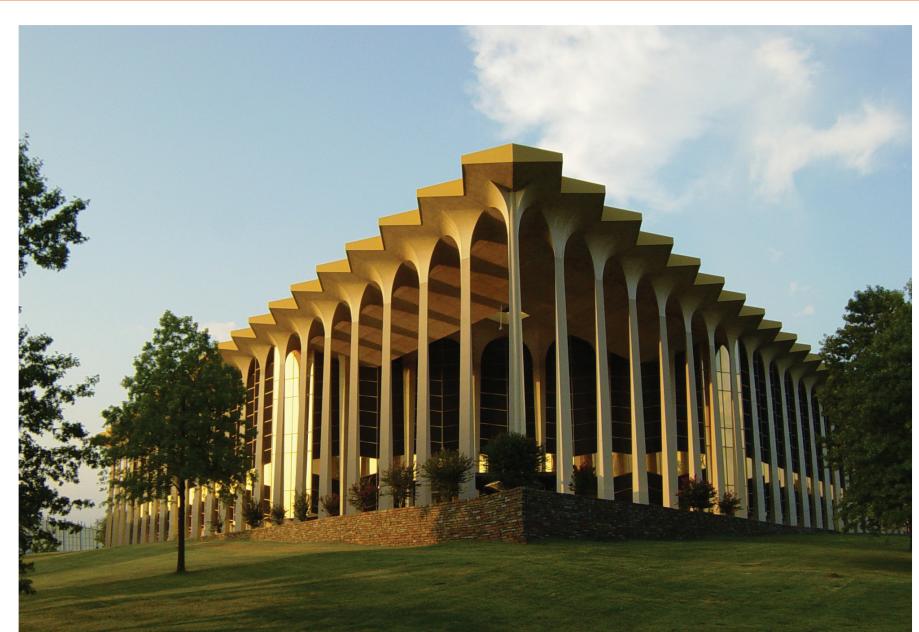


CASE STUDY

Oral Roberts University
Tulsa, Oklahoma



Physics Students Boost Test Scores with Enhanced WebAssign® at Oral Roberts University

Elena Gregg teaches physics at Oral Roberts University (ORU), a liberal arts university in Tulsa, Oklahoma with more than 3,400 students. In a WDG Research survey in which employers rated the quality of graduates of local training institutions, ORU scored 4.5 on a scale of 1 to 5, besting 21 other schools. Elena is doing her part to deliver high-quality education. She uses the Enhanced WebAssign® (EWA) online homework tool to ensure that her students receive interactive problem-solving practice, access to animations and other visual resources, and individual attention that improves their understanding and performance.

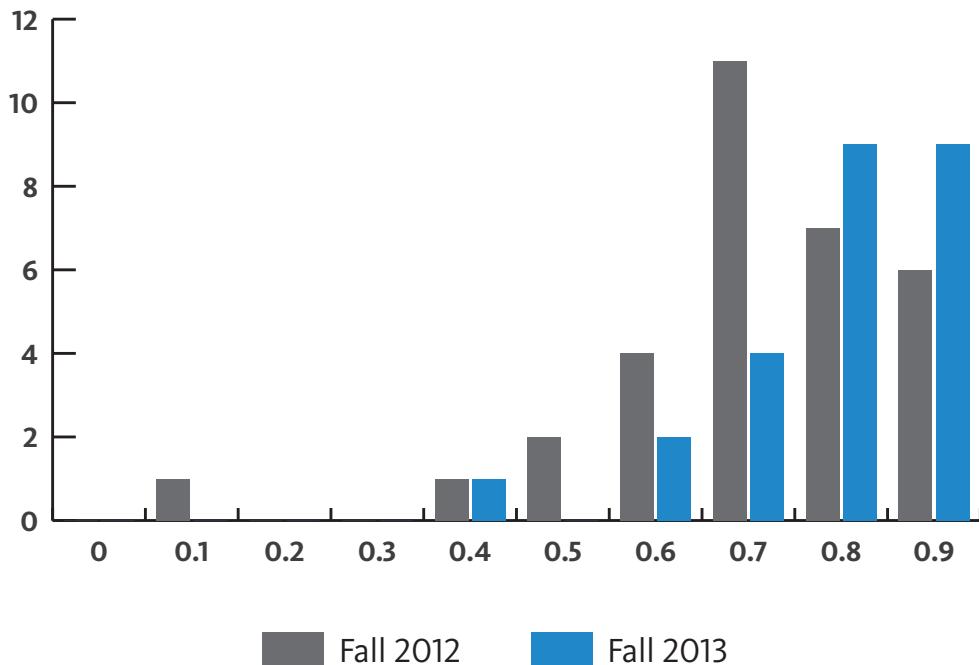
CHALLENGES

“Since different students get different problems, they have to do the homework themselves. As a result, they learn the concepts better and their test scores are much improved.”

Elena Gregg
Assistant Professor of Physics,
Oral Roberts University

Motivating students to engage in their homework, and consequently be prepared for exams, has been an issue for Elena. “When I first started teaching this course, if students did well on their homework they did well on the exams,” she says. “Over time, as students were able to find answers to their homework on the Internet, they got perfect homework grades but terrible exam grades. I needed to find a solution that gave students homework problems in such a way that they would have to practice on their own — and consequently learn the concepts.”

FIGURE 1: Distribution of Final Course Scores*



*The data above shows that there was a positive statistical difference in the final course scores between Fall 2012 ($M=.76$, $SD=.16$) and Fall 2013, when WebAssign was introduced into the course ($M=.84$, $SD=.12$); $t(56)=1.35, p=.037$.

Elena heard about online homework at a Physics Teachers Conference and was intrigued. “I tried several products and just didn’t like them,” she recalls. “Their practice problems were too easy. The problems in EWA were much more difficult, and at the level necessary to help students get more prepared for tests.”

RESULTS

EWA supports Elena’s Cengage Learning textbook with a bank of more than 5,000 questions, including end-of-chapter problems, interactive Active Figure questions, conceptual questions, and tutorial problems that offer feedback and hints to guide students to content mastery. Many problems have “Master It” mini tutorials and/or “Watch It” solution videos to offer further individual assistance.

“EWA helps me tremendously — I can put out material for self-study for the students, and they will do it,” says Elena. “It has excellent animations that I like to use to explain difficult concepts. The tutorials are excellent as well.” Active Figures in EWA build conceptual understanding by allowing students to view animations of figures from the text and visualize phenomena and processes (for instance, the Atwood Machine). Students can change variables to see the effects, conduct suggested explorations of the principles involved, and receive feedback on related quiz questions. Active Examples guide students through the process needed to master a concept and help them overcome common misconceptions. If a student enters an answer based on a common mistake, he or she receives feedback specific to the mistake.

EWA ensures that Elena’s students do their own work, and eliminates the temptation to share answers. Whenever possible, variables, numbers, or words are randomized so that each student receives a unique version of the question. Elena also likes the “Show-Your-Work” feature, which requires students to focus on their methodology while giving instructors the option of considering more than a student’s final answer for grading. “Since different students get different problems, they have to do the homework themselves. As a result, they learn the concepts better and their test scores are much improved.”

Elena has found that EWA gradebook tools help her to be a better instructor in ways that go beyond saving time; for instance, in identifying at-risk students. “EWA is excellent for assessment. I can see how much time students are spending on homework, whether they are stuck, and how many attempts they made — and make adjustments to my teaching or the assignments as needed.” She continues, “Grading homework is less of a burden. I can focus on particulars that will help students learn more effectively without their having to come to my office.”

After less than one term, Elena is already so pleased that she recommended EWA to other physics instructors at AAPT (American Association of Physics Teachers). “EWA has been even better than I expected it to be.”

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