

MyLab Operations Management educator study analyzes pre-lecture homework assignments and simulations at Colorado Mesa University

<p>School name Colorado Mesa University, Grand Junction, CO</p> <p>Course name Operations Management</p> <p>Course format Face to face</p> <p>Course materials MyLab Operations Management with <i>Operations Management: Processes and Supply Chains</i> by Krajewski, Malhotra, and Ritzman</p>	<p>Timeframe Fall 2017</p> <p>Educator Richard Vail, Professor</p> <p>Results reported by Candace Cooney, Pearson Customer Outcomes Analytics Manager</p>
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Key Findings

- 90% of students earning an above average MyLab homework score earned an A as their final course grade, and 100% students who scored above average on MyLab homework earned an A or B.
- Students who completed most assignments had higher average exam grades — students earning an A skipped fewer than one assignment on average.
- 87% of student survey respondents agreed that the pre-lecture assignments in MyLab helped them understand the basic concepts in the upcoming lecture.

Setting

- Locale: large, urban, four-year institution in western Colorado
- Enrollment: more than 10,000 students
- Freshman retention rate: 66%

- First-time students: 23%
- Minority students: 26%

About the Course

Richard Vail has been teaching for 28 years, including 21 years at Colorado Mesa University (CMU), where Operations Management is offered to more than 200 students annually. This is a one-semester, three-credit course offered face to face and online. Operations Management introduces students to the basics of using resources to produce goods and services, along with the concepts of planning, scheduling, and controlling productive activities and physical resources.

Challenges and Goals

Vail and his colleagues had been requiring homework and hand grading it prior to Fall 2016, when they met to consider a new textbook. **Looking for a digital companion program that would encourage students to participate in their own learning and facilitate greater understanding of the course content**, MyLab™ Operations Management was adopted. Vail also appreciated how MyLab provided instant feedback and automatic grading, two keys to success that could not be accomplished with paper-and-pencil assignments. Additionally, the simulation assignments in MyLab allowed him to merge quantitative study with application, enabling students to see the immediate function of OM concepts as they relate to real-world business challenges.

Implementation

An instructor may have other external considerations before deciding to adopt educational technology, including price. Vail and his colleagues certainly considered their students' budgets and looked for cost-effective solutions for students interested in cutting down on the expense of course materials. Vail said, "We are sensitive to student costs, so we make sure they get value out of the MyLab program." On an end-of-semester survey of his students (91% response rate), **86% of students agreed that MyLab was a good value for the money.**

Additionally, offering different purchasing options allows students to select the one that works best for them. On the student survey, respondents shared the following:

- 46% of respondents purchased the MyLab code with eText only (all-digital option)
- 35% of respondents purchased the MyLab code and a used, print textbook
- 19% of respondents purchased the MyLab code and a new, print textbook

Vail uses a variety of instructional techniques in his course: class discussion, lecture, simulations, team work, and group projects. Outside of class, students are expected to read the text, complete MyLab homework assignments, and participate in team activities. MyLab homework assignments are completed before lecture, have required due dates, and consist of the following features:

Problem sets: Weekly problem sets are chosen from end-of-chapter questions, usually include two or three multi-part numeric problems, and students have three attempts at completion. Learning aids like Help Me Solve This are turned on, and 85% of respondents on the student survey indicated they always or usually activate the learning aids for just-in-time, individual support when unable to start or finish an exercise. One student commented, “The homework aids (Help Me Solve This, and Show Me an Example) were fantastic! I would use these any time I was stuck and needed help. They helped me understand concepts better and follow along with the process of solving the problems.”

MyLab homework is a pre-lecture assignment intended to give students an understanding of core concepts so Vail can focus on more challenging and applied topics in lecture. Indeed, 87% of student survey respondents agreed that the pre-lecture assignments in MyLab helped them understand the basic concepts in the upcoming lecture. Additionally, Vail uses the MyLab gradebook to help identify problems the students found challenging, and he revisits the exercise in lecture before moving on to new material.

Video case studies: Vail assigns three video cases throughout the semester. Video case studies allow students to see operations management in action and learn to apply course concepts to real business situations. After reviewing the video in MyLab, students are required to complete a 150-word or less written response to questions that follow the video, using facts supported by the textbook, lectures, and discussions.

OM simulations: Vail assigns the five [MyLab Operations Management simulations](#). These interactive simulations give his students hands-on experience in real-world roles, helping them link course concepts to on-the-job application. Using real-life situations, students evaluate information and engage in decision making and critical analysis, which results in real-time feedback so they can see the impact of their choices and gauge their performance against individual, peer, and system metrics. Topics integrate with learning objectives and include inventory, quality control, forecasting, and project management. Simulations take approximately 20 minutes and students have multiple attempts at completion, allowing them to see the wide-ranging effects of their various decisions. On the end-of-semester survey, students reported the following:

- 80% of respondents agreed that the simulations in MyLab were a real-world application of the chapter material that allowed them to gain hands-on experience with decision-making in OM.
- 92% of respondents agreed that the simulations were a different and engaging way of working with the chapter concepts.

Students responded enthusiastically to the simulations:

- *“The simulations were so great in understanding the material covered in class and in other MyOMLab assignments.”*
- *“I really liked the simulations that put you in charge of making decisions for whatever unit we were working on. It really made the content come to life.”*
- *“I would recommended using the simulations as a learning tool because they were engaging, challenging, and felt like a game.”*

- *"I found the simulations to be very useful and I learned a lot. I liked the simulations better than the normal homework. More simulations would be awesome!"*

Students also complete a midterm and final exam based on a short case, with questions that focus on the application of course concepts. A major team project rounds out the course assessments; students work in groups to investigate a topic in OM of interest to them, create a proposal including a Gantt chart for project completion, track reports, and design a final group presentation. A peer evaluation and individual 2–3 page written report complete the team project.

*"I really liked the simulations that put you in charge of making decisions for whatever unit we were working on. It really made the content come to life."
—Student, Colorado Mesa University*

Assessments

28%	Team assignment
20%	Exams
15%	MyLab case assignments
14%	MyLab homework assignments
13%	Individual report and peer evaluation
10%	MyLab simulations

Results and Data

Grouping students based on average MyLab homework score identifies the following (figure 1):

- Average MyLab homework score: 79%
- 90% of students earning a MyLab homework score above average earned an A as their final course grade, and 100% of students earned an A or B.

For students, completion of the formative MyLab assignments are intended to help them identify where they are in terms of successfully completing the summative course exams. Empirically, Vail agrees that the MyLab homework should have a positive impact on exam scores, as practice is a cornerstone for successful course completion.

Average MyLab score and final course grades

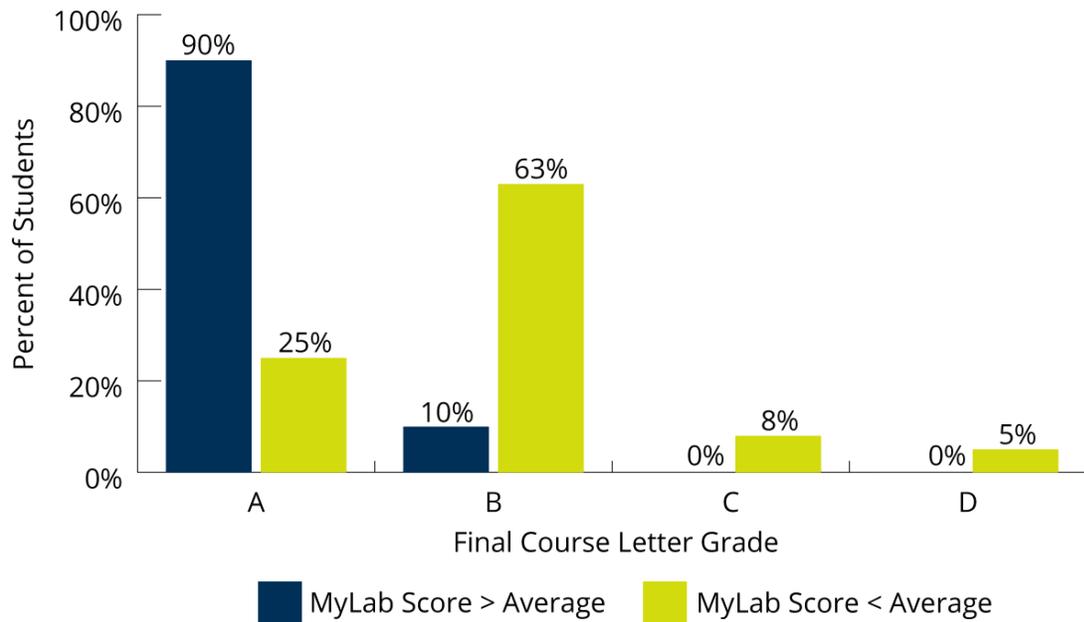


Figure 1. Relationship between Average MyLab Score and Final Course Grades, Fall 2017 ($n=81$)

Homework completion is measured by identifying the number of assignments a students did not complete or skipped out of a total of 14 problem sets (figure 2). Data indicates:

- Students who completed most assignments had higher average exam grades — students earning an A skipped fewer than one assignment on average.
- Students who completed fewer assignments had lower average exam grades — students earning a D skipped an average of 2.5 assignments.

MyLab assignment completion and average exam grades

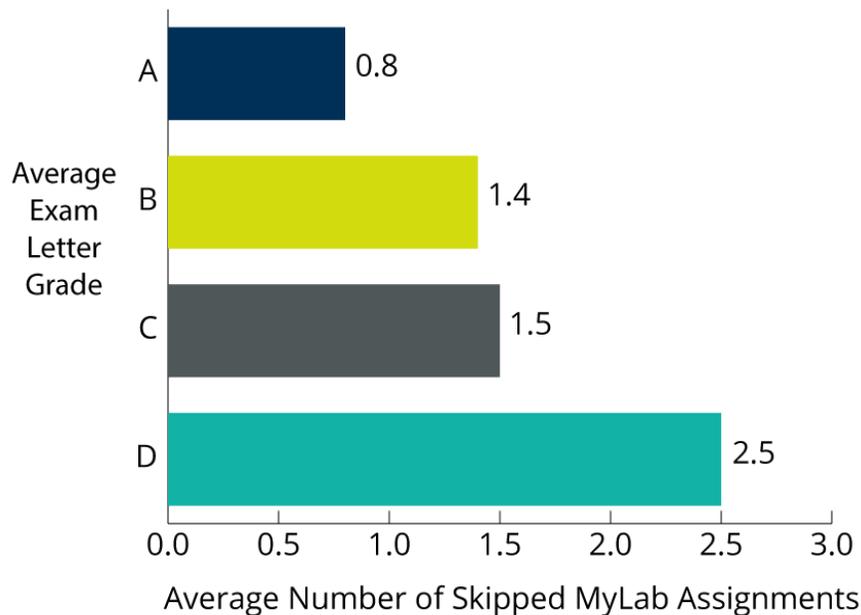


Figure 2. MyLab Assignment Completion and Average Exam Grades, Fall 2017 (n=81)

The Student Experience

Responses from the Fall 2017 end-of-semester survey of Vail's students indicate that the majority of responding students recognize the value of MyLab Operations Management.

- 89% of respondents agreed that their understanding of the course material increased as a result of using MyLab.
- 80% of respondents agreed that use of MyLab positively impacted their quiz and exam scores.
- 77% of respondents agreed that MyLab provided additional resources that helped them learn more than they would have from traditional paper-and-pencil homework.

Student responses to the question, "What were the benefits of MyLab?" include:

- *"I felt more prepared for class. It was easier to understand the lecture."*
- *"The benefits were the simulations and the "view an example" learning aid. When it was really difficult for me to figure out a problem, working through a similar problem was very helpful."*
- *"The simulations were interesting and gave me context and application of the course material. The eText is convenient and I enjoy the link to text option in the homework."*
- *"MyLab helped me understand some of the 'word' problems better. Help Me Solve This guided me."*
- *"MyLab helped me understand the concepts better and gave me a chance to practice what we learned in class."*

Conclusion

All homework offers students the opportunity to practice, but the just-in-time hints and support that MyLab offers during critical learning moments is something that the paper-and-pencil assignments Vail previously used cannot provide. The opportunity to help students while they are in practice mode cannot be disregarded as a potential key to understanding course topics. Auto grading of these assignments was an ideal side benefit for Vail and his colleagues. Additionally, access to real-world simulations that engaged students in business decision making added depth to Vail's course and enabled his students to apply what they were learning to typical business challenges.

“MyLab helped me understand the concepts better and gave me a chance to practice what we learned in class.”

—Student, Colorado Mesa University