STATE UNIVERSITY OF NEW YORK, College of Environmental Science and Forestry — Syracuse, NY

Product Name MasteringBiology

Course Name General Biology 1: Organismal and Ecology

Credit Hours Three

Key Results Students come to class better prepared and are more engaged after doing prelecture assignments in MasteringBiology. As a result, student success rates are significantly higher.

Text

Campbell Biology, 9e, Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, and Robert B. Jackson

Implementation

General Biology 1 is the first course in a two-semester sequence in the College of Environmental Science and Forestry. The course explores introductory biological principles at the ecosystem, population, and organismal levels with an emphasis on the form, function, diversity, ecology and evolution of living organisms. A one-credit lab is offered concurrent to the course, which is primarily taken by science majors but may also include a mix of other majors.

In fall 2011, I adopted MasteringBiology to address the issue of student unpreparedness. Each semester, I assign 30 prelecture homework assignments and keep the top 25 grades. Each assignment is 10–20 questions, comprises a mix of question types and difficulty levels, and may include content from multiple chapters. Each assignment takes 25–60 minutes to complete; students have 5–10 days to submit each assignment.

I use the time and difficulty ratings in MasteringBiology to help me select homework problems. Prior to lecture, I use MasteringBiology's homework diagnostics to assess the most missed problems—this enables me to address any common misconceptions during classtime and ensure that all students clearly understand the concepts.

Two graduate teaching assistants and multiple undergraduate teaching assistants hold weekly course workshops, in which they review content in the MasteringBiology study area and show BioFlix. They encourage students to review prelecture assignments and to visit MasteringBiology's study area to watch the BioFlix, use flashcards, and do the practice cumulative exams on their own. Some of the questions from the study area are used on exams.

Assessments

58 percent	Exams (four)
14 percent	MasteringBiology homework
14 percent	In-class assignments and quizzes
14 percent	Final exam

Results and Data

Analysis of student course grades for 2010–2012 indicates that since adoption of MasteringBiology, A/B/C rates have increased and D/F/W rates have decreased (see figure 1). In just the first year of implementation, student success rates increased by 11 percentage points.

In addition, the number of students each semester who took the final exam and completed the course has increased by three percentage points.

"End-of-course student survey responses indicate that [students] recognize and appreciate the value of using MasteringBiology."

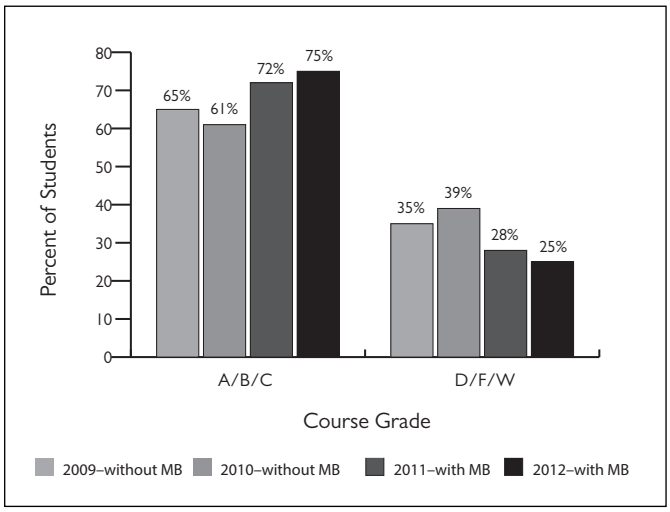

Figure 1. Student Success and Drop/Fail/Withdrawal (D/F/W) Rates with and without the Use of MasteringBiology, 2009–2012 (2009 *n*=298, 2010 *n*=266, 2011 *n*=280, 2012 *n*=306)

The Student Experience

End-of-course surveys given in fall 2011 (192 students) and 2012 (240 students) revealed that students viewed their MasteringBiology experience as positive; 34 percent of students mentioned MasteringBiology as "the most effective part of this course." A separate end-of-course survey administered via Blackboard indicated that 80 percent of students found MasteringBiology helpful.

When asked to complete the statement, "The preassignments on MasteringBiology…" 63 percent of students from the fall 2011 course responded: "Were extremely helpful and made a positive difference in my grade."

After implementing prelecture homework assignments in MasteringBiology, students were more engaged in class and asked better questions. In addition, I could include more difficult concepts in lecture because students were more prepared. Student comments confirm that introducing them to content *before* the lecture was beneficial.

- "The preassignments were a big help. They enabled us to listen to the lecture with some prior understanding."
- "I did MasteringBiology work before the lecture so I could go knowing what was going on. It helped my grade a lot."

Students were also asked what advice they'd give to incoming students. Responses included:

- "Always do MasteringBiology homework. Even though it can be a pain, it really helps reinforce what's taught in lecture."
- "Don't underestimate the difficulty of the class—it's hard. But that doesn't mean it's impossible to pass. Use MasteringBiology—it can save you."

Conclusion

Millennial students won't spend their time and energy on homework unless it is both required and counts toward their grade. Before adoption of MasteringBiology, I entered the classroom each period only to be met by a sea of faces that clearly had no idea what I was talking about. Since adoption of MasteringBiology and implementation of prelecture homework assignments, students are noticeably more engaged during lectures, and classes are more interactive.

MasteringBiology makes a positive difference. The increase in student success shows that students are learning more; end-of-course student survey responses indicate that they recognize and appreciate the value of using MasteringBiology.

Submitted by Melissa Fierke
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