

MasteringBiology™

EDUCATOR TESTIMONIAL UNIVERSITY OF ESSEX

COURSE:	Molecular Cell Biology (first year)
TEXT IN USE:	Campbell <i>Biology</i>
USED SINCE:	2009
SUMMARY:	MasteringBiology offers an interactive learning format that more effectively engages students with course materials and thereby helps them perform better in the course.
SUBMITTED BY:	Louise Beard

Implementation

Molecular Cell Biology is a first-year, first-semester undergraduate course. The course is taught as a large, mostly noninteractive, group lecture – as such, some students simply don't attend. I found that students didn't regularly read the textbook and probably didn't review the course material until studying for exams. In fall 2009, I adopted MasteringBiology with the goal of motivating students to read the textbook and interact with the lecture material in a format that was more familiar to them, thereby making their learning more effective and enjoyable.

My MasteringBiology homework consists of assignments that open each lecture day and close one week later. Assignments comprise mostly activities and tutorials, and are designed to review what was covered in lecture in a more interactive way. Students may not view hints or answers until after the assignment due date.

Each question is assigned a point value related to the number of minutes a student should take to complete it (e.g., 10 minutes=10 points). I try to get each assignment to equal 30 points. I monitor the gradebook when the assignments are open and e-mail and communicate with students through our institutional LMS 24 hours before the deadline to remind them of it. Once the deadline has passed, students who have not completed the assignment are given a 24-hour extension, and a reduced grade.

At the end of the term, I create no-credit, review assignments for each topic using multiple-choice testbank and end-of chapter questions. Students may make multiple attempts and answers may be viewed. Once the assessment is completed, the original assignments are available to use for additional practice.

Homework consists of worksheets from three laboratory exams, plus the total score from ten MasteringBiology assignments. A multiple choice exam at the end of the semester, and a written short-answer and essay exam are the other components of the course grade.

ASSESSMENTS

33 percent Written final exam

33 percent Multiple-choice exam

25.5 percent Lab worksheet homework

8.5 percent MasteringBiology homework

Results and data

MasteringBiology has enabled the students to engage with the course materials and has had a positive impact on my students' learning in the course. Since using the program, I've seen an increase in the homework and course mean grades. In addition, both the multiple-choice and written final exams have shown grade increases over the last two years using MasteringBiology. With no other changes to teaching or assessment, the mean course grade has increased by more than six percent since implementing MasteringBiology. See figure 1.



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I also have found that making the MasteringBiology assignments required—as summative assessments—is the best way to get the students to engage with the course material. At least 90 percent of students regularly complete a required assignment; usually only 30–60 percent of students complete an optional, extra-practice assignment.

The Student Experience

I survey students about MasteringBiology by writing my own questions and adding them to the last required assignment in the program. Responses reveal that most students enjoy the work and find it helpful. Many admit that they probably would not have completed as many assignments if they hadn't been required. They also use some of the other study resources, such as the eText and self-study resources.



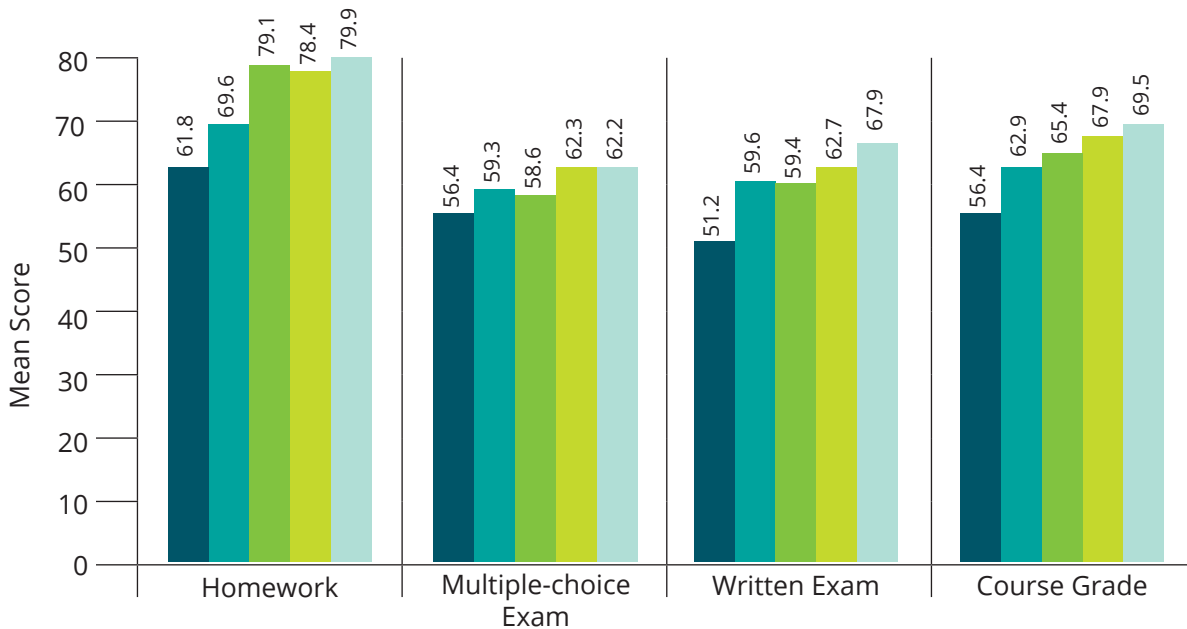


Figure 1. Mean Homework, Multiple-choice Exam, Written Exam, and Course Grade Scores with and without the Use of MasteringBiology, 2007–2012

Some of the comments I received from students include:

- *“At first I was skeptical about having to buy the book new and paying full price. But I’ve just done the first three questions and have learned so much already.”*
- *“The online assessments are a fun and interactive way to learn biology.”*
- *“I found [MasteringBiology] helpful. I can now remember the majority of the functions and names without looking at the book.”*

Conclusion

Students want to be engaged in the subject matter, and they welcome new technologies. Because modern students grew up with computers, some find books alien. We need to embrace this shift, rather than try to revert back to the old-school way of learning. MasteringBiology’s online assignments offer students the flexibility to learn in their own space, at their own pace, and in a visual or 3D way that isn’t possible from traditional textbooks.