MyProgrammingLab

School Name	University of Central Florida, Orlando, FL
Course Name	Introduction to Object-Oriented Programming
Course Format	Online

Key Results After implementation of MyProgrammingLab, the percentage of students earning final course grades of A or B increased by 22 percentage points—from 30 to 52 percent. The percentage of students earning a D or F decreased by 21 percentage points—from 30 to 9 percent.

Submitted by
Andrew Eisler, Instructor

Course materials
How to Program Java, Deitel and Deitel

Challenges

University of Central Florida is the nation's second largest university, serving more than 60,000 students on ten campuses across central Florida. Introduction to Object-Oriented Programming is a three-credit course designed to teach basic programming concepts, including classes, methods, and interfaces, and the expression of these concepts using Java.

In 2011, the course moved from a traditional lecture format to online. Today it enrolls more than 200 students per semester from a range of fields, including information technology, visual arts, computer engineering, and computer science. Andrew Eisler, instructor, sought an online system that would (1) help him modify the way course content is practiced and learned to accommodate the range of student skills, and (2) provide students with coding practice to prepare for course programming assignments.

Implementation

MyProgrammingLab is a required component of the course. Students are offered 10 programming assignments and receive credit only for the correct ones. For example, students may earn 100 percent on MyProgrammingLab homework if they complete at least 75 percent of the exercises and achieve a score of at least 75 percent on the assignment. They are allowed unlimited time and five attempts within one week to complete each MyProgrammingLab assignment.

Exams are administered on campus. Midterm exams are not cumulative; the final exam covers some material completed earlier in the course. Exams are closed book and consist of multiple-choice and true/false questions with an emphasis on Java and object-oriented programming skills. Students must earn a minimum grade of 70 percent on each of the three exams in order to qualify for a final course grade of A.

The remaining assessments in the course are programming assignments using Eclipse. Students complete 6–7 assignments over the course of the semester. These are serious projects that require a significant amount of time practicing coding.

Late assignments are accepted up to two days after the deadline—a 15 percent penalty is assessed on the first day, a 20 percent penalty on the second. Work handed in more than two days late earns a 0.

Assessments

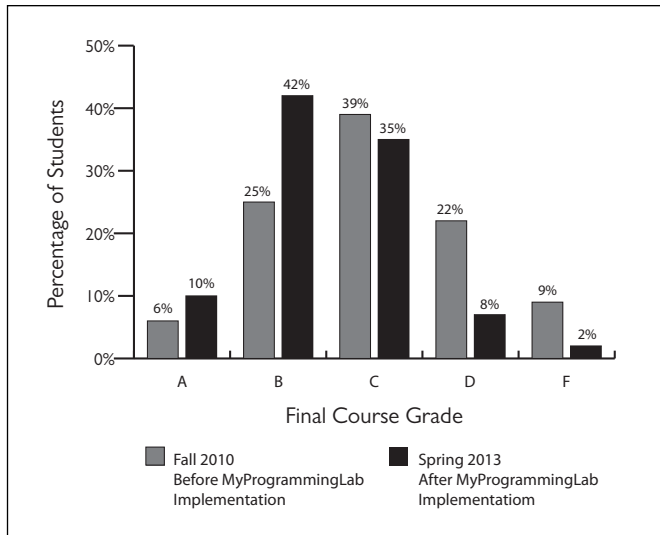|	
42 percent	Programming assignments
28 percent	Midterm exams (2)
20 percent	Final exam
10 percent	MyProgrammingLab homework

Figure 1. Final Course Grades before and after MyProgrammingLab Implementation, Fall 2010 (*n*=69) and Spring 2013 (*n*=202)
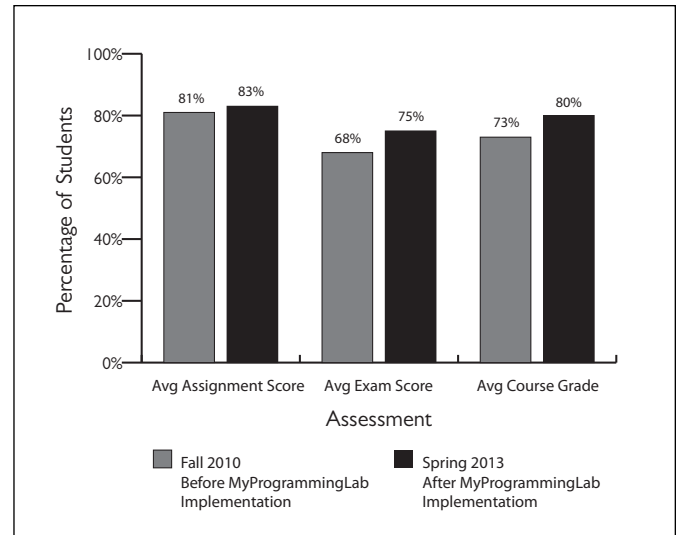

Figure 2. Average Assessment Scores before and after MyProgrammingLab Implementation, Fall 2010 (*n*=69) and Spring 2013 (*n*=202)
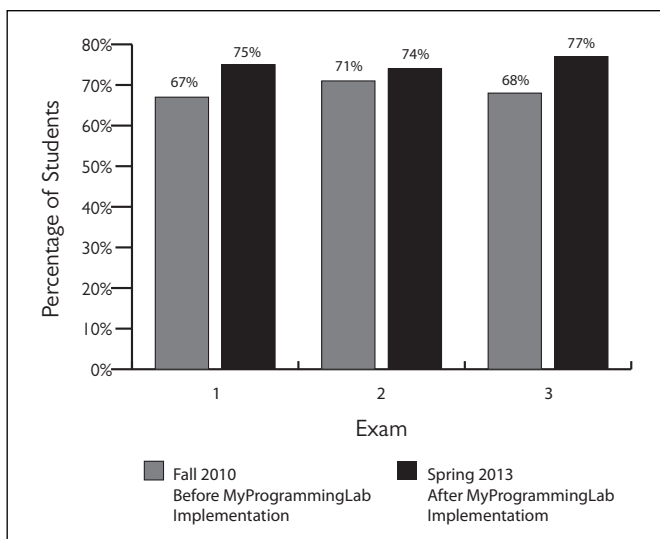

Figure 3. Exam Scores before and after MyProgrammingLab Implementation, Fall 2010 (*n*=69) and Spring 2013 (*n*=202)

Results and Data

A comparison of final course grades shows substantial improvement after implementation of MyProgrammingLab. The percentage of students earning an A or B in the course increased from 30 to 52 percent; the percentage of students earning a D or F decreased from 30 to 9 percent. In addition, both exam scores and overall course grades increased an average of 7 percent.

The Student Experience

Students report that MyProgrammingLab helps them practice more coding, which is specifically necessary for those students who are not computer science majors. They gain first-hand programming experience in the program's interactive environment, and immediate, personalized feedback when they make mistakes or have questions. The positive effect of the immediate feedback helps students realize their weaknesses before progressing to more challenging material.

Conclusion

In addition to a positive impact on student grades, implementing MyProgrammingLab provides Eisler with the program's Dynamic Roster. He can now monitor student activity on each assignment, enabling him to identify at-risk students; and gain an overview of the classes' progress, enabling him to identify weak areas of the class as a whole.