

MyLab Operations Management educator study analyzes homework assignments and exam scores 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 and <i>Operations Management: Processes and Supply Chains</i> by Krajewski, Malhotra, and Ritzman</p>	<p>Timeframe Fall 2017</p> <p>Educator Kyle Stone, Associate Professor</p> <p>Results reported by Candace Cooney, Pearson Customer Outcomes Analytics Manager</p>
--	--

Key Findings

- 100% of students who completed all MyLab problem sets earned an A or B for a final course grade.
- Students earning MyLab problem set scores above average had average exam scores four percentage points higher than students who scored below average on MyLab problem sets.
- 88% of student survey respondents agreed that the use of MyLab positively impacted their exam scores.

Setting

- Locale: large, urban, four-year institution in western Colorado
- Enrollment: more than 10,000 students (90% undergraduate)
- Six-year graduation rate: 36%
- Freshman retention rate: 66%
- First-time students: 23%
- Full-time students: 78.5%

- Student-faculty ratio: 22:1
- Gender: 54% female, 46% male
- Student age: 55% in 18 to 21-year-old range
- Minority: 26%

About the Course

Kyle Stone has been teaching for seven years, including five 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

Stone and his colleagues had been requiring and hand grading homework prior to Fall 2016, when they met to consider a new textbook. Having used MyLab™ in another course, **Stone was aware of MyLab's ability to provide 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 would allow him to merge quantitative study with application, enabling students to see the immediate function of Operations Management (OM) concepts as they relate to real-world business challenges. Seeing the numerous benefits the program would bring, MyLab Operations Management was adopted in Fall 2016 along with a new Pearson text.

An instructor may have other external considerations before deciding to adopt educational technology, including price. Stone and his colleagues certainly considered their students' budget when choosing materials, looking for cost-effective solutions for those students interested in cutting down on the expense of course materials. On an end-of-semester survey (74% response rate), Stone's students shared the following:

- 24% of respondents purchased the MyLab code with eText only (all-digital option)
- 44% of respondents purchased the MyLab code and a used, print textbook
- 32% of respondents purchased the MyLab code and a new, print textbook

100% of students who purchased the MyLab code with eText option chose it because it was the least expensive choice. Offering students options allows them to select the one that works best for them.

"Also, we make sure to use MyLab fully, so students see the value in it", said Stone. On the student survey, **92% of respondents agreed that the resources in MyLab made the program a good value for this course.**

Implementation

MyLab Operations Management is required and used for homework assignments and additional clarification of chapter content. To be successful in this course, Stone estimates that students will spend about two hours per week working in MyLab. The student survey indicates that 32% of respondents said they spent 1–2 hours per week working in MyLab and 52% spent 2–3 hours per week working in MyLab, while an additional 12% of students spent more than three hours per week in MyLab.

MyLab is integrated with Desire2Learn, offering students a single login and password for both applications.

Stone meets three times per week with his students. The first meeting is lecture based, and new topics are introduced and explained. Students are expected to read the assigned chapter material prior to attending class. The second weekly meeting is focused on problem solving and activities, while the final weekly meeting ties together the lecture, problems, and activities or simulations. MyLab homework assignments are completed post lecture, have required due dates, and consist of the following features:

- **Problem sets:** Weekly problem sets are chosen from end-of-chapter questions, typically 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 80% 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. Stone uses the MyLab gradebook to help identify problems the students found challenging and revisits these exercises in lecture.
- **Video case studies:** 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 at least a 150-word written response to each of the questions, using facts supported by the textbook, lectures, and discussions. A case study template and rubric is provided to guide students.
- **Simulations:** Stone also assigns four of 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:

- 84% 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.
- 96% of respondents agreed that the simulations were a different and engaging way of working with the chapter concepts.
- *"The simulations were really helpful to see how decisions affected the different areas of operations that were covered during the semester."* —Student

- *“Being able to run the simulations multiple times allowed me to see how different decisions impacted the final outcome. It really drove home some of the points emphasized in the text book.”*
—Student

Students also complete four paper-and-pencil exams consisting of eight multiple-choice and six conceptual questions per chapter, as well as two numeric, multi-part problems similar to MyLab problem sets. As such, exams are less calculation based than homework assignments. Students have 50 minutes for completion of each exam and two hours to complete the final exam. Additionally, students complete a team consulting project where they observe a service or manufacturing process and make suggestions for improvement.

Assessments

28%	MyLab problem sets
22%	MyLab video case studies/end-of-chapter case studies
21%	Exams (4)
19%	Team consulting project
7%	MyLab simulations (4)
3%	Class activities

Results and Data

Grouping students based on completion of MyLab problem set assignments identifies the following (figure 1):

- 81% of students completing all MyLab problem set assignments earned an A as their final course grade, while no students who skipped at least one assignment earned an A.
- 63% of students who skipped at least one MyLab problem set assignment earned a C or D as their final course grade.

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

MyLab problem set completion and average final course letter grades

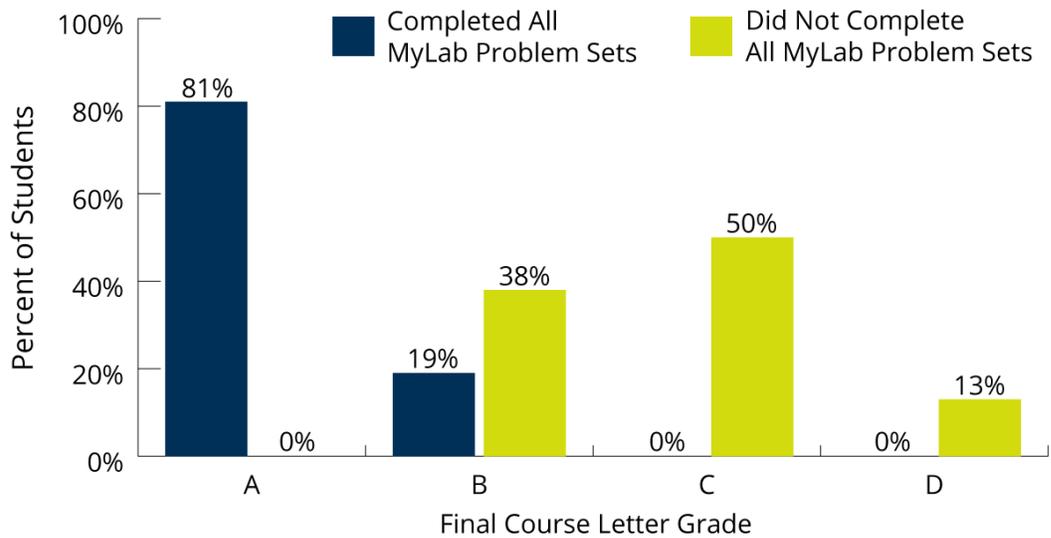


Figure 1. Relationship between MyLab Problem Set Completion and Final Course Letter Grades, Fall 2017 ($n=38$)

Students were divided into two groups based on the average MyLab problem set score of 89%. Data show that students who earned above average MyLab scores had average exam scores 4 percentage points higher than students who scored below average (figure 2). Results of a t -test, which compares the mean of both groups of students, confirms that the results are repeatable and not random, where $t(44)=3.72$ and $p<.001$, indicating statistical significance.

Average MyLab problem set scores and average exam scores

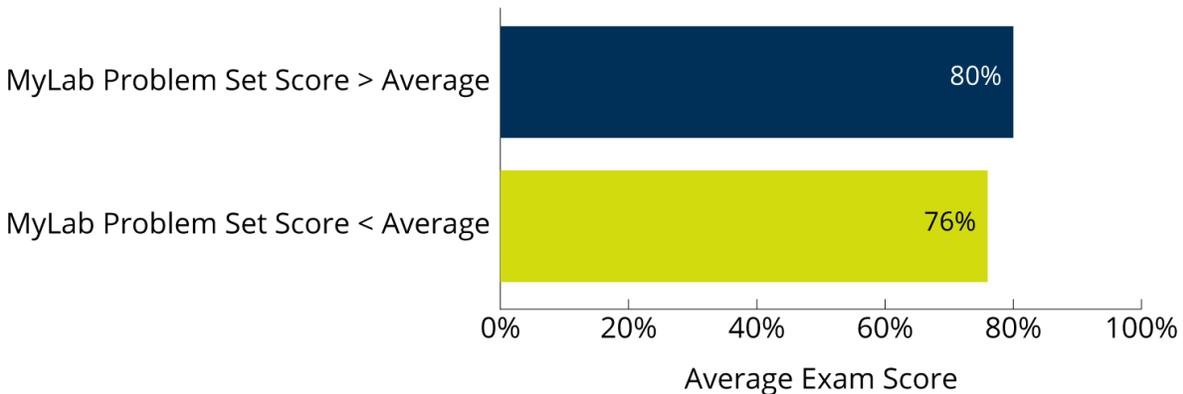


Figure 2. Average Exam Score for Students Scoring Above and Below the Average MyLab Problem Set Score, Fall 2017 ($n=38$)

The Student Experience

Responses from the Fall 2017 end-of-semester survey of Stone's students (74% response rate) indicate that the majority of responding students recognize the value of MyLab Operation Management.

- 100% of respondents agreed that their understanding of the course material increased as a result of using MyLab.
- 100% of respondents agreed that MyLab provided additional resources that helped them learn more than they would have from traditional paper-and-pencil homework.
- 88% of respondents agreed that use of MyLab positively impacted their exam scores.

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

- *"The fact that the homework was actually engaging. When I didn't understand problem sets, the examples and interactive options helped me work through it almost as if a teacher was there."*
- *"Being able to learn the material from different angles. It made it more engaging and fun."*
- *"The ability to click "similar problem," even if you got the problem correct, so that you can continue practicing to ensure you fully understood the concepts being taught."*
- *"I got extended help when not in class, also, we're able to practice problems multiple times until I understood them. Was very beneficial for studying for tests."*

"...the [MyLab] homework was actually engaging. When I didn't understand problem sets, the examples and interactive options helped me work through it almost as if a teacher was there."

—Student, Colorado Mesa University

Conclusion

After using MyLab in another course, Stone recognized that the Operations Management course at Colorado Mesa University should also use MyLab to give students personalized, just-in-time feedback while completing assignments. The opportunity to help students while they are in practice mode is key to understanding course topics. While all homework offers students the opportunity to practice, MyLab provides hints and support to students during critical, teachable moments — something paper-and-pencil assignments cannot provide.

Auto grading of these assignments in MyLab came as an ideal side benefit for Stone and other instructors teaching the course. Additionally, access to MyLab simulations that engaged students in business decision making added depth to the course and enabled students to apply what they were learning to real-world business challenges. Diving deeper into MyLab, Stone is considering adding the Dynamic Study Modules or Learning Catalytics to his course in a subsequent semester.