

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 Knewton Adaptive 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 Knewton Adaptive 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

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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.

- **Knewton Adaptive Study Plan.** Use of the Adaptive 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 Adaptive 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 Adaptive 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 two 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.

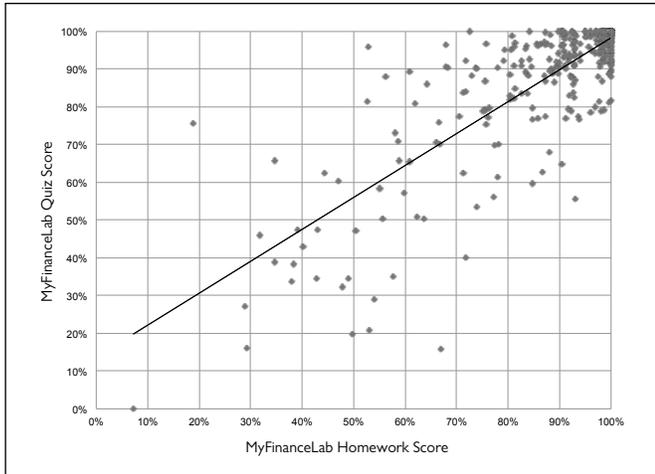


Figure 1. Correlation between Average MyFinanceLab Homework and Average Quiz Scores, Spring 2015 ($n = 358$)

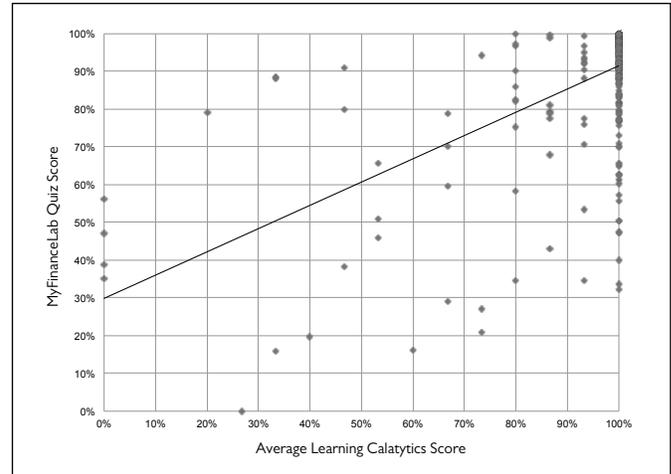


Figure 2. Correlation between Average MyFinanceLab Quiz Scores and Average Learning Catalytics Scores, Spring 2015 ($n = 358$)

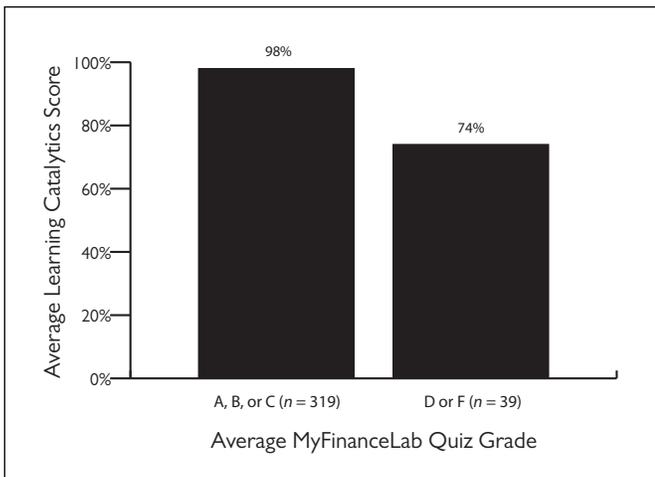


Figure 3. Average Learning Catalytics Scores and MyFinanceLab Quiz Grades, Spring 2015 ($n = 358$)

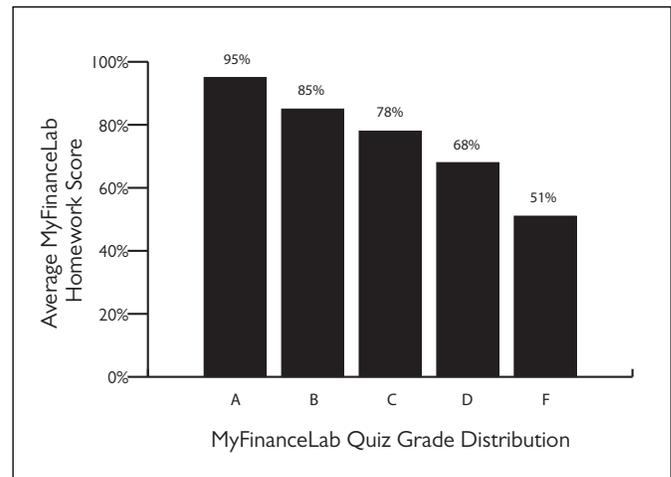


Figure 4. Average MyFinanceLab Homework Scores by MyFinanceLab Quiz Grade Distribution, Spring 2015 ($n = 358$)

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 Knewton Adaptive 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 Adaptive Study Plan to assess its impact on exam grades (Figure 5).

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

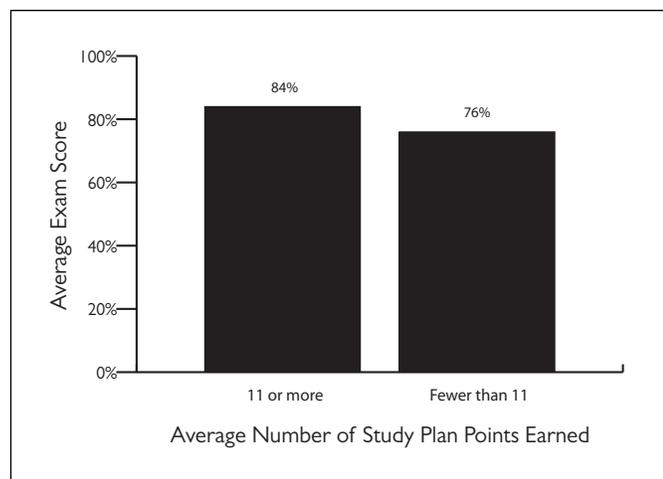


Figure 5. Average Exam Scores by Average Number of Adaptive Study Plan Points Earned, Spring 2015 ($n = 358$)

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

- 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.

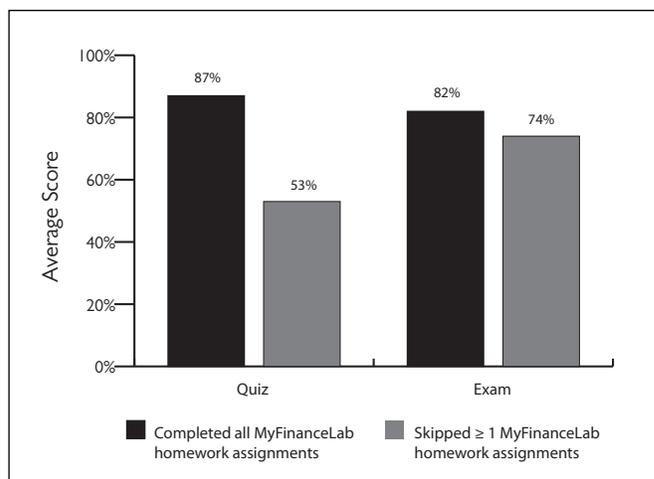


Figure 6. Average Quiz and Exam Scores by MyFinanceLab Homework Completion, Spring 2015 ($n = 358$)

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 Knewton Adaptive Study Plan that helps many students identify where they lack mastery. In the end-of-semester survey, student comments included, "[The Adaptive Study Plan] had a lot of useful practice questions that helped me understand the material," and "I liked the Adaptive 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 Adaptive Study Plan offers students material that is tailored to them; its personalized feedback helps students master concepts, not just guess at answers.