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Practice Makes Perfect with Enhanced WebAssign®

The adage “practice makes perfect” could have been created for mathematics teachers. For Diana Pagel, “practice” is the operative word, as it leads to proficiency if not perfection, and that’s just fine with her. Since 1992, Diana has taught at Victoria College, located in the Crossroads region of Texas, nearly equidistant from Corpus Christi, Houston, San Antonio, and Austin. The Aspen Institute ranks Victoria in the top 10% of U.S. community colleges for demonstrating high levels of student success.

Diana has taught the spectrum of math courses, from developmental math through calculus. In recent years, she has used Enhanced WebAssign® (EWA), an interactive online homework tool from Cengage Learning, in online precalculus and face-to-face college algebra courses. In her experience, EWA — which enhances problems from her textbooks with interactive tutorial support — has been effective in promoting practice, active learning, and consequently, improved outcomes.

COURSES AND PARTICIPANTS

Diana’s college algebra class has 56 students. More than half of them are older than traditional college-age learners and have jobs, families, and limited time for homework. The course is taught in two parts. Students who succeed in the first eight-week session, which covers intermediate algebra topics, continue on to study core college algebra topics.

Diana assigns EWA for homework, along with a few problems for students to hand in so that she can assess how they write out their solutions. (In her online precalculus course, Diana uses the EWA “Show Your Work” feature, which allows students to electronically submit scanned versions of their handwritten work and gives her the option of considering more than a final answer for grading.)

THE CHALLENGES

Many of Diana’s students are not prepared for college due to poor math and study skills. “They haven’t learned how to study effectively and do homework. Younger students, excited at being in college, are distracted by a desire to have a good time. Others have forgotten the math they learned ten years ago, so are intimidated,” she says. “Students must practice and do their homework in order to succeed, and the challenge is getting them to do that.”

Time spent grading homework used to be daunting for Diana. “When I first started teaching, I had so many papers to grade that I couldn’t finish them in time for the students to get feedback before an exam. I would grade papers between classes, most of the night, and while eating breakfast, and it still wasn’t fast enough. It wasn’t fair to the students.”

Another ongoing challenge is being able to cover topics thoroughly in class. “I don’t have enough time in any given class period to cover everything that I’d like to, or that students would like me to, such as showing a sufficient number of examples of the homework problems they’ll be doing.”



CHALLENGES

- **Students need to consistently practice skills and techniques** outside of class to assure success in college algebra, but aren’t always motivated to do so.
- **Lectures and office hours don’t allow enough time** for instructors to cover everything students may need to complete their homework, and students who get stuck on problems can get discouraged.
- **Hours required to hand-grade homework assignments** can mean that students don’t get feedback in a timely manner.

SOLUTIONS

- Enhanced WebAssign®
- Gustafson, R. David & Jeff Hughes, *College Algebra*

RESULTS

- **“Practice another version”** feature encourages practice that builds proficiency. Instant feedback shows students when they answer incorrectly, prompting them to engage in further practice and active learning.
- **EWA takes over for instructors after class and office hours**, providing examples (e.g., “Master It” mini-tutorials, “Watch It” video solutions) that guide students through each homework problem — and to greater understanding.
- **Automatic grading of homework assignments** reduces the burden on busy instructors, while providing students with immediate feedback on every answer.

“Enhanced WebAssign has made my life easier because I am not bogged down in paperwork, but it has also benefited my students — it has enhanced their learning.”

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THE RESULTS

Diana says that the most important benefit of EWA is its interactive practice environment. “I can stand up in front of students all day and show them how to do problems, and they may think they understand — but until they try it for themselves, they won’t know for sure,” she says. “Most of my students need a considerable amount of practice, and EWA engages them in practicing on their own.”

Immediate feedback is another benefit, which Diana believes has improved student engagement and performance. Students can work at their own pace and do their homework when they have time throughout the day. “When students do the Enhanced WebAssign homework, I know that they are going to succeed in the course,” she says. “A few students are uncomfortable with computers, but I’d say that 90% of them like EWA. Even the intimidated students end up liking it because they can see their success immediately.” Diana allows multiple submissions, so students can rework problems answered incorrectly and get credit for final correct answers. “Having a second chance motivates students to use the available resources and practice further, because it gives them some control over their grade,” she says. “Beyond that, students today are accustomed to getting information instantly, and EWA plays into that by allowing them to use their familiar tools. I’ve seen students call up EWA problems on their smart phones.”

Diana’s students like the practice tutorials, which guide learners through the solution to a similar problem with feedback along the way, and the narrated video solutions, which use different values than the assigned problem. Students can also click “Read It” buttons to link to relevant eBook pages from the text, and practice another version of a problem to gain confidence before they submit their final answer.

Diana also appreciates that EWA is available to play an important role when class time ends. “Enhanced WebAssign has made my life easier because I am not as bogged down in paperwork, but it has also benefited students — it has enhanced their learning. Once they realize that they will succeed if they take responsibility for their learning and put in the time, they embrace it. I’m sure some students also see the value of Enhanced WebAssign as a means to getting the A’s and B’s that will help their GPA. If students become active in their own learning, as they do with EWA, they can learn anything.”

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