MyFinanceLab

School Name	University of Texas at Arlington, Arlington TX
Course Name	Business Finance
Course Format	Flipped, lecture

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

Submitted by
John Adams, Assistant Professor

Course materials
MyFinanceLab and *Principles of Financial Management,* Brief

Setting

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

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

Challenges and Goals

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

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

Implementation

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

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

Learning Catalytics is a bring-your-own-device student engagement, assessment, and classroom intelligence system whereby students engage with open-ended, instructor-led questions designed to develop critical-thinking skills and encourage students to work together, fostering teamwork and collaboration skills. Learning Catalytics responses are in real time; they help Adams identify misconceptions by the class overall and provide immediate feedback.
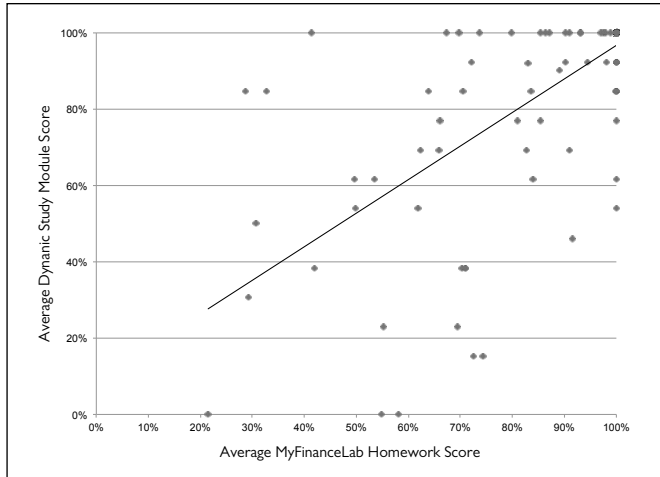
Figure 1. Correlation between Average MyFinanceLab Homework Scores and Average Dynamic Study Module Scores, Spring 2015 (*n* = 141)
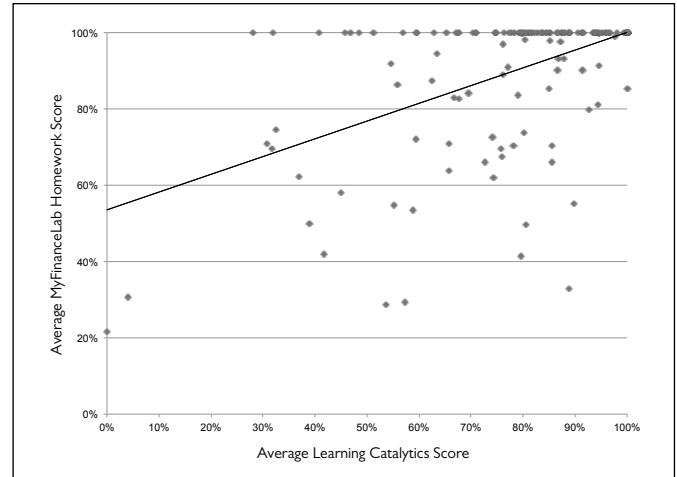

Figure 2. Correlation between Average MyFinanceLab Homework Score and Average Learning Catalytics Scores, Spring 2015 (*n* = 141)

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

- Complete required textbook reading.

- Complete the Dynamic Study Modules in MyFinanceLab. Due Tuesdays or Thursdays at 8 a.m., prior to the first class meeting for each chapter, credit is awarded for successful completion.

- Lecture. Twice per week, students receive a broad overview of key concepts, then engage in group activities and exam preparation.

- Learning Catalytics. Questions are a combination of homework-type problems, conceptual questions, and exam problems—mainly multiple choice or numeric response. There are 20 questions per lecture; the class as a whole must score at least 75 percent before Adams moves to the next concept. Students receive .5 points for attempting to answer a question, and .5 points for answering a question correctly. To inspire students to think before responding, if the class earns 100 percent on any Learning Catalytics question, it reappears on the midterm or final exam.

- MyFinanceLab Homework. Approximately 10 questions per assignment with multiple parts, students are expected to spend about one hour per chapter on MyFinanceLab homework. Assignments are due Tuesdays at 11:59 p.m.

Assessments

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

Results and Data

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

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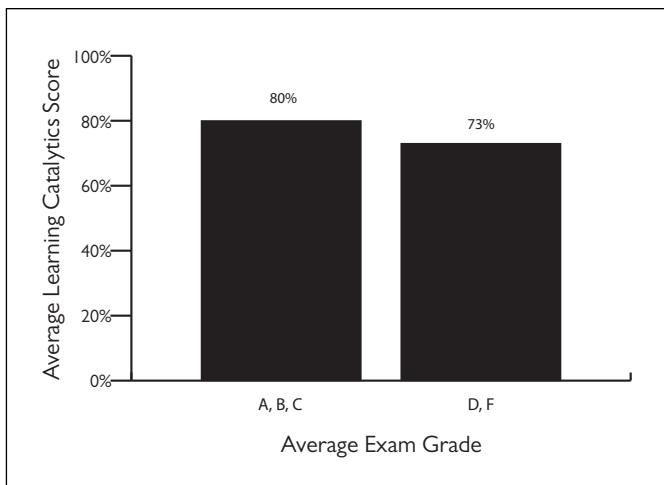

Figure 3. Comparison of Average Exam Grades (High and Low) and Average Learning Catalytics Scores, Spring 2015 (N = 141 total, n = 70 students earning an A, B, or C, n = 71 students earning a D or F)
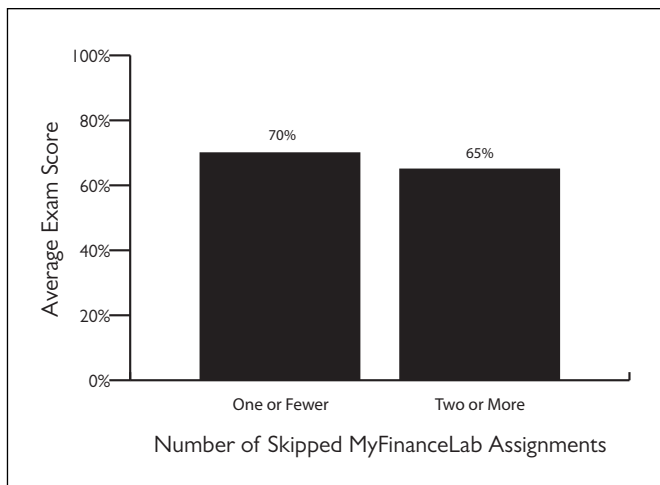

Figure 4. Average Exam Grades by MyFinanceLab Assignment Completion, Spring 2015 (N = 141 total, n = 101 Skipped ≤ 1, n = 40 skipped ≥ 2)

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

77%   Average Learning Catalytics score

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

87%   Average Dynamic Study Modules score

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

89%   Average MyFinanceLab homework score

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

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

71%   Average exam grade for students who completed all assignments

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

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

The Student Experience

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

100% Agreed or Strongly Agreed that their understanding of the course material increased as a result of using MyFinanceLab.

85% Agreed or strongly agreed that the Learning Catalytics questions helped their understanding of the lecture content or helped identify misconceptions they may have had about the lecture material.

57% Agreed or strongly agreed that the Dynamic Study Modules helped them to continuously assess their performance and provide additional practice in the areas where they needed assistance most.

85% Agreed or strongly agreed that the use of MyFinanceLab positively impacted their exam scores.

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

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

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

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

"I liked the use of it in class. It kept my attention."

Conclusion

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