



Pearson

# Mastering Biology

## Efficacy Report Summary

Mastering Biology is an online tutorial system that provides lessons featuring hints and targeted wrong-answer feedback. It is used in higher education general introductory courses to help students, both majors and non-majors achieve mastery of core biology concepts and develop critical reasoning and problem-solving skills.

### ***Is Mastering Biology usage associated with students getting higher exam scores?***

We partnered with a North American state-related, land-grant, doctoral university, where students used Mastering Biology in a foundational biology course to analyze the relationship between student usage and course outcomes.

#### **What we found**

We found that there was a positive relationship between students who scored highly in their Mastering Biology homework assignments and their exam scores. At least a 90% or better on Mastering Biology homework assignments was associated with a 9% increase in exam scores.

It is important to note, however, that this relationship was non-linear. That is, students only saw improvement in exam scores when averaging 90% or better on Mastering Biology homework assignments. This non-linear relationship can perhaps be attributed to how the instructor implemented Mastering Biology in the course.

The instructor used Mastering Biology to assign homework assignments with the intention of practice rather than performance. The instructor gave students multiple chances to reach the correct answer on homework assignments, and did not penalize students when they requested hints.

As such, although most students were ultimately able to attain relatively high homework scores, they may not have fully mastered the material. In other words, students who did not score at least a 90% on the homework assignments may not have achieved a level of mastery that would be beneficial to their performance on exams.

No significant relationships were found between total time spent using Mastering Biology and exam scores, or between the number of hints used and exam scores.

**In the context of the study conducted at a North American state related, land-grant, doctoral university, for students enrolled in a foundational biology course, Pearson is able to make the following statement about the efficacy of Mastering Biology:**

— Averaging at least 90% or better on Mastering Biology homework assignments was associated with a 9% increase in exam scores.

*This statement is set out in full in the box titled “Efficacy statements” on page 11 of the Research Report where they have been subject to assurance by PwC, whose report can be found at the end of the Research Report.*

#### **Key findings**

90%

**Averaging at least 90% or better on Mastering Biology homework assignments**

=



**Increased exam results**

## How we did the research

We measured usage by examining the number of hints requested, time spent, and average scores in pre-lecture and post-lecture homework assignments. We then assessed each student's use of Mastering Biology against their exam scores, which we used as a measure of student achievement.

Explore the full report at [Pearson.com/corporate/efficacy-and-research](https://www.pearson.com/corporate/efficacy-and-research)

### **Pearson's Efficacy Commitment**

In 2013, Pearson made a commitment to efficacy: to identify the outcomes that matter most to students and educators, and apply evidence-based approaches to product design, development and implementation support so we could have a greater impact on improving those outcomes. We committed to reporting on the impact of use of products, commencing in 2018 with some of our most frequently used products.

To Pearson, efficacy is more than a commitment to report on the impact of use of our products on outcomes. It is even more than a way to continuously improve our products. Efficacy is a priority for everyone at Pearson. Applying outcomes-focused, evidence-based design to our products, and supporting educators to use them to help more learners learn more, is at the heart of who we are, what we do — and of our vision for the future of learning.