



Flipped Learning

Implementation Strategies for High Impact

Educator Case Studies • 2015

Flipped Learning: Implementation Strategies for High Impact, Educator Case Studies 2015

Edited by Michelle D. Speckler

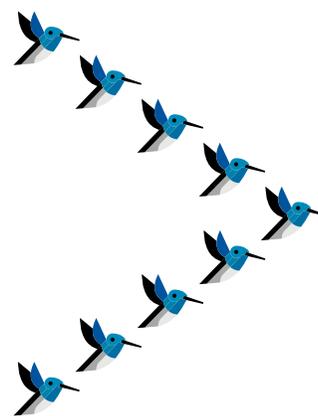
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Welcome Letter

Dear Educator,

At Pearson, we define efficacy as a measurable impact on improving lives 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 data-driven implementation case studies that were codeveloped by educators and our Efficacy Results team. Educator participants are represented from both two- and four-year institutions, and each implemented a flipped classroom model. Findings from these case studies help us and educators understand the positive impact these implementations have had on the learner, and provide valuable insights into common teaching and learning challenges. Further, a list of proven MyLab/Mastering/REVEL best practices and tips for getting started with your own implementation follow the case studies.

Looking for more case studies? Visit the **Pearson Results Library**, an online repository of more than 400 case studies, each documenting the impact that educator best practices had on student learning using our digital solutions. Filter by discipline, product, institution type, course format, or state/province to find a match.

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 using a Pearson digital solution. To learn more about partnering with us on a case study, please reference our new Efficacy Support—Partnering with Pearson document on page 3.

We look forward to hearing from you.

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Efficacy Support—Partnering with Pearson

At Pearson, we believe that learning is a life-changing opportunity and that education should have a measurable impact on learners' lives. We not only hold ourselves accountable for the products we make, we also work closely with educators to learn from, document, and share their learner experiences and outcomes via implementation and results case studies.

What Are Implementation and Results Case Studies?

Implementation and results case studies share actual implementation practices and evaluate possible relationships between program implementation and student performance. The findings are not meant to imply causality or generalizability within or beyond these instances. Rather, they can begin to provide informed considerations for implementation and adaptation decisions in other user contexts. Mixed-methods designs are applied to all case studies, and the data collected include qualitative data from interviews, quantitative program usage analytics, and performance data. Open-ended interviews are used to guide data collection.

Why Is Pearson Interested in Case Studies?

Case studies have helped educators over the past decade understand more about the teaching and learning experience, and use data to inform implementation modifications to improve learner outcomes and determine what is most relevant about their implementation and results. This in turn helps us improve our products and enables us to share blueprints of best practices with other educators seeking new ways to increase student success and continuously improve.

Pearson Results Library

The Pearson Results Library is a comprehensive collection of evidence-based case studies. Each case study documents the impact of educator best practices and Pearson digital solutions on student learning. Visit the Results Library at www.pearsonmylabandmastering.com/results.

Are you being asked to report on learner outcomes? Implementing a redesign? Wondering what impact your Pearson digital solution is having on program goals? **Pearson wants to partner with you.** Your results—and the best practices you used to achieve them—can be helpful and inspiring to your peers.

Questions to Consider

- What issues and challenges are you trying to address?
- What quantifiable outcomes are you trying to achieve?
- How will you measure these outcomes?
- How will you implement your chosen Pearson digital product to generate results?

What Quantitative Results Can Be Measured?

We can help you gauge the impact that your implementation, taken holistically, is having on your students' learning and course success. The results you measure with the full support of our data analysts may include but are not limited to:

- Relationship between homework completion and scores and final exams (or final course grades)
- Comparison of test averages, pass rates, success rates, or retention rates over semesters
- Accelerated completion of remedial courses
- Completion and achievement in subsequent courses

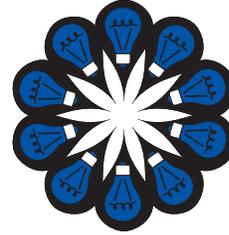
Don't Forget about Qualitative Observations

- Students coming to class more prepared and more engaged
- Improved class discussions; students asking higher-level questions
- Student ownership of learning, demonstration of agency and purpose in pursuit of academic goals

The Case Study Process—Partnering with Pearson

Every study project is unique. The process can take from two to nine months. Instructors interested in conducting studies should expect an interactive and rewarding partnership. To maintain objectivity, Pearson does not offer compensation for participation in case studies.

1. Overview call with Pearson efficacy results manager to discuss goals and research questions, identify measures of success, and agree on next steps.
2. Pearson provides planning guidelines, data collection tools, and sample surveys to share with students and faculty both at the start and end of your course.
3. Submission of quantitative and qualitative results and discussion of outcomes. Your Pearson efficacy results managers and data analysts are ready to assist with data analysis, to document implementation best practices, and to help define next steps.
4. Pearson completes the case study and sends it to the instructor for review and approval.
5. Pearson publishes the case study on its Results Library at www.pearsonmylabandmastering.com/results.



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Flipped Learning

TRADITIONAL TEACHING METHODS HAVE CHANGED VERY LITTLE SINCE the early 1900s. Watch any of Sir Ken Robinson's TED talks on education and you'll learn that despite an increased understanding of how students learn and the emergence of both more effective and more efficient models of teaching and learning, the "sage on the stage" model,¹ is still the standard in most classrooms.²

Higher education instructors who are looking to step outside the box to increase student engagement and improve learning gains are turning to the flipped learning model. Already popular in language learning, the flipped learning model dictates that students read material and master concepts *before* coming to class so class time can be spent diving deeper into course material. Today, educators across majors are taking advantage of innovations in information technology and flipping the classroom in new and exciting ways that take full advantage of the time spent both inside and outside of the classroom.

In fall 2013, when Marta Tecedor Cabrero, director of lower-level Spanish at [Texas Tech University](#), learned her instructors were struggling to keep students engaged, she spearheaded a flipped-classroom redesign using Unidos and MySpanishLab.

Primary goals included increasing communication in the classroom, teaching grammar with a functional/inductive approach, helping instructors shift the way they approach instruction, and provide pedagogical continuity between elementary and intermediate courses. A secondary goal was improving the student experience in order to increase the number of Spanish minors/majors. In addition, Cabrero wanted to promote learning autonomy—a major benefit of the flipped-classroom model, while also providing training for both students and instructors. Every instructor (100 percent) teaching in the flipped model reported an improvement in the students' communication skills and an increase in student engagement; 95 percent would elect to continue teaching the flipped model.

STEM disciplines are also jumping into the flipped classroom experience—and with promising results. [Vincennes University](#) and [Shoreline Community College](#) have been flipping their biology and microbiology courses for years with much success.

“Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves.”³

¹ King, A. *College Teaching*, Vol. 41, No. 1 (Winter, 1993), “Sage on the Stage to Guide on the Side,” pp. 30-35. The professor is the central figure, the “sage on the stage,” the one who has the knowledge and transmits that knowledge to the students, who simply memorize the information and later reproduce it on an exam—often without even thinking about it.

² Lodaya, H. (2013, June 6). Flipped classrooms can improve STEM education, <http://stemwire.org/2013/06/06/flipped-classrooms-can-improve-stem-education/>.

³ Chickering, A. W. (1996). “Implementing the Seven Principles: Technology as Lever,” *American Association for Higher Education and Accreditation Bulletin*.

Curtis Coffman, associate professor and biology department chair at [Vincennes University](#), observed that students were not coming to class prepared, which, in turn, impacted how class time was spent. To promote that students take more responsibility for their learning and come to class with a better understanding of basic content, he redesigned the course to a flipped classroom model. By assigning content prior to class, he can focus on more active-learning strategies and help students develop a deeper understanding of conceptual problems. The flipped format offers students the same information three different ways in order to address different learning styles and to help students make connections to the material. Coffman reports that since flipping his classroom with MasteringBiology, students who complete the assignments come to class with a better understanding of basic concepts and a recognition of what they both know and don't yet understand.

Judy Meier Penn, professor at [Shoreline Community College](#), sought a way to increase student participation in class, ensure that students came to class prepared, integrate more interactive learning, and reduce the amount of time she spent lecturing on basic concepts. In light of improved lecture-capture technology, Penn also wondered if she could eliminate the face-to-face lecture and free class time for more meaningful topics. She'd used group activities in the past and noticed that students seemed to (1) understand the associated material much better after those activities, and (2) move to higher levels of learning beyond memorization. After redesigning the course to a flipped format, Penn observed an increase in final exam scores, improvement in the averages of quiz grades, and better performance on higher-level quiz questions.

Business programs also are moving to a flipped model. Karen Hallows, lecturer at [University of Maryland](#), employs a flipped and blended classroom with both MyFinanceLab and Learning Catalytics. This flipped/blended format offers students the best of both worlds: they can work online any time on lecture material, plus attend face-to-face classes for numeric problem and other content review. Previous to redesign in fall 2013, students came to lecture unprepared. Hallows sought a digital course component that could help motivate students and improve preparedness for lecture. She wanted an integrated platform that includes homework, quizzes, study aids, and other learning resources. Data indicate a strong positive correlation between average MyFinanceLab quiz scores and average MyFinanceLab homework scores and average Learning Catalytics scores. In addition, students who earned an A, B, or C average quiz grade also earned Learning Catalytics scores 30 percent higher than students who earned a D or F average quiz grade.

In 2010, the College of Business at [Northern Illinois University](#) identified a need for a new Information Systems course to ensure that students learned the Microsoft Excel and Access skills they need to successfully complete the business sequence. The school's Course Transformation Project⁴ dictated that 30 percent of course content be available in a media-rich online environment so students could do work before lectures, lectures be interactive and engaging, and the digital program provide instructors with in-class activities. Large section sizes meant that the digital resource would also be used for grading and testing. Presidential Teaching Professor Chuck Downing and his colleagues chose MyITLab for its simulated environment and ability to provide comprehensive application projects that could be used as both homework and assessment. Downing reports that MyITLab is a critical component of the redesign. "I wouldn't teach this course without MyITLab," he says. 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.

[University of Dallas](#) implemented a flipped classroom model using REVEL for its General Psychology course, resulting in students scoring significantly higher on exams than did students in the same course the previous year. Instructor Brittany Landrum explained that before REVEL, she used a printed textbook by a different author, plus a publisher-provided open-access website that included online quizzes. The challenge, however, was that there was no way to know if students were using the quizzes or how they were performing. Since it was important that all students in class had access to and read the textbook, she chose to implement REVEL because it is affordable, she can see if students have accessed it, and it is accessible anytime. Most important, it encourages students to read assigned course material before coming to class—an essential characteristic of the flipped classroom.

⁴ <http://www.niu.edu/transform/>

MasteringBiology

School Name Vincennes University, Vincennes, IN

Course Name Principles of Biology I and II

Course Format Lecture and lab, flipped classroom

Key Results After implementing MasteringBiology as part of a four-year course redesign to a flipped classroom, students earned more As and Bs and earned higher average final exam scores.

Submitted by

Curtis Coffman, Associate Professor and Biology Department Chair

Course materials

MasteringBiology and *Campbell Biology in Focus*, Urry, Cain, Wasserman, Minorsky, Jackson, and Reece

Setting

Vincennes University offers both two- and four-year degree programs, and enrolls more than 15,000 students across multiple campuses. The main campus is located in a rural area.

Principles of Biology I and II is a two-course sequence offering an integrated approach to the study of living organisms. Topics include genetics; cytology; respiration; photosynthesis; ecology; evolution; living-organism domains and kingdoms; plant morphology, physiology, and development; and animal morphology and physiology.

The students who take these courses are primarily preprofessional majors (i.e., premed, dentistry, pharmacy, physical therapy, and veterinary majors), in addition to agriculture, earth science, zoology, forensics, biotech, biology, and marine biology majors. The majority are full-time, traditional, college-age students.

Challenges and Goals

Associate Professor and Biology Department Chair Curtis Coffman found that students did not come to class prepared, which impacted how class time was spent. To promote that students take more responsibility for their learning and come to class with a better understanding of basic content, he redesigned the course to a flipped classroom. By assigning basic content to students prior to class, he can now focus on active learning and help students develop a deeper understanding of conceptual problems, which will help them succeed in future courses.

Implementation

The redesign was rolled out over a four-year period. The starting point was when Coffman attended a 2010 workshop for the National Association of Biology Teachers on lecture-free teaching by Bonnie Wood, professor at the University of Maine at Presque Isle, who wrote a book by the same title.

Coffman developed preclass worksheets to encourage students to prepare prior to lecture. Over a three-year period, he then collected active-learning exercises and case studies to incorporate into the class. In fall 2013, he added MasteringBiology and preclass videos to ensure students were prepared for in-class activities. Preclass work now includes the following:

1. 10–13 minutes of video that covers content to be discussed in class. The main sources of videos are YouTube, Crash Course Biology, and Bozeman Science.
2. A preclass MasteringBiology homework assignment, which may include BioFlix™, exercises, and quiz questions.
3. A paper-and-pencil assignment based on the textbook reading. Coffman creates the questions, which are focused on important background information.

The new, flipped format provides students with the same information three different ways to address different learning needs and help students make connections. Students who complete the work come to class with an understanding of basic concepts and a recognition of what they don't yet understand. Coffman uses the diagnostic reports in MasteringBiology to check for knowledge gaps and address misconceptions in class.

The following activities are utilized in class:

- Case studies
- Process modeling
- Group discussion questions
- Textbook data analysis and graphing for skills exercises

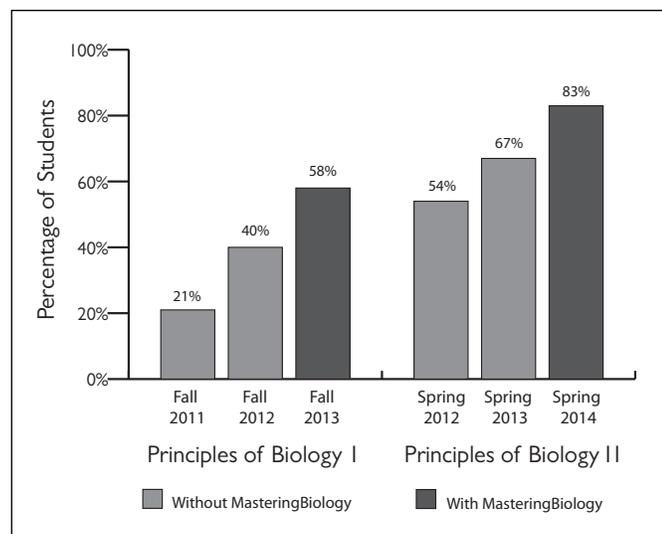


Figure 1. Percentage of Students Earning an A or B with and without MasteringBiology, Fall 2011–13 and Spring 2012–14 (Fall 2011, $n = 50$; Fall 2012, $n = 43$; Fall 2013, $n = 52$; Spring 2012, $n = 35$; Spring 2013, $n = 33$; Spring 2014, $n = 41$)

In-class activities come from sources including the National Center for Case Study Teaching in Science, *The American Biology Teacher*, and Coffman himself. These activities encourage the development of critical-thinking skills and focus on conceptual learning of biology topics.

Assessments

60 percent	Exams (five exams and a final)
25 percent	MasteringBiology
10 percent	Preclass chapter outlines
5 percent	In-class activities

Results and Data

Data for Principles of Biology I and II for the first semester MasteringBiology was in use indicated an improvement in student performance: the number of students earning an A or B in the course increased in both Principles of Biology I and II (Figure 1); in the spring 2014 Principles of Biology II course, in which the students had used MasteringBiology in the fall Principles of Biology I class, the A/B rate was 16 percentage points higher than the prior semester without MasteringBiology.

In addition, students earned significantly higher exam scores for both Principles of Biology I and II after using MasteringBiology (Figure 2). The final exam average for Principles of Biology I was notably higher than prior averages ($p = 0.000007$), with the Principles of Biology II exam significantly higher than prior semesters ($p = 0.019$).

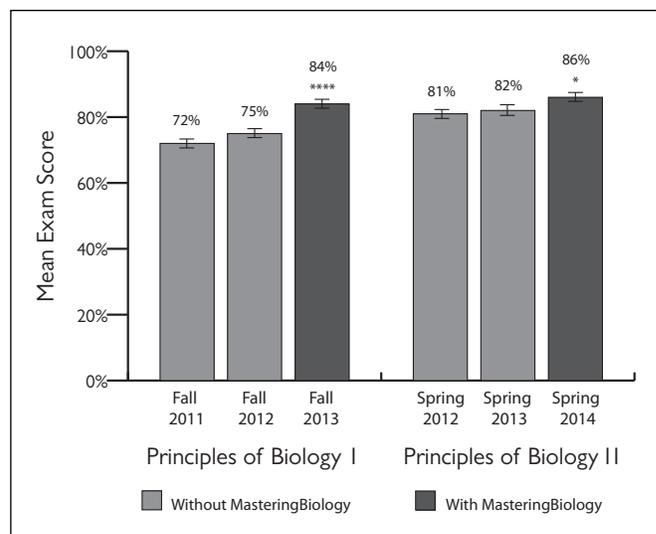


Figure 2. Mean Exam Scores with and without MasteringBiology, Fall 2011–13 and Spring 2012–14 (Fall 2011, $n = 50$; Fall 2012, $n = 43$; Fall 2013, $n = 52$; Spring 2012, $n = 35$; Spring 2013, $n = 33$; Spring 2014, $n = 41$) Error Bars = Standard Error, Significance * $p < 0.05$, **** $p < .0001$

The Student Experience

Students say that they enjoy using MasteringBiology and use it as a study tool to help prepare for exams. Prior to exams, students can often be found in the computer lab working on MasteringBiology, reviewing homework, and using the study area resources. In addition, student evaluations on the overall class have become much more positive since the redesign.

Conclusion

Coffman reports that since flipping his classroom and adding MasteringBiology, students come to class better prepared and understand what they know and don't know. In addition, topics are covered in more depth, which better prepares students for higher-level courses in the future.

According to Arthur Chickering and Stephen Ehrmann, "Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves." The flipped format does just that.

¹Chickering, Arthur W. and Ehrmann, Stephen C., "Implementing the Seven Principles: Technology as Lever," *American Association for Higher Education and Accreditation Bulletin*, 1996.

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.

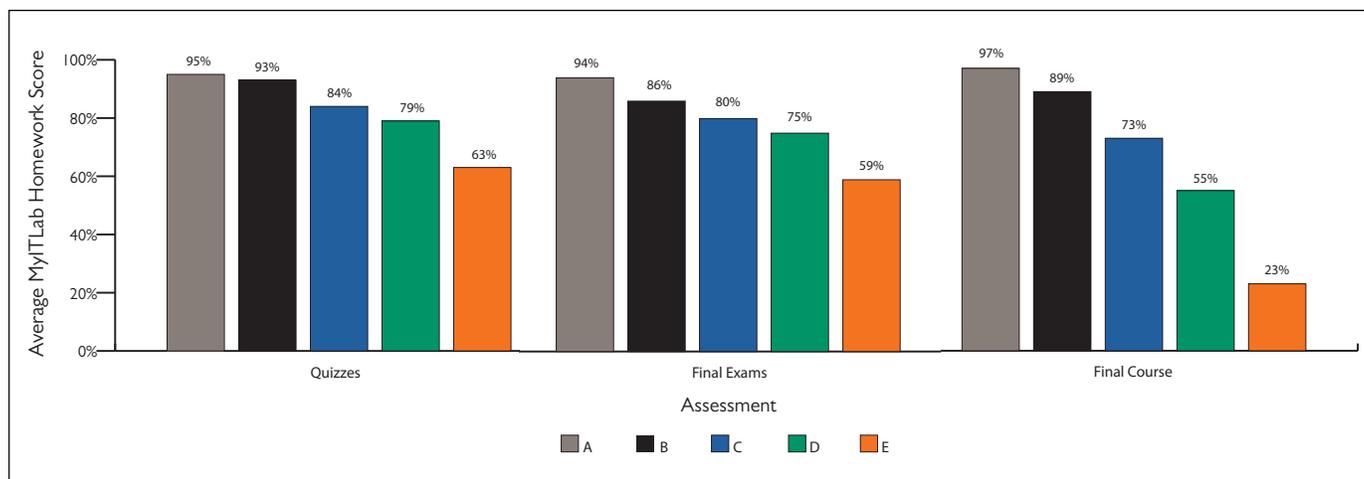


Figure 1. Grade Distribution by Average MyITLab Homework Scores per Average Quiz, Final Exam, and Final Course Grades, Fall 2014 ($N = 288$; quizzes: $A n = 48$, $B n = 135$, $C n = 79$, $D n = 17$, $F n = 38$; final exams: $A n = 19$, $B n = 103$, $C n = 116$, $D n = 41$, $F n = 9$; final course: $A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

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 and 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. Grades are based on correct responses, the lowest 10 percent of the total scores are

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 MyITLab homework grades to average quiz and final course

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

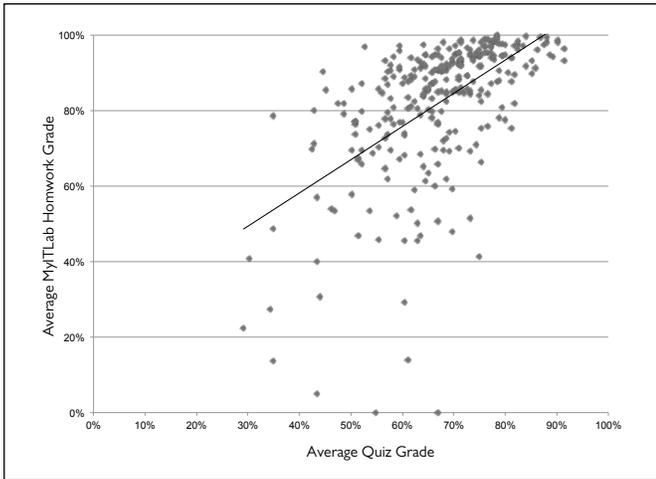


Figure 2. Correlation between the Average MyITLab Homework Grades and Average Quiz Grades, Fall 2014 ($n = 288$)

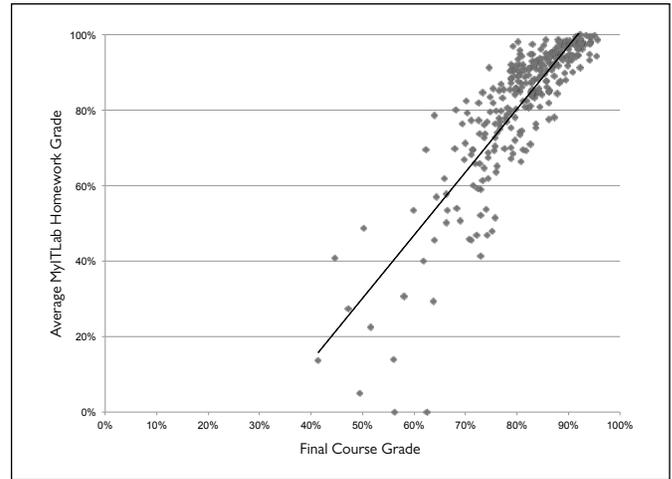


Figure 3. Correlation between the Average MyITLab Homework Grades and Final Course Grades, Fall 2014 ($n = 288$)

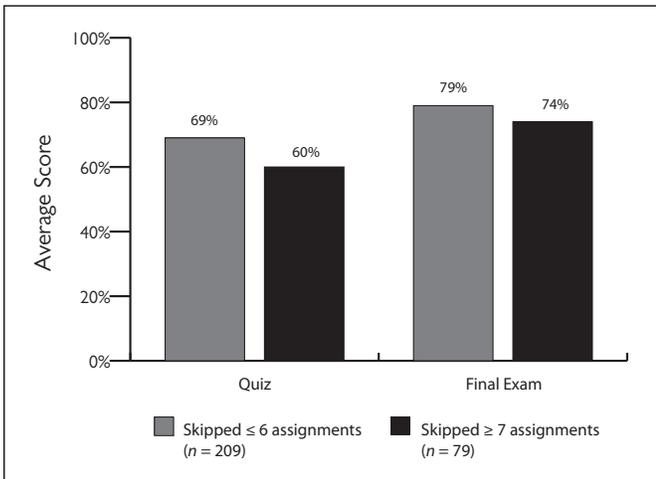


Figure 4. Relationship of Homework Completion Rates to Average Quiz and Final Exam Grades, Fall 2014 ($n = 288$)

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

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.

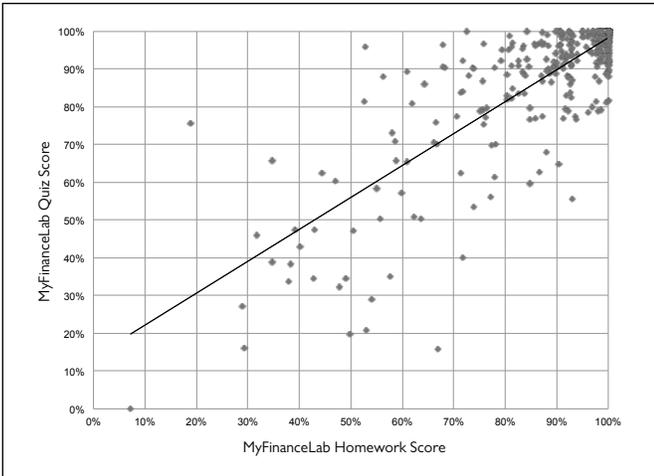


Figure 1. Correlation between Average MyFinanceLab Homework and Average Quiz Scores, Spring 2015 (n = 358)

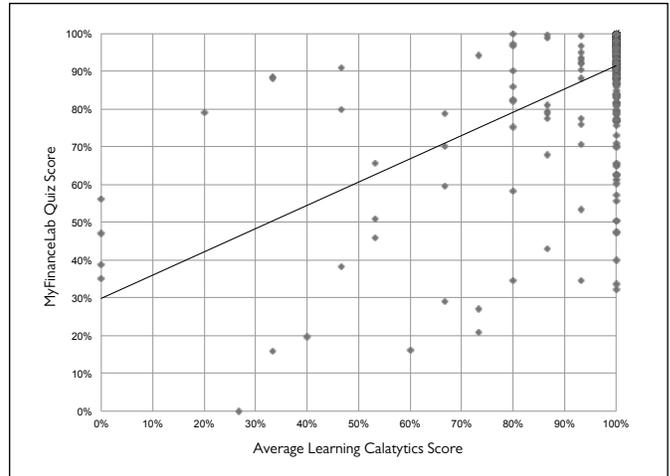


Figure 2. Correlation between Average MyFinanceLab Quiz Scores and Average Learning Catalytics Scores, Spring 2015 (n = 358)

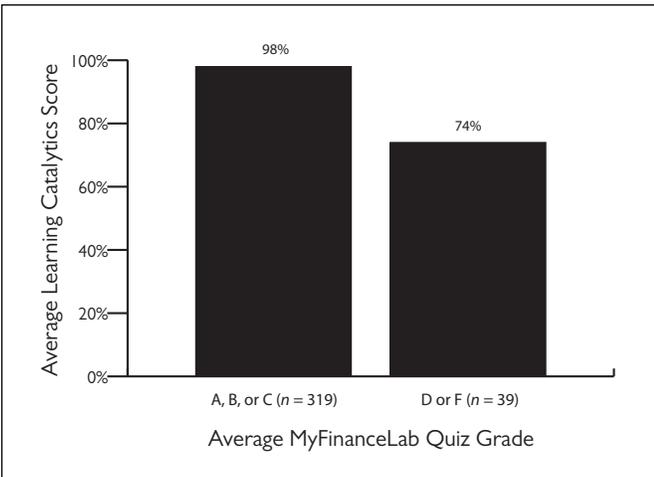


Figure 3. Average Learning Catalytics Scores and MyFinanceLab Quiz Grades, Spring 2015 (n = 358)

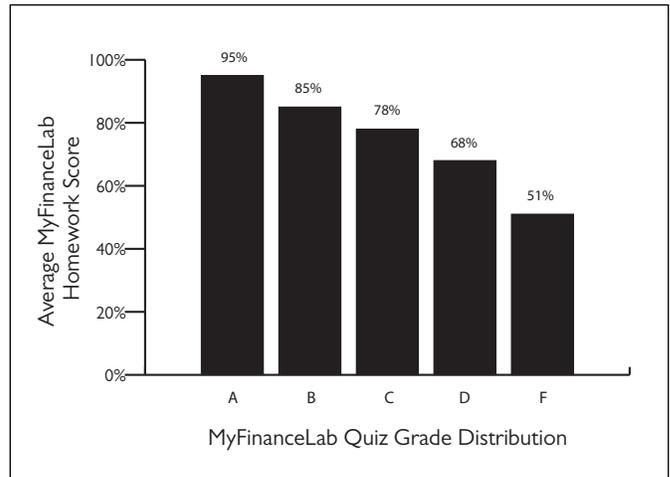


Figure 4. Average MyFinanceLab Homework Scores by MyFinanceLab Quiz Grade Distribution, Spring 2015 (n = 358)

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).

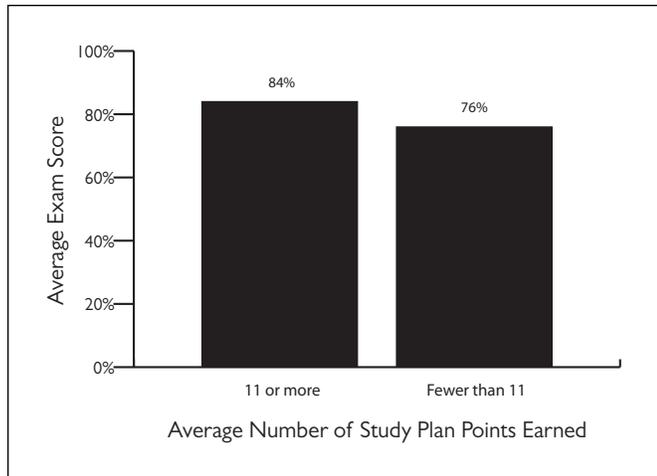


Figure 5. Average Exam Scores by Average Number of Study Plan Points Earned, Spring 2015 ($n = 358$)

- 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.

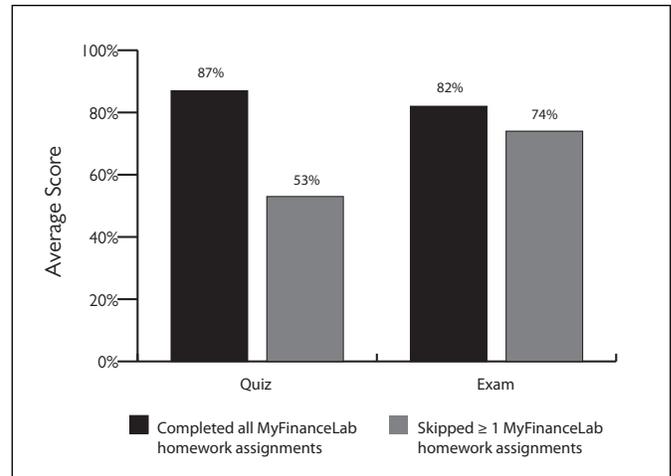


Figure 6. Average Quiz and Exam Scores by MyFinanceLab Homework Completion, Spring 2015 ($n = 358$)

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.

MasteringMicrobiology

School Name Shoreline Community College, Shoreline, WA

Course Name Microbiology

Course Format Winter–fall 2012: traditional lecture, winter 2013–winter 2014: flipped classroom

Key Results Assessment scores increased and more students earned As and Bs after a redesign of the course to a flipped format and after implementation of MasteringMicrobiology to enhance student learning outside the classroom.

Submitted by

Judy Meier Penn, Professor

Course materials

Microbiology with Diseases by Body System, Bauman

About the Course

Shoreline Community College is a suburban school on a quarter system. The students who take Microbiology are primarily nursing and allied health majors, and are a mix of returning adult students and recent high school graduates representing a wide range of ages, cultures, skills, and life experiences. This five-credit lecture and lab course is a survey of microorganisms with a focus on health-care applications: disease process, microbial control, and immunology. Laboratory techniques covered in the course include isolation and identification of bacteria.

Challenges and Goals

Professor Judy Meier Penn reports that in her traditional lecture, she could interact with only a few students. She sought a way to increase student participation in class and ensure that students came to class prepared, to integrate more interactive learning, and to reduce the amount of time she lectured on basic concepts.

Thanks to improved lecture-capture technology, Penn also wondered if she could eliminate the face-to-face lecture and free up class time. She had used group activities in the past, and noticed that students (1) seemed to understand the associated material much better after those activities and (2) seemed able to move to higher levels of learning beyond memorization.

Implementation

Penn started using MasteringMicrobiology in fall 2009, class testing the beta version because she believed it provided resources that would facilitate accomplishing her course goals. It helped students prepare for class by having them do an activity outside of class in MasteringMicrobiology, and it helped her to better understand student comprehension of the materials prior to class meetings.

Previous to implementing MasteringMicrobiology in her course, Penn gave a paper-and-pencil pop quiz or other short in-class assessment to obtain real-time feedback. MasteringMicrobiology enables her to identify student issues and misconceptions *prior* to class meetings. She can now use valuable class time to review problem areas and focus on more-active learning.

MasteringMicrobiology enables [Penn] to identify student issues and misconceptions prior to class meetings.

In the winter 2013 quarter, Penn redesigned her course and flipped the classroom. Assessments include eight quizzes and one comprehensive final exam per quarter. She drops each student's lowest quiz score. The remainder of the course assessments are as follows:

- **Lecture:** MasteringMicrobiology homework assignments plus activities completed in class. MasteringMicrobiology assignments are a combination of end-of-chapter, tutorial, and Penn's own custom-written questions. These questions are designed to help students learn—she allows multiple attempts and there is no time limit.

- **Lab:** Prelab assignments are completed before each lab session and include (1) reading the exercise, (2) preparing a flow diagram of the procedure and preparing locations for recording results in lab notebooks, and (3) taking a prelab quiz in MasteringMicrobiology to ensure content mastery.

In addition, Penn offers two optional, not-for-credit MasteringMicrobiology assignments: a practice quiz (objective questions to practice for the graded quiz) and lab study questions (study questions to test understanding of course content and the application of it from lab).

Students receive the information they need before each class by reading, viewing a video lecture, and completing a MasteringMicrobiology assignment. During class time, they participate in group activities, such as working on application questions including case studies; pairing up with other students to practice explaining processes; and making models and diagrams that illustrate concepts.

When she moved to a flipped classroom, Penn identified the following best practices:

- *Introduce the format and activities with a positive attitude and show statistics that illustrate improvements in quiz or course grades.* If students understand the change can help them, they are more likely to move out of their comfort zone and fully participate in it.
- *To help students come to class prepared, give them low-stakes MasteringMicrobiology assignments after they have watched the lecture videos and done the readings.* Encourage students to complete assignments without looking up answers, so they can truly assess what they understood.
- *To make the most of group activities, do the following:*
 - Spend part of the first class asking students to brainstorm the qualities that make a good group member and discuss ways to involve all members in discussions.
 - During the 10 instructional weeks of the quarter, change groups only one or two times during the term and have students complete peer reviews.
 - Have students suggest two people they'd like to work with and put them with at least one of those people in subsequent group assignments.

- When forming groups, include a mix of success levels, genders, and ethnicities, as well as at least one person who has the potential to be an effective leader. Provide an online group page in the school learning management system where they can share and discuss course content.
- Make sure that group activity assignments are aligned with what students are tested on and how they are tested, e.g., the same level of Bloom's taxonomy and course objectives.

Assessments

- 55 percent Quizzes (eight, the lowest is dropped)
- 25 percent Lab
- 10 percent Lecture assignments
- 10 percent Comprehensive final exam

Results and Data

Penn compared student success rates from the traditional and flipped quarters and discovered that the biggest change was a five-percentage-point increase in As and Bs (Figure 1).

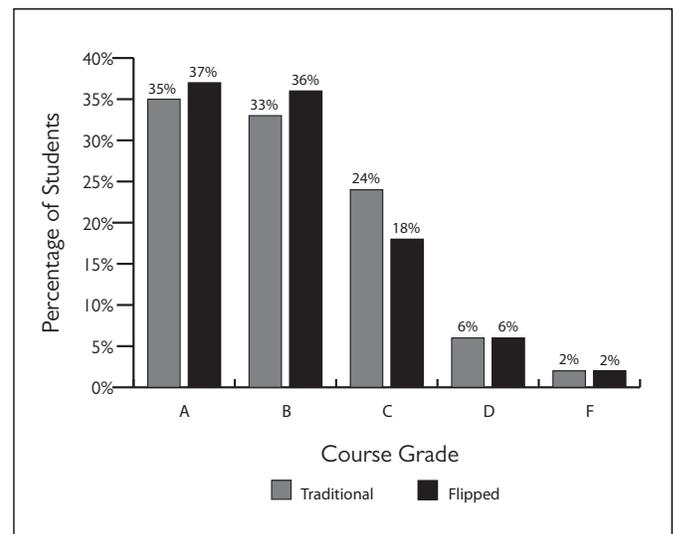


Figure 1. Comparison of Grade Distribution in Traditional and Flipped Classroom Settings, Fall 2012–Winter 2014 (Traditional, Fall 2012–Winter 2012, n = 54; Flipped, Spring, Winter, Fall 2013, Winter 2014, n = 132)

In the flipped format, students share strategies for reading, test taking, and problem solving; and they are more likely to form study groups and hold online study sessions.

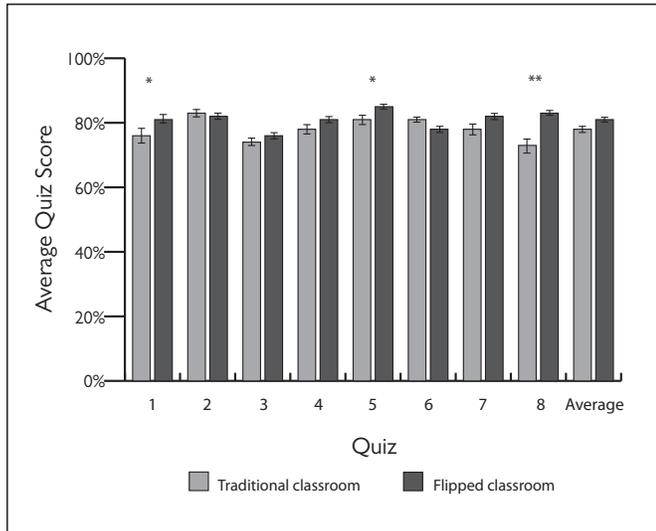


Figure 2. Comparison of Average Quiz Scores in Traditional and Flipped Classroom Settings, Fall 2013–Winter 2014 (Traditional, $n = 53$; Flipped, $n = 127$; Error Bars = Standard Error; Significance * $p < .05$; ** $p < 0.01$)

After redesign to a flipped format, Penn observed the following:

- The mean final exam score increased from 73 to 75 percent.
- The averages of six of eight quizzes and the quiz average increased, three being statistically significant (Figure 2).
- Students performed better on higher-level quiz questions.

The Student Experience

In an end-of-quarter survey, students were asked to rate MasteringMicrobiology assignments and practice items for their effectiveness in helping them to learn course content. The results show that the majority of students from the winter 2013 through 2014 quarters felt that MasteringMicrobiology assignments helped: 51 percent said they helped “significantly,” and 43 percent said they helped “somewhat” ($n = \sim 65$).

In addition, Penn asked students for feedback on the flipped-classroom approach. Student responses included the following:

“The flipped class has helped me to not only learn the information, I retain it.” (Winter 2013)

“This is the first time I’ve taken a class where the easy parts (reading, viewing lecture) are done at home and the hard parts (learning and understanding) are done in class. It gave me time to interact with my instructor, which definitely benefited me during the quarter.” (Spring 2013)

In the flipped format, students share strategies for reading, test taking, and problem solving; and are more likely to form study groups and hold online study sessions. As nearly all of Penn’s students are planning careers in allied health, they also benefit from the interpersonal communication gains of these activities.

Conclusion

An April 2014 study looks at 225 published and unpublished studies that compare the results of experiments documenting student performance in courses with at least some active learning versus traditional lecturing. The study, published in Proceedings of the National Academy of Sciences online, found that the results of these 225 studies “document that active learning leads to increases in examination performance.”¹ The results of this study show similar findings.

By using MasteringMicrobiology as a platform for learning outside the classroom, Penn has incorporated more active learning in the course, moving from a mostly traditional lecture format to a fully flipped format, and in fall 2014 she started using Learning Catalytics for some of the class activities.

Now when she enters the classroom, students are often already talking about the content that was assigned for the day. She hears things like, “Did you understand...?” or “I think the hardest part was...” It is evident that they are engaged, working outside the class, and more prepared, which has resulted in higher levels of learning and success rates in the course.

¹Active learning increases student performance in science, engineering, and mathematics, Scott Freeman, University of Washington, Sarah L. Eddy, University of Washington, Miles McDonough, University of Washington, Michelle K. Smith, University of Maine, Nnadozie Okoroafor, University of Washington, Hannah Jordt, University of Washington, and Mary Pat Wenderoth, University of Washington. Edited by Bruce Alberts, University of California, doi: 10.1073/pnas.1319030111, <http://www.pnas.org/content/early/2014/05/08/1319030111>.

REVEL

School Name University of Dallas, Irving, TX

Course Name General Psychology

Course Format Flipped classroom

Key Results REVEL provided students with access to assigned course material. Its assignment calendar encouraged students to read material before coming to class; the performance dashboard helped the instructor decide which topics to emphasize during lecture. After implementation of REVEL, exam scores were significantly higher than those in the same course the previous year. Both cohorts were academically equivalent.

Submitted by
Brittany Landrum, Instructor

Course materials
REVEL for *Psychology* by Ciccarelli and White

Setting

University of Dallas is a private, four-year university accredited by the Southern Association of Colleges and Schools, located 15 minutes from downtown Dallas. Approximately 95 percent of the 1,360 undergraduate students have demonstrated financial need and are awarded financial aid and/or scholarships. Most students are traditional in age and registered full time. General Psychology serves as an introduction to various topics including learning, memory, sensation, perception, intelligence, and consciousness. In addition, various fields in psychology are explored, including social, abnormal, physiological, and developmental. Students are a mix of freshman, sophomores, and juniors and reflect the overall university demographics.

Challenges and Goals

Before implementation of REVEL, Instructor Brittany Landrum used a printed textbook by a different author, along with the publisher-provided open-access website that included online quizzes. “The challenge with these quizzes was that there was no way to know if students were using them or how they were performing,” says Landrum. “It is very important that all students in my class have access to and read the textbook.” She chose to implement REVEL because it is affordable, she can see if her students access it, and it is easily accessible at anytime. REVEL is a way to encourage students to read their assigned course material before coming to class. She believed it would better prepare them to engage in higher, more conceptual levels of thinking, resulting in improved performance on exams. “My exams consist of mostly applied and conceptual questions, and

students need to understand the material to do well,” she says. “Simply memorizing definitions from the book is not enough.”

Implementation

To align with the course syllabus, students completed 16 chapter assignments in REVEL throughout the semester. Quizzes embedded within assigned REVEL reading material were due before 9:00 a.m. on the day the material was covered in class. All quizzes were available two weeks prior to the due date, giving students plenty of time to complete assignments and keeping them on pace with the syllabus. REVEL’s performance dashboard provided Landrum with an overall class score for each chapter assigned, as well as individual student scores. This feature enabled her to see how well her class understood the material and helped her prepare lectures accordingly. Students were able to track their progress from the REVEL performance dashboard throughout the semester. If they did not complete a REVEL assignment on time, it was reflected in their overall REVEL score. At the end of the semester, Landrum exported all students’ overall REVEL scores at once. This export included an overall REVEL score for each student that counted as 35 percent of their final course grade.

Assessments

45 percent	Exams (five)
35 percent	REVEL (16 chapter assignments)
15 percent	Participation
5 percent	Attendance

Connecting REVEL assignments with the syllabus made it easy for students to keep up with their work and enabled Landrum to use information from the REVEL performance dashboard to structure her lectures.

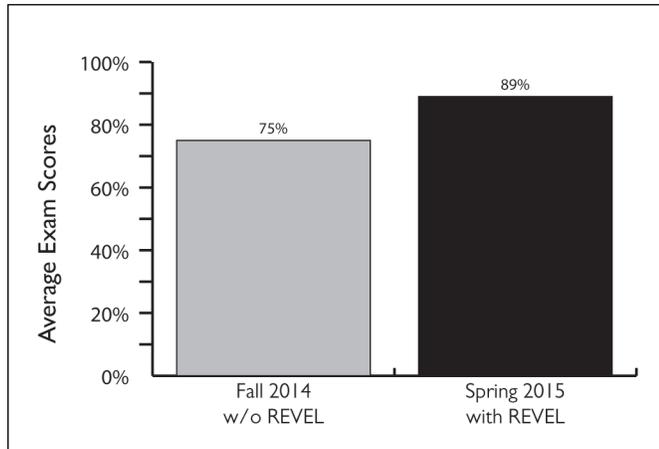


Figure 1. Average Exam Scores without REVEL (Fall 2014, $N=33$) and with REVEL (Spring 2015, $N=31$)

Results and Data

Students who used REVEL ($M = 89\%$, $SD = 5\%$, $N = 31$) scored significantly higher on exams than students in the same course the previous semester who used a traditional print textbook with optional open-access quizzes ($M = 75\%$, $SD = 12\%$, $N = 33$), $t(2) = -5.86$, $p < .01$ (Figure 1). Both fall 2014 and spring 2015 exams consisted of mostly applied and conceptual multiple-choice questions. The same topics were covered each semester, questions were pulled from publisher-provided test banks, and both cohorts were equivalent academically and in terms of preparedness for the course.

Benefits observed

- Thirty out of 31 students (97 percent) in spring 2015 accessed their assigned course material before the first assignment was due.
- Students complete chapter assignments in REVEL before class and come to class better prepared. Twenty-one out of 31 students (68 percent) in spring 2015 completed all assignments before coming to class. Two out of 31 students missed more than two assignments.

- Seeing student performance prior to the lecture enabled Landrum to emphasize or expand on topics in class.
- REVEL is an affordable option for students.
- REVEL is easy to use.

The Student Experience

In spring 2015, an end-of-semester survey asked students for observations on their experience using REVEL. Their feedback was positive, mostly focusing on REVEL's accessibility and ease of use. When asked what they liked best about REVEL, student responses included the following:

"Easy access to materials."

"Very accessible for those with disabilities."

"It made the course easier."

Students were also asked what best practices they would share with students using REVEL for the first time. Best practices from students included:

"Highlight or take notes on important information from REVEL assignments."

"Play the audio while reading."

"Spread it out; don't try to do everything in one sitting."

Conclusion

"REVEL has had a positive impact on the way I teach my course," says Landrum. "I believe it led to improved exam performance." Connecting REVEL assignments with the syllabus made it easy for students to keep up with their work and enabled Landrum to use information from the REVEL performance dashboard to structure her lectures. Next semester, she plans to explore implementing early intervention strategies using the REVEL performance dashboard.

M = Mean, SD = Standard Deviation, N = Total number of learners

MySpanishLab

School Name Texas Tech University, Lubbock, TX

Course Name Spanish Elementary Review

Course Format Hybrid, flipped classroom

Key Results

One hundred percent of instructors teaching the flipped method report that the quality of students' communication skills has improved and that they have seen a noticeable increase in student engagement and communication during class time. Ninety-five percent of instructors would elect to continue teaching the flipped model.

Submitted by

Marta Tecedor Cabrero, Director

Course materials

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

Background

Texas Tech University is a public university enrolling more than 33,000 students a year. Students in the College of Arts and Sciences are required to complete six credits of language courses (sophomore level or above) to graduate; students in the first-year sequence must complete 11–16 hours of language instruction. Annual enrollment in elementary and intermediate Spanish is 1,500–2,000 students with 20 students per section. Fall 2014, there were 100 Spanish majors and 320 Spanish minors.

Spanish Elementary Review, a five-credit, one-semester course, is designed for students with at least two years of high school Spanish. The course covers chapter *preliminar* through Chapter 4 in *Unidos*. Students attend class three hours each week; there is no designated lab time.

Challenges and Goals

When Marta Tecedor Cabrero, director of lower-level Spanish, arrived at Texas Tech in fall 2013, he was informed that the instructional approach in the elementary and intermediate courses was not working. A communicative method was in place, but instructors were struggling to implement instruction that engaged students. During her time as a PhD student at the University of Iowa, she had experience redesigning a curriculum and teaching with the flipped model. In fall 2013, Cabrero spearheaded the flipped classroom approach with *Unidos* and MySpanishLab with four primary goals.

- Increase communication in the classroom.
- Teach grammar with a functional/inductive approach.

- Help instructors change how they approached instruction.
- Provide pedagogical continuity between elementary and intermediate courses.

A secondary goal of the redesign was to improve the student experience in elementary and intermediate Spanish in order to increase the number of students minoring and majoring in Spanish. Finally, Cabrero sought to promote learning autonomy, a major benefit of the flipped model, while also providing appropriate training for both students and instructors.

Implementation

In the flipped classroom format, students work on grammar structures and vocabulary topics in MySpanishLab *before* coming to class. The instructor sets clear expectations that students must take responsibility for studying and learning the basic rules of grammar, tenses, and verb endings. The instructor reviews the assigned material during the beginning of class; then spends the remainder of class time encouraging students to actively communicate in Spanish, using their knowledge from preclass work.

“With this new format, I do not teach grammar concepts, but instead focus on making sure that students are practicing what they learned in the online platform and using those skills to communicate effectively. I am also teaching culture which was difficult to do with the old methodology since we did not have enough time.”

—Instructor

“Students have exponentially more opportunities to express themselves in the target language. The environment of the class is much more social, which enables students to increase their confidence and diminish the anxiety that comes with speaking a foreign language.”

—Instructor

For each vocabulary or grammar topic, students complete both graded and nongraded activities in MySpanishLab; activities are due at midnight the night before class. Nongraded activities include interactive presentations, vocabulary tutorials, grammar tutorials, and Amplifire Dynamic Study Modules. Graded work includes Apply activities (maximum of four per topic, per day), comprehension-based *Piénsalo* activities, two listening and two reading activities per chapter, games, and a practice test. If there are more than four activities, they contain listening and/or have more than a binary choice such as *true/false*. Additional MySpanishLab activities are used later in the week for review of that week’s topic. Students are allowed three attempts at MySpanishLab homework.

Students complete five vocabulary quizzes during the semester. Each quiz evaluates students’ knowledge of the corresponding chapter’s vocabulary, and is taken from both the vocabulary section in *Unidos* and the vocabulary tutorials in MySpanishLab for that chapter.

Although students start learning grammar in MySpanishLab, they sometimes are assigned short reflective activities in-class for more difficult grammar points. Students who need additional help are encouraged to take advantage of virtual or face-to-face office hours, once they have done their homework.

The instructor experience

In order for instructors to successfully implement the flipped classroom, they must be thoroughly prepared for the shift to “communication facilitator.” Without coaching, they will continue to teach the way they always have and/or ignore the new form. Cabrero and her colleagues developed a thorough training program to assist with the transition. Before the semester begins, they have individual instructor meetings to talk about teaching the flipped method with *Unidos*—when instructors know how the material has been explained to students, they can better use class time. They also prepare instructors for class by providing all necessary classroom materials, including instructions and PowerPoint slides that incorporate a road map of each chapter and a brief review of the material. Instructors are also coached on how to approach office hours, and are provided semistructured interview scripts.

Over the course of the semester, Cabrero conducts one team meeting each week to discuss how things are going and to answer questions. She lets instructors know that they can create their own course materials as soon as they respect the philosophy of the program. Ongoing training includes:

- Coaching instructors on how to use MySpanishLab’s infinite resources in a balanced way.
- Teaching instructors how to coach students in the new flipped classroom format.
- Talking about the links between MySpanishLab activities, in-class activities, and assessment.
- Discussing study strategies, skill strategies (listening and reading), and test-taking strategies.
- Practicing development of in-class activities.
- Training instructors how to grade oral and writing activities for consistency and to minimize grade inflation using real examples.

Assessments

15 percent	Chapter exams (three)
15 percent	Final oral exam
15 percent	Final written exam (includes listening assessment, writing assessment, reading comprehension)
10 percent	Participation (12)
10 percent	MySpanishLab assignments
10 percent	Vocabulary quizzes (five)
10 percent	In-class oral activities (two)
10 percent	Writing activities (two)
5 percent	Midterm oral exam

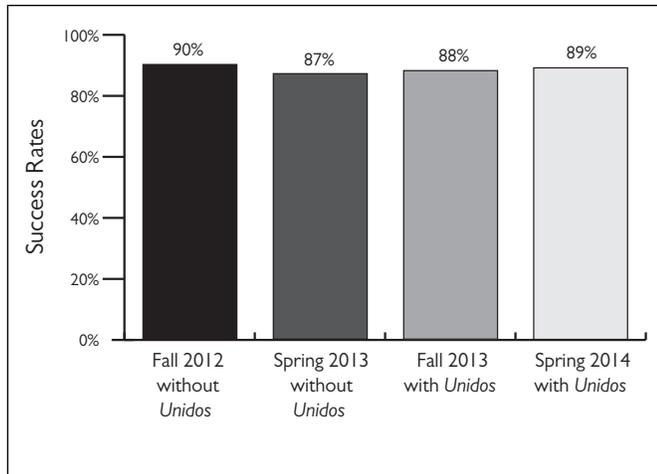


Figure 1. Percent of Students Receiving Final Course Grade of A, B, or C, Fall 2012 (n=371), Spring 2013 (n=481), Fall 2013 (n=446), Spring 2014 (n=419)

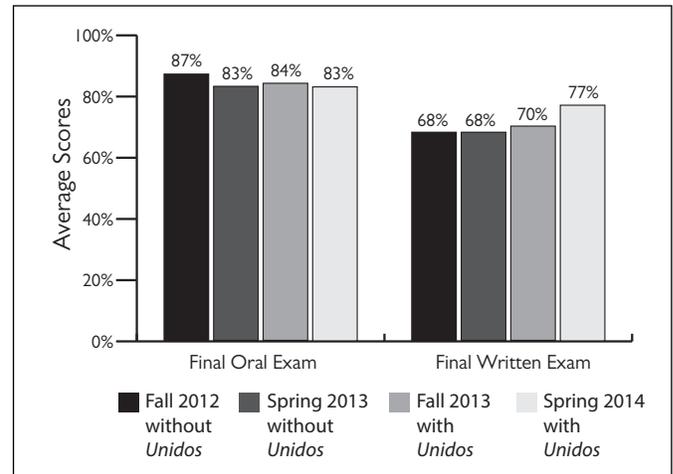


Figure 2. Final Oral Written Exam Scores, Fall 2012 (n=371), Spring 2013 (n=481), Fall 2013 (n=446), Spring 2014 (n=419)

Benefits

The computer-enhanced course with MySpanishLab offers the following advantages:

- **Self-pacing.** Students can take the time they need to do the online portion of the course as long as assignments are completed before the deadlines.
- **Immediate feedback.** The computer grades electronic homework exercises instantly, tells students which items or activities are wrong, and makes suggestions on what to study before attempting the exercise again.
- **Opportunity for improvement.** The program is designed so students can attempt the exercises/activities as many as three times in order to earn their desired grade. The students who do the work in advance (and take advantage of the system) do better on their first try. Students who get closer to 100 percent on their first attempt are usually the students who are studying correctly.
- **Easy access.** Students can do online assignments from any computer with Internet access.

“This method helps improve students’ oral, speaking and listening abilities. However it is important to work on their expectations. Many of them want to get an A without doing the work.”

—Instructor

Results and Data

Very positive feedback was obtained from a summer 2014 anonymous instructor survey; the survey was answered by all 20 instructors teaching the redesigned course. The following percentages reflect instructor’s perceptions since the transition to *Unidos* and the flipped classroom in Elementary Spanish:

- 100%** Agree that “the quality of students’ communication skills has improved.”
- 100%** Have noticed an increase in student engagement/communication during class time.
- 77%** Say, “If given the choice, I would continue teaching with the flipped classroom model.”
- 93%** Perceive an improvement in students’ speaking abilities.
- 90%** Agree that they “can now use classroom time more effectively.”
- 73%** Say “students exhibit more confidence speaking in the classroom.”
- 73%** Perceive an improvement in students’ listening abilities.
- 57%** Perceive an improvement in students’ writing abilities.
- 53%** Perceive an improvement in students’ reading abilities.
- 50%** Think “students’ reactions to the new flipped classroom’ format have been positive.” (25 percent of instructors reported “no change.”)

“Students come to class prepared. They have studied verb conjugations and grammar and are ready to engage in speaking activities. It takes them less time to understand what I explain in class.”

—Instructor

While the initial focus was on evaluating instructors’ responses and perceptions of the flipped model, Cabrero has also begun to collect and study results of student scores. Figures 1 and 2 show success rates and final exam scores from the first year of implementation. Initial end-of-year results show a modest pattern of improvement in success rates and a pattern of growth from the first to the second semester. These scores represent comparisons of different student cohorts from only one year of implementation and are therefore inconclusive. The expectation is that there will be increased gains over time; Cabrero looks forward to studying these results with more detailed analysis, collecting data on student perceptions as they advance through successive levels of the new model, and investigating how the switch to a flipped classroom impacts both program enrollment and the number of students choosing to minor or major in Spanish.

The Student Experience

Students have an orientation to MySpanishLab on the first day of class, but Cabrero believes that this is not enough. She explains that the instructor must continue to coach students on how to be successful throughout the semester. “We cannot assume that the flipped classroom method is implicit,” she says. “Students are not used to studying in advance of class time. As a result, we have seen a huge increase of students coming to office hours.”

It is very common for students to earn high scores on their MySpanishLab homework, but not on their chapter exams. The instructor’s goal is to coach students through the process of thinking about how to be successful in the course. They might ask, “How are you studying?” only to learn that the student is getting help on the homework from a friend. More often, the student doesn’t know why they’re doing poorly.

It is typical for students to prepare for the next day of class at close to midnight the night before. Many students work part- or full-time jobs; they watch the interactive presentation in MySpanishLab, but they don’t read the textbook. Cabrero has found that it is important to ask the student, “What are you going to do to get an A?”

Office hours are important, they help students understand the importance of studying, writing, and reflecting. Instructors don’t always want to tell students how to study well, but the reality is that many need to be told. For the majority of students, this extra coaching is helpful.

Conclusion

Following the first semester of the flipped Elementary Spanish Review, Cabrero flipped the next two levels of Spanish. She launched Intermediate Spanish 1 with *Unidos* (Chapters 5–8) in spring 2014 and Intermediate Spanish 2 with *Unidos* (Chapters 9–12) in summer 2014. Both courses are three-credit hours each and are taught face-to-face.

After one year of implementation, the results provide clear evidence of positive perceptions from instructors. Overall, instructors report satisfaction with the flipped model. Developing a flipped classroom method takes time and effort. Instructors must be acclimated; students must be prepared to succeed in a different culture of learning.

Although there were some initial road bumps (they lacked comprehensive training in spring 2014), but with persistence and determination, they feel they are succeeding with the new model. Over the next couple years, they look forward to seeing how switching to the flipped classroom impacts overall enrollment and the number of Spanish minors/majors in the program.

Conclusion

THE SUCCESSFUL IMPLEMENTATIONS, 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 deep insights gathered from long-term tracking and measuring of student data.

Pearson offers a community of educators teaching with a Pearson digital product who are both passionate and willing to share their experience, advice, tips & best practices with other educators. This community, known as the Faculty Advisor Network (FAN), is available as a peer-to-peer resource to support and enhance your own teaching and learning experiences. Visit the FAN Website to meet and engage with this community of educators using MyLab & Mastering and REVEL products.

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 Pearson digital implementation increase exponentially. We can 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, Pearson digital 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 hope you'll want to include your experience in the next MyLab & Mastering or REVEL reports. To tell us about your success, contact Mary Jo Lawless, efficacy results manager, at maryjo.lawless@pearson.com.

HELPFUL PEARSON LINKS

Following is a list of websites 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.

CENTER FOR EDUCATOR LEARNING & EFFECTIVENESS

<http://researchnetwork.pearson.com/educator-effectiveness/resources/flipped-learning-resources>

COURSE REDESIGN

www.pearsoncoursereDesign.com

FACULTY ADVISOR NETWORK

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

PEARSON RESULTS LIBRARY

www.pearsonmylabandmastering.com/results

TEACHING & LEARNING BLOG

<http://www.pearsoned.com/blog/>

TEN

STEPS

TO A SUCCESSFUL IMPLEMENTATION

PLAN

- 1 Define the goals and outcomes you have for using Pearson technology in your classroom.
- 2 When choosing which features and assets to use, make sure they align with your goals, syllabus, and assessment plan.
- 3 Identify how you will measure your success.

IMPLEMENT

- 4 Take advantage of Pearson's professional development and training opportunities to improve learner outcomes.
- 5 Customize the course to best meet your goals and outcomes.
- 6 Use your "Getting Started" resources to set your students up for success.

EVALUATE

- 7 Monitor student performance throughout the term.
- 8 Improve student performance by using communication tools and other intervention methods.
- 9 Be open to making revisions during the term to improve the course's effectiveness.
- 10 Review data to measure success and plan course revisions.

Retrace your steps for another successful term if you're teaching this course again.

List of Contributors

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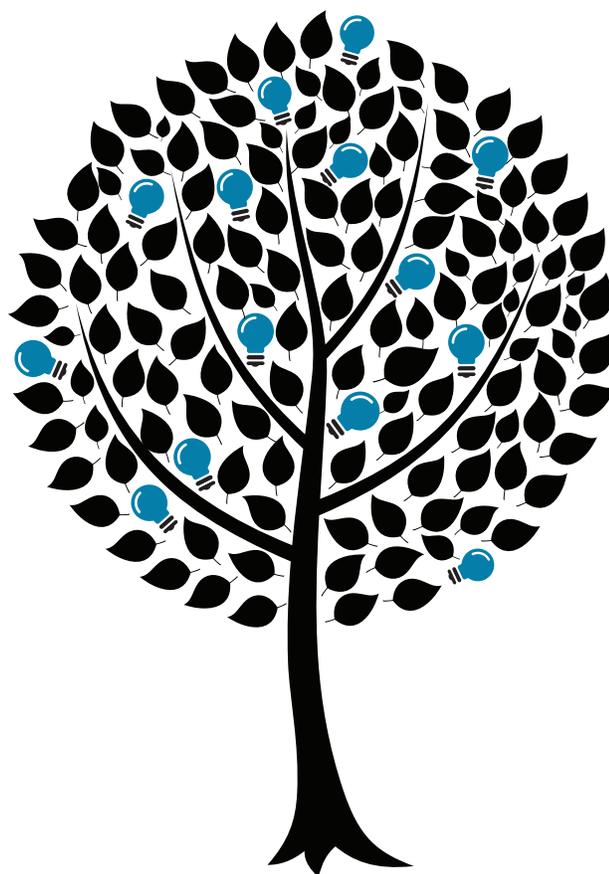
Curtis Coffman
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Chuck Downing
Northern Illinois University

Karen Hallows
University of Maryland

Brittany Landrum
University of Dallas

Judy Meier Penn
Shoreline Community College



Pearson is committed to providing products and services in support of effective teaching and learning. We do this by fostering partnerships with all industry stakeholders, including you, our customers. This is your community. In a spirit of sharing best practices among peers, we offer instructors informative reports, present online forums and trainings, and sponsor various on-ground events throughout the year. We encourage you to participate, and we welcome your feedback.

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