

Virtual Educa 2003

Final Text of Presentation

A Solution for Turning Traditional Classroom Teaching into Multimedia E-learning for On-Demand and Live Delivery

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Introduction

We are pleased to have this opportunity to share our experience of turning traditional classroom teaching into multimedia E-learning for on-demand and live delivery. Our hope is that our experience will be of value to other learning institutions, as we share how we utilized cutting edge technology in the past and describe how we plan to utilize it in the future, and offering it as an alternative to enhance traditional classroom teaching. We will candidly present the triumphs and challenges of our experience, and will also share our future plans as we continually strive to keep up to date with new distance learning technologies. The shared results of our experience—the do's and don't's—may help you and your organization avoid some of the hurdles we stumbled on.

Our Background

Cal Poly Pomona is located in Southern California, about 30 miles east of Los Angeles, and is one of 23 universities in the Cal State system. We offer 61 undergraduate degrees, 18 graduate degrees, and 8 credential programs. We serve approximately 20,000 students. Cal Poly Pomona is known all over the country and the world for our "learning by doing" educational philosophy. Because of this, the graduates of the University are highly regarded by business and industry. The College of the Extended University (CEU) within Cal Poly Pomona is the external arm of the

University. CEU has a rich history of integrating University resources into programs which benefit the community at large. Formerly known as the Office of Continuing Education, we are no longer just about open enrollment and adult night classes. We are the “missing link” between a wealth of knowledge and a community that needs it. The College supports business enterprise with educational programs in the areas of career enhancement and industrial education. Some programs that it encompasses are the International Center, through which all international students are channeled, the NASA Commercialization Center, where we have a business incubator, the Center for Advanced Computer Training, providing post baccalaureate and certificate courses in advanced computing, and an On-Site Corporate Training Department, where we provide training to different companies, such as Hyundai and Boeing, in any subject area from Project Management and Leadership Training to specialized classes such as Handwriting Improvement for Medical Doctors. Whatever a company’s or institution’s training needs are, our On-Site Corporate Programs can tailor classes specifically for them.

In addition, CEU has been involved with distance learning since 1995, beginning with a federal grant to deliver the Crosscultural Language and Academic Development certificate to California teachers and paraprofessionals. The program, called Project LEP-Uplink, utilized the learning package model—a box of videocassettes and textbooks, shipped to each student. Distance learning has obviously come a long way in recent years. We joined the E-learning movement last year, doing our best to incorporate our existing distance learning experience in the E-learning realm. Our first venture was to deliver a basic Spanish course to corporate employees. Imagine, our maiden voyage delivering Internet instruction was with a language course—a trial by fire. Although all involved with the program have deemed it a success, navigating the fine line between educational integrity and delivery convenience was quite a struggle.

Our Client

It is through our On-Site Corporate Training program that the opportunity came to us to teach a Basic Spanish class. A very successful retail chain in the business of selling beds (mattresses, box springs, headboards, footboards), Sit'n Sleep, wanted to capture a bigger share of the Spanish speaking market. This company cares for their employees very much, particularly its sales force. It offers them many benefits and incentives to increase their sales. The company knows that its greatest asset is its sales force. Thus, sales representatives are asked regularly what management can do to help them increase their sales. The salespeople asked management for a basic Spanish class. Since in Southern California the Spanish speaking population is growing by leaps and bounds, it made good economic sense for salespeople to learn to communicate in Spanish with their customers in order to increase their sales volume. Sit'n Sleep management agreed to offer the class and about 25 individuals were interested in taking it—not only sales representatives but also customer service and billing department representatives, and warehouse employees.

The Need

Sit'n Sleep has 11 locations within Southern California, covering an area expanding about 200 square miles. It was necessary to find a central location where all those interested in taking the basic Spanish class could meet at a convenient time. The most adequate place would be the company's headquarters in the city of Carson (near Los Angeles International Airport). But this location was problematic for many people because of the distance and travel time involved in getting there. A solution to get the needed instruction to participants without their having to travel was needed. It was then that our Distance Learning Director stepped in.

The Solution

Michael Filson had purchased the Tegrity WebLearner unit for our College a few months before, around July 2002. The unit was acquired to increase our capability of delivering distance

learning courses to participants of Project LEP-Uplink. The Tegrity WebLearner gave us the capacity to do the following:

- Teach the class in traditional classroom fashion at the Sit'n Sleep headquarters office to students on-site, **and** deliver the instruction via live webcast to participants at remote locations (their homes).
- Have off-site participants actively participate in class by submitting their questions or comments to us in writing during lectures via remote messaging. The instructor was able to read and respond verbally to these immediately.
- Interact freely with content to make teaching more engaging. I could write words and sentences, questions and answers, draw pictures, circle words or sentences, etc. on a regular white board. The notations were captured by sensors and could be seen immediately by students at remote locations, just like the students on-site could see them.
- Make Power Point class notes and other handouts available to participants at remote locations. These documents would be uploaded to the system and a hotlink would be created. Students at remote locations could then download them to their home printer.
- Record each class session. A hotlink was created identifying each lecture by date. Thus, participants could view each lecture via the web on demand, any time any place convenient for them, as many times as they wished, to clarify or reinforce the information imparted during live sessions.

The Platform

The learning landscape is changing. Many learners no longer fit traditional profiles and need both quality *and* convenience in their education choices. E-learning to supplement classrooms or reach distance learners will help solve the problem, but only if it is engaging enough to be effective. What is more engaging than a student's own instructor? Tegrity's unique method empowers

institutions to create and deliver engaging E-learning, without sacrificing natural teaching style or being forced into a production process. We affectionately refer to the Tegrity WebLearner as an “overhead project on steroids.” It incorporates a series of cameras, projectors, sensors, and microphones, all run by a main PC computer. This equipment allowed us to roll into the classroom and capture all that went on.

Right out of the box, the Tegrity system can handle all basic webcasting needs. But we wanted to create a program that was more than basic. Thus we supplemented and upgraded our equipment, enhancing production with Digital Hi-8 cameras, high-grade video cards, multiple wireless microphones, external audio processing and recording equipment, camera switching devices, and external video editing software. This may sound like quite a bit, but the add-ons totaled less than \$2,500 above the cost of the basic Tegrity unit. We now had a step up on all our webcasting competitors.

Playing to Tegrity’s strengths allowed delivery design to fall right into place. The first step was to transcribe a bulleted version of each of the instructor’s lectures, and combine the text with graphics in a PowerPoint presentation. This PowerPoint presentation was projected onto a white dry-erase board at the front of the classroom. As the instructor’s lectures progressed, she would advance to the next slide by literally pointing to the whiteboard. At any time, should she choose to pick up a marker and make notes on the board, a sensor camera would pick-up the annotations, and broadcast them real-time to remote viewers. These annotations also became recorded material, fusing themselves to the pre-existing PowerPoint file. Multiple cameras would film both the instructor and the students, recording the video straight to the computer’s hard disk. The instructor wore a wireless lapel microphone, and the students passed around a wireless handheld microphone. Both audio streams also recorded directly to hard disk. A special gooseneck document camera was at the instructor’s disposal and was used to show close-ups of small items and take digital snapshots that instantly were inserted into the PowerPoint presentation. Should any of the remote students have a question about any topic, they would send their written questions electronically, which would

immediately appear on the whiteboard for the instructor to respond to. All this was broadcast over the Internet live, as well as recorded for streaming at a later date.

The Class

The class was given over a period of ten weeks during the Winter 2003 Quarter, from January to March. The class was called *Basic Spanish for Sit'n Sleep Sales Representatives* because its focus was Spanish language vocabulary for sales; however, customer service, finance, and warehouse staff also signed up for the class. We met at the Sit'n Sleep headquarters office every Tuesday night from 6:30 to 9:30 p.m. The students came to the site from various locations, but most worked at the headquarters office and waited for class after their regular working hours. They were a close-knit, very dedicated, very delightful group. A couple of them had a great sense of humor and they made the class very enjoyable. The instructor's style of teaching is friendly, casual, light, and fun; and the culture of the company was casual and relaxed; thus, it was a good student/teacher match. A technician was hired to accompany the instructor to class every week. The instructor's responsibility was to teach the basic Spanish class in an interesting and engaging fashion, offering participants relevant vocabulary, both conversational and technical, to suit their needs, prepare handouts, quizzes and tests, and visual aids to facilitate learning. The technician's responsibility was to transport the Tegrity WebLearner unit, to get to the class location about an hour before class to set up the system, to operate the system during class, resolve any sort of technical glitches we faced, and to do editing work after each class.

The Team

This class was truly a team effort that engaged the cooperation of five different departments within the College of the Extended University:

- The On-Site Corporate Training Manager marketed and sold the program to the client,
- The Distance Learning Director provided the technology and the technicians to operate it,

- The Publicity staff created the Power Point presentation template used in every class, and visual aids and handouts for each lesson,
- The Information Technology staff resolved technical difficulties experienced by students and technicians at both the client and our university locations, to maintain a constant flow from server to student and to provide technical support.
- And, of course, the instructor provided instruction in the Spanish language and researched technical vocabulary specific to the needs of the client. Aside from teaching students the basic components of the Spanish language, many hours were spent researching translations of the specialized vocabulary required in the mattress and bedding industry. In addition, students were exposed to Latin American culture, food, customs, and music. It took anywhere from 10 to 20 hours per week to prepare for this class.

On the client's side, the Chief Financial Officer worked out the details of the contract, including what deliverables were expected. The Sales Trainer organized the students, served as liaison in getting textbooks and other materials to each student, facilitated contact between us and the students, and kept track of their attendance and performance. Management was very aware that they were investing in a new type of training endeavor. Therefore, they kept close tabs on us, the trainers, and the trainees. Sit'n Sleep also enlisted the services of their systems analyst, who worked very closely with our own technical staff to set up this program.

Working with the Platform: Instructor's Perspective

The *Basic Spanish for Sit'n Sleep Sales Representatives* class was my first time working with the Tegrity WebLearner Platform. My overall experience using this platform was very good. However, I did have to adjust some aspects of my teaching. As a teacher accustomed to delivering instruction in a traditional manner, I found it a bit difficult at first to talk to the camera and to treat it as if it was an additional student. I found that I had to raise my awareness of the fact that the students on-site were not the only ones present, that I had "other" students that were watching me and were

participating in the class through their computers. It took me some time to remember to make eye contact with the camera every so often. In addition, I had to learn to wait for the camera to follow me before moving around in the classroom, otherwise the camera would focus on uninteresting background space.

I also had to remember to check incoming messages every few minutes in order to answer questions from off-site students. These messages would appear on my white board in complete silence, so I had to visually check the board to notice them.

Certain manipulatives and visual aids that are useful teaching tools for me did not work very well with the Tegrity set up. Flash cards, for example, were difficult for students at remote locations to see and it was too time consuming to place them under the document camera. Also, I like to use a pocket chart in my classes. While the pocket chart worked nicely for on-site students in learning verb conjugations in Spanish and changing affirmative to interrogative statements, students at remote locations could not see the words strips very well because of the distance from the camera to the chart and also because of excessive light reflections.

The use of microphones was also a learning experience. I clipped the wireless transmitter box to my back at my waist band, brought the small cord and clip-on lapel microphone around to my front attaching it to my blouse. The transmitter functioned properly unless the antenna made contact with metal, such as the tray on the whiteboard. If contact was made, this resulted in harsh static noise, which I managed to produce more than once. We also had a hand held microphone for the students to use when posing or answering questions. On-site students and I would often forget that in order for remote location students to hear their voices, they needed to speak right into the microphone. Thus, many times when listening to my recorded sessions the viewer can hear only my side of a conversation because the other side was not picked up by the microphone.

Lastly, learning how to move the Power Point slides forward or backward was also challenging. The Tegrity WebLearner has a mechanism that enables the instructor to move slides back and forth. In order to change slides, I had to cast a shadow with my finger that covered at least

75% of a two-inch square projected on the white board. The shadow must be projected by sliding the finger at a specific angle and speed from the left side. I could never consistently figure out that speed and angle. Sometimes I could do it, but other times, it didn't work. I could not figure out what I was doing differently when shadowing the button did not work for me. Fortunately, the technician also had a way to advance/retrocede slides from his location at the keyboard. Many times I was forced to ask him to move slides for me, after trying repeatedly to do it on my own with no success. The document camera also had a trick to using it. I had to place an object just below it and press a key on the keyboard for the camera to pick up the image. I ended up not using it much because I could never remember how to work it.

Working with the Platform: Distance Learning Director's Perspective

The greater the dependency on technology, the greater chance there is of having something go wrong. Our first problem took two days to solve—finding the solution less than an hour before the first class session began. The Tegrity system requires proprietary software to run on a centralized server. This, of course, was at our offices at Cal Poly Pomona. In order to broadcast from a remote location, we had to network the Tegrity system into Sit 'n Sleep's servers, transmit the signal back to Cal Poly Pomona, and then out to the remote users from there. Attempting to sync-up multiple IP addresses, clearing several firewalls, competing with local workstations for bandwidth, time-out settings, and a wireless network was incredibly complicated and frustrating. Technicians at both locations, although highly qualified, knew only their own networks, and not the other's. I liken it to a doctor trying to diagnose a patient's ailment by examining himself. Two days and seven technicians later, the problem was solved once and for all. Someone had a decimal point in the wrong place. I won't name names.

The second problem was calibrating the sensor camera. The sensors pick up any coloration change in the whiteboard, including reflections from the lights. We tried to turn the lights down, but then it was difficult for the on-site students to function. We often ended up with stray marks on the

PowerPoint slides, every now and then covering up a piece of important text. Trying to find a balance between the two took a few class sessions.

The Tegrity software is designed to run within Internet Explorer. The video is powered by Windows Media Player, versions 8 & 9. The material is streamed in three speeds to accommodate bandwidth as low as 28.8, in order to not eliminate any potential students with minimal computer systems. Tegrity will automatically run a system check anytime a new workstation logs onto the content. However, certain audio and video settings that have been modified from the default, in addition to older versions of Windows Media Player, would slow down or stall the presentation. The Tegrity system's check is designed to alert the user to changes needed, but often the user's computer literacy was so low that these suggestions were undecipherable. We provided technical support by phone and e-mail, but this effort was limited by the user's unfamiliarity with their own computer system. In a couple instances, a student did not even know how to open their Internet browser. Only too late did we realize the need for an up-front assessment of computer literacy as a prerequisite for enrollment. We also discovered that the software is not compatible with Mac OS.X.

At the close of the course series, Sit 'n Sleep requested a fully-edited CD-Rom set of the course. Editing involves, audio and video clean-up and optimization, PowerPoint slide sync, removing stray marks, customizing the presentation window, adding graphics, etc., and is incredibly time consuming. The Tegrity WebLearner is packaged with a basic editing program, which we found to be almost completely useless. Thanks to some of our talented staff, we broke Tegrity's file code order and were able to export the video streams into Sonic Foundry's Vegas, a program similar to Final Cut Pro. We edit the videos with greater ease, have the capacity to get creative with music, camera transitions and effects, and import the newly rendered file back into the Tegrity software. When the Tegrity company learned we had done this, they strongly advised against transferring files back and forth to manipulate them. Then they asked us for a copy of one of the videos so they themselves could figure out how we did it.

Triumphs

Having addressed the adjustments that must be made when changing from traditional classroom teaching to multimedia E-learning for on-demand and live delivery, we can now focus on our accomplishments:

- Students at both on-site and remote locations learned basic conversational Spanish, basic Spanish grammar, and basic technical vocabulary relevant to their occupations. During the last class session, we had an end of the course party and the Sit'n Sleep Chief Financial Officer and the Sales Trainer and the Cal Poly Pomona On-Site Corporate Programs Manager attended. We played a game where students were divided in two teams and different questions were posed to them in Spanish. These questions were prepared to allow students to demonstrate their newly acquired knowledge of the Spanish language. The students did this very well and the instructor was pleased to see that they were able to "show off" to their audience, the managers. The students also expressed great appreciation and gratitude to the instructor and the entire team that brought them this class. We were extremely happy to hear from them how pleased they were with our efforts.
- Students were exposed not only to the Spanish language, but to Latin American culture, food, customs, and music.
- The group developed a sense of camaraderie and cohesiveness since they were undertaking the arduous task of learning a new language together.
- Students at remote locations had the opportunity to watch the lectures in the comfort of their own homes, without having to commute, without being constricted by the limits of time and space.
- Students will benefit from recorded lectures well beyond the duration of the class. We provided the company ten recorded, fully edited lectures on CDs. Students will be able to

borrow the lectures on CD from Sit'n Sleep management and watch them at their convenience.

- Students were given exercises and evaluations to allow them to track their progress.
- Management was happy with the quality of the lectures and the information imparted.
- Our University and College have obtained a partial return of their investment in this technology from the money collected from the Sit'n Sleep project.
- Our University and the College have another platform and technology for providing distance education and training, and thus another source of income.
- Our University and the College have another tool to offer Spanish and other courses through online technology.

Where Do We Go from Here

Despite facing some very high hurdles, we managed to jump them all. Successful emergence from this trial by fire can only be attributed to the cooperation, tenacity, and talent of our CEU colleagues. The endless hours and problems that were so frustrating at the time have turned into knowledge and experience that we are now applying to new endeavors, one of which is the successful completion of Project LEP-Uplink's first semester of E-learning CLAD instruction.

This conference is just one of the many indicators that our world is becoming smaller and smaller. But current factors like war and disease have hindered international student exchanges, and E-learning is the perfect supplement to lean on in these difficult times. If the students cannot come to the University, then we will bring the University to them.

Final Thoughts

Although E-learning has come a long way, it is still in the infancy stages. Issues like software compatibility, bandwidth, file size, student retention, assessment, shared standards, and overall

educational integrity must be addressed sufficiently before E-learning becomes the norm. Opening up to change, although risky and possibly frightening, can lead to new opportunities and even a renewed sense of purpose. The College of the Extended University at Cal Poly Pomona anxiously awaits the role distance education will play in the mutually beneficial marriage of education and enterprise.

We welcome comments and questions. Please contact us at: smmoussavi@csupomona.edu or mjfilson@csupomona.edu.