

OWL² is Key to Meaningful Homework and Better Student Engagement

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Case Study: OWLv2 is Key to Meaningful Homework and Better Student Engagement



About OWLv2

Created by teaching chemists, OWLv2 is a powerful online learning system for chemistry with a unique Mastery Learning approach, which allows students to practice at their own pace, receive meaningful feedback and access a variety of learning resources to help them master chemistry and achieve better grades.

OWLv2's unique Mastery Learning activities enhance conceptual learning. Students work on a set of questions about a specific chemistry concept to prove mastery. The Mastery Learning approach allows students to practice at their own pace and leads to a higher level understanding of concepts.

If variety is the spice of life nowhere is that more evident than inside a university classroom where distractions abound and students can easily find other things to do rather than focus on lectures and concentrate on homework. "I want them to know the homework assignments aren't just busy work," said Steven Neal, an organic chemistry professor at the University of Tennessee Knoxville.

Unfortunately, the students in Neal's classes were not taking the homework assignments seriously because they did not feel completing the assignments helped them do better on exams. Combine this perception with the fact that strictly guided organic chemistry homework can lack variability and it's exactly why students were ignoring the homework and preparing for tests with nothing more than classroom lectures.

Neal quickly realized the role of homework had to change if his students were going to do better at test time. Not only might a digital tool help Neal create more compelling homework assignments, but it might also give him more time to offer more individualized attention to struggling students.

OWLv2 Improves Quality of Students' Homework and Instructor Effectiveness

The variety Neal was itching to add came to fruition when the University adopted OWLv2, an online learning system that provides chemistry students with a collection of study and test-preparation tools designed to foster engagement and improve grades.

Instead of following lectures with mundane homework assignments, Neal broke with tradition and offered homework prior to lectures using OWLv2. "My favorite feature is the variation of the material that I can offer," Neal said. "I assign the multimedia questions prior to class so they get a glimpse of the material before the lecture and they're not starting from scratch."

OWLv2 also allows Neal to follow up with mastery style and end-of-chapter questions that students are now convinced are aligned with the exams, while allowing students to visualize concepts that are reinforced during lectures. Together, it results in students completing homework assignments more often and coming to class better prepared.

"I have loved it," Neal said. "I'm really quite pleased with the success students are having with it."

Another reason for that success is that OWLv2 streamlines course planning and management, which frees instructors like Neal to spend more time offering one-on-one attention.

Improved Homework Completion Rates Result in Higher Course Grades

To tangibly prove to students that completing the homework assignments would pay off, Neal crunched the numbers himself. Specifically, he stacked final organic chemistry course grades alongside the OWLv2 homework grades and compared them. What he found was that a strong student performance on OWLv2 homework assignments correlated with higher course grades.

"The better they did on the homework, the better they did on the exams," Neal said.

Specifically, Neal rated student homework performance as strong (a 90% or above), moderate (a 70% or above), or weak (below 70%). Of the 728 students analyzed, 378 earned an "A" or "B" in the course. Combine the students earning a "C+" in the course and 492 of the best-performing students were the ones who turned in the strongest homework assignments (Figure 1).

"I show students a chart that illustrates this on the first day of class to demonstrate the importance of OWL homework," Neal said. "If students want an A or a B in the class, they'll need to put forth significant effort on the homework."

OWL's Emphasis on Critical Thinking Skills Positions Students to Excel Beyond The Classroom

A key benefit of OWLv2 is the way it allows instructors to identify topics with which students are struggling and offer specialized modules to help them better comprehend the subject matter. "One of the big advantages with OWLv2 is that it's not an assessment-based program as much as it [is a program that] helps them learn," Neal said. "The thought process required to solve the homework problems is the same thought process they need to answer questions on the exam. OWL helps me develop the students' thought processes so they are confident and prepared."

Developing this skillset in students is extremely important as organic chemistry success is often determined by a student's critical thinking and problem solving skills. Success in class and beyond is made easier with OWLv2 as it enables professors to offer students multiple iterations of similar problems, thus cementing critical thinking skills. The tool also helps instructors reinforce these key homework lessons during classroom lectures.

"It has been a wonderful experience," Neal said. "It really gives them a chance to practice and leads them to actually understanding the concepts."

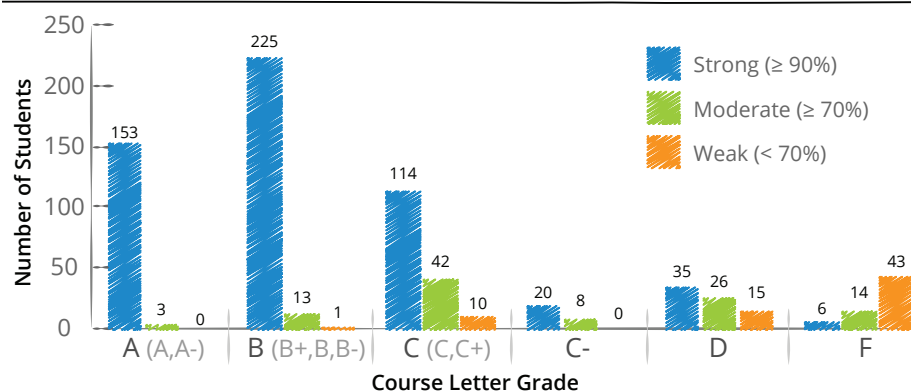


The better they do on the OWLv2 homework assignments, the better they do on the exams.

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Figure 1: Homework Completed vs. Course Grade Comparison, Fall 2013-Fall 2014.





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