

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

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