



## San Diego State Saves \$75,000 and Triples Enrollment in a Single Course by using Wimba Classroom

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*-Dr. Tom Impelluso, Associate Professor, Mechanical Engineering, San Diego State University*

While many schools have a difficult time calculating the return-on-investment they receive by using educational technologies, professors at San Diego State University (SDSU) believe they have cracked the code. By looking at a few factors and costs, these professors believe they have saved their school \$75,000 by using Wimba Classroom to teach only one class online – a class whose enrollment he has since tripled – while also significantly improving student learning and obviating the need for expensive hardware purchases.

In an era when simulations will soon be equipped with mechanics and machines will communicate with one another, Drs. Tom Impelluso (Associate Professor in the Department of Mechanical Engineering) and Marcie Bober (Chair and Professor of Educational Technology) believe it is imperative that mechanical engineers understand elements of computational science. However, they also believe that engineers should not be taught these elements by a Computer Science department. While most computer science students are interested in programming databases and objects, Dr. Impelluso and Dr. Bober believe that mechanical

engineers need a programming course focused on algorithms and analysis in order to ease into an understanding of the principles of programming and computer technologies. Therefore, SDSU offers such a course: Mechanical Engineering 203 (ME203) Computer Programming Applications.

The purpose of ME203 is to teach students of mechanical engineering concepts of programming as well as how to communicate with a computer so as to:

- 1) Solve complicated equations, including
  - o Simple systems of equations
  - o Non-linear equations
  - o Numerical integration

- 2) Control mechanical machines

Nevertheless, there are several problems inherent to offering such a course. First, faculty/lecturers must learn to teach programming in a style suitable for mechanical engineers.

Second, the department needs to have the proper workstations and hardware to teach. And finally,



San Diego State University  
San Diego, CA  
www.sdsu.edu

### WIMBA PRODUCTS AND SERVICES

- Wimba Classroom
- Wimba Voice

### KEY BENEFITS

- Saved \$75,000 in only one course
- Tripled enrollment
- Eliminated student hesitation to ask questions

**Dr. Tom Impelluso**  
*Associate Professor,  
Department of Mechanical Engineering,  
San Diego State University*



### **MORE ACCESS FOR STUDENTS**

*"This distance approach, based on Wimba, allowed me to also do a few more things. I taught students how to download Operating System emulators and I taught them how to connect via SSH to our school's UNIX server. Thus, the students did not need to PHYSICALLY sit in a room of 30 workstations. They could code from home!"*

*-Dr. Tom Impelluso, SDSU*

faculty/lecturers must ensure their students successfully learn this new, foreign material.

For years, Dr. Impelluso and his colleagues at SDSU taught ME203 in a room equipped with 30 computer workstations and therefore taught 30 students per section. By sitting at computers, his students could easily write code during class, effectively making the course like a lab course. However, whenever student enrollment needed to increase, the number of workstations needed to increase as well. Thus, this meant two things had to happen:

- 1) SDSU had to constantly upgrade and buy costly new hardware
- 2) SDSU had to hire new lecturers to teach the new additional sections

Fortunately for Dr. Impelluso, SDSU purchased the Wimba Collaboration Suite and made Wimba Classroom available to his ME203 courses for the Fall 2007 semester. He and Dr. Bober, one of the nation's premier instructional technologists, worked closely to determine how best to use Wimba to teach computer programming to his students. Dr. Bober enabled him to determine that using voice and application sharing would allow Dr. Impelluso to closely monitor his students' work. So when he first deployed ME203 using Wimba, he quickly realized he no longer needed his students to take class while seated at workstations. Now, his students were able work on their assignments from home. In the Fall 2007 semester, ME203 met twice a week; once on Tuesdays and once on Thursdays. Every Tuesday class was held live online via the ME203 Wimba Classroom while every Thursday class was taught face-to-face. "I use Wimba to watch their desktop and train them," he says. And the increase in enrollment immediately followed.

"The enrollment shot to 40," Dr. Impelluso said as he described the immediate impact of using Wimba Classroom in Fall 2007. "In [the Spring 2008] semester, I bumped it up to 64 students. Next semester, I will be allowed to take it to 120 students."

"This distance approach, based on Wimba, allowed me to also do a few more things," said Dr. Impelluso. "I taught students how to download Operating System emulators and I taught them how to connect via SSH to our school's UNIX server. Thus, the students did not need to PHYSICALLY sit in a room of 30 workstations. They could code from home!"

Perhaps even more impressively, Dr. Dr. Impelluso calculated that he has already been able to save his department \$75,000 as a direct result of teaching via Wimba Classroom.

"Our department was granted \$45,000.00 to upgrade our hardware to teach ME203. As a result of my experiment with Wimba, I told the Department they could spend that \$45,000 on other needs. Wimba allowed me to obviate the need for hardware. I do not need hardware infrastructure," says Dr. Impelluso. "In addition, with Wimba, I was able to up the enrollment to 120 students. We do not have to pay additional lecturers to teach the other sections anymore. SDSU pays lecturers \$15,000 per semester. Two lecturers amount to \$30,000. Thus, in sum, Wimba saved our department \$30,000 on lecturers and \$45,000 on hardware, for a total savings of \$75,000."

And while Wimba addressed two aspects of Dr. Impelluso's course – personnel/lecturers and infrastructure (computer hardware) – there is a third aspect that Dr. Impelluso believes is far more critical: student learning.



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**CLOSE TO ONLINE STUDENTS**

*"With Wimba, it only takes me a few minutes to fix each problem and the kids are on their way and understand their work much better. [Wimba] enables me to be closer to them without going to the physical office hours."*

*-Dr. Tom Impelluso, SDSU*

"I enter the virtual room every night. If they see my name there I encourage them to call me. I put down what I'm doing and I work on their project. We manage to get over their ambivalence of asking questions. I save time. It only takes me a few minutes to fix each problem and the kids are on their way and understand their work much better. It enables me to be closer to them without going to the physical office hours. In the first semester, I was still learning the technology and

not aware of all I could do. And I admit I am still realizing how much more I can do."

Dr. Impelluso knows his students are performing better. "You can read my students' testimonials; they are all learning better because of this. Wimba allows them to have the courage to ask questions, review lectures, participate in a fun style, share desktops and so on and so on."

**Funded in part by**

A CyberInfrastructure Architecture for Computational Mechanics  
 National Science Foundation 0549845

**And also by:**

Fund for the Improvement of Postsecondary Education (FIPSE),  
 US Department of Education: P116B020852

**About Wimba**

Wimba develops web-based collaboration software designed for online education, language learning and live interactive communications. Our collaborative applications enable learning professionals to fully embrace the new wave of teaching and learning opportunities afforded by the Internet; regardless of geographic location, bandwidth or operating system. Our classroom collaboration solutions enable educators to conduct live, online classes, meetings, office hours and other collaborations, and our language learning tools add oral interaction directly into course content, webpages, study groups and assessments. With simplicity and power, Wimba adds new dimensions to online, accessible education, enhancing the learning experience for both students and instructors.

