An Education in Distance Learning: The Case of Agribusiness 101

By

Lynn Hamilton
Assistant Professor
Agribusiness Dept
Cal Poly State University SLO
San Luis Obispo, CA 93407
805-756-5032 (phone)
805-756-5040 (fax)
lhamilto@calpoly.edu

1999 American Agricultural Economics Association
Nashville, Tenn.
Aug. 8 –11, 1999

The Agribusiness Department at Cal Poly San Luis Obispo, Calif., and Santa Ana College in Orange County, Calif., embarked on a unique learning and teaching partnership in 1998, funded by a USDA Hispanic-Serving Institutions grant. Two important issues drove this initiative. First, the demand is growing for students who are ready for leadership positions in the expanding food and agribusiness industry. Second, as the traditional, rural pool of students continues to shrink, the most likely source of potential students lies with urban, minority students who are under-represented in the industry. Most of these students begin their education at colleges such as Santa Ana, which offer curricula that could provide successful launching pads for further experience and study in agribusiness.

At the same time, Cal Poly initiated the Cal Poly Plan, which states as one of its missions to increase technology and multimedia in the classroom. New technology-laden classrooms were constructed, with the capability for both live, interactive video distance courses to be sent and received, as well as built-in presentation technology to use for both distance and on-campus instruction. With the funding and infrastructure in place, a class could be developed to serve both Cal Poly and Santa Ana students simultaneously.

Agribusiness 101, the introductory principles course for the major, emerged as the most obvious class to deliver via distance education. Santa Ana faculty wanted their students to gain a broad view of the agricultural industry and to learn about career opportunities in agriculture, and AGB 101 served that purpose. AGB 101 is an existing course in Cal Poly's agribusiness department, but curriculum changes in 1998-99 warranted a revision of about half of the course content. This significantly increased the time required to prepare the course for distance delivery.

In Fall 1998, 38 Cal Poly students enrolled in AGB 101-05 on campus, and nine Santa Ana students signed up 250 miles away. The course was offered by both institutions, allowing Santa Ana students to take advantage of considerable cost savings in the community college system. Santa Ana students receive full Cal Poly credit for the course, should they transfer to Cal Poly.

I taught the course at Cal Poly, and a co-instructor at Santa Ana, Diana Todaro, helped administer the class at the distant site. We worked together to plan the course content, and found, as others have, that team teaching with two-way interactive video is beneficial for both the teachers and students (Nichols and Trout). In addition, co-instruction was necessary because of the discrepancies between the semester system at Santa Ana and the quarter system at Cal Poly. Ms. Todaro taught several classes during the quarter, which gave Cal Poly students the experience of being the recipients of a distance education course. In addition to teaching, a co-instructor or facilitator at the far site is invaluable for any distance education course for distributing materials, proctoring exams, and giving feedback about the course that one might not get from students.

At Cal Poly, the emerging model for teaching distance courses is to offer an existing course to both on-and off-campus learners simultaneously. Distance education classrooms are built to accommodate up to 48 on-campus students, with no structural limitation on the number of off-campus learners. Multiple sites can interact with the on-campus classroom via live video connections. This suggests that Cal Poly has realized the potential economies of scope of distance education, as noted by Burton. As distance education becomes more popular, more on-campus students are learning in classrooms with a new element – one or more distant sites being piped in both audibly and visually through a TV monitor. I was interested not only in how well

the distant site learned, but also in how well my on-campus students learned when the distant site was present in the classroom.

I taught another section of AGB 101 the same quarter, a traditional day class in a classroom equipped with a chalkboard, VCR and overhead projector. This class, AGB 101-04, tended to serve as an unofficial "control" classroom, from which one could measure differences in performance between the traditional and the distance education class. The enrollment for the traditional course was 37 students.

Student performance, as measured by course grades, seemed to suffer a bit for the students in the distance course setting, as compared to the traditional classroom setting. The class with the distance component earned an average grade that was 2.4% lower than their counterparts in the traditional class. However, this cannot be solely attributed to the difference in classroom setting. The traditional class, offered in the daytime, was comprised of 10.1% non-majors, while the distance course setting was made up of 28.9% non-majors. There were factors in the distance class that could have contributed to the lower scores, which will be discussed later.

In the distance course, both faculty and students made considerable adjustments in adopting the new method of teaching and learning. The Cal Poly students who chose AGB 101-05 did not know it contained a distance education component upon enrollment, and were surprised to find their classroom decked out with cameras, computers and large monitors on the first day of class. In order to accommodate the community college's class scheduling, the course was taught in the evening. Most Cal Poly classes, particularly introductory ones, are scheduled during the day. Out of five sections offered of Agribusiness 101 at Cal Poly last fall, the evening section was the last to reach the enrollment limit.

All lecture materials were either PowerPoint or Web-based, which more than doubled class preparation time. This is the typical increased preparation time for distance courses, as noted by Newcomb and Muggli-Cockett et. al. In addition, weekly class materials were prepared and sent to the Santa Ana, either by fax or via the Internet.

Several unanticipated issues arose during the class. First, age of the students at Santa Ana was vastly different than the Cal Poly group. Many of the Santa Ana students were mid-career, and one was even in retirement. The goal of achieving diversity was realized, but perhaps in a different manner than had been expected. Of the Santa Ana students, five were white males between the ages of 19 and 72, one was an Hispanic male in his 30s and three were females between the ages of 31 and 55. Two of the females were Hispanic, and one female was white. One student was planning to transfer to Cal Poly in Winter 2000. In contrast, 36 of the 38 Cal Poly students were white, with an average age near 20.

Different teaching methods were necessary to keep both groups involved. The class met for two hours from 6 to 8 p.m. two nights per week for 11 weeks. Each lecture contained one or two small group activities to encourage student interaction both intra-site and inter-site. Extra effort was needed to ensure both Cal Poly and Santa Ana students were involved with group discussions. End-of-quarter evaluations lent insight to student's perceptions.

Cal Poly students answered questions regarding the use of technology in the classroom, the lecture guides, classroom activities, interaction with the distant site, and their feelings about the distant education component of the course. Santa Ana students completed a similar survey, but questions were revised to learn more about their perceptions at the distant site. The remainder of the paper will focus on the Cal Poly students' perspectives of taking an on-campus

course with a distance education component. At the submission deadline, the Santa Ana surveys had not been sent to the author for inclusion in the paper.

AGB 101-05 students gave very a positive response (over 90%) to the use of fill-in lecture notes that corresponded with the Power Point presentations. These lecture handouts were implemented about three weeks into the course, as I found that students had difficulty taking notes during the faster-pace of Power Point-enhanced lectures. I learned the hard way that providing the students a complete set of notes erodes classroom interaction: they just look down at their note set for the answer to the questions I posed. After that experience, I started leaving blanks where key information needed to be filled in. That technique kept the students interested and involved with the class, and helped them take notes more efficiently. Informal feedback from Santa Ana indicated that the lecture notes were very useful in helping them to follow the lecture material. In addition, 97% of Cal Poly students responded positively to the use of Power Point in the classroom. In their written comments, most of the students listed the combination of Power Point and lecture notes as an aspect of the class that enhanced their learning.

In order to diversify teaching techniques over the two-hour time period, and to give students a chance to learn from each other, small group activities and worksheets were incorporated in to each class. This also gave me an opportunity to check understanding of the lecture materials. Ninety-three percent of the students said the activities were effective in helping them understand the lectures.

Incorporating the Internet into some of the lectures met with more a mixed response, garnering positive answers from 77%, while 13% disagreed that using particular web sites helped to emphasize lecture materials. The remaining students were neutral. Several homework

assignments were Web-based, however, and 87% of the students responded positively to that use of technology.

The student responses I was most interested in involved the distance education component of the class. The classroom could seem very busy at times, with two cameras, microphones, one large screen and one small screen monitor. The Cal Poly students could only see the Santa Ana students if they turned around to look at the monitor, but they could hear the far site very well. The Cal Poly students each had microphones in front of them, which they were at times reluctant to speak into. In addition, whatever image was being projected to Santa Ana appeared on the large screen in front of the classroom. This was ideal for Power Point portions of the lecture, but when the camera was on me, the Cal Poly students had both views – the live version, and the on-screen projection that was beamed to Santa Ana. As the instructor, it could be rather alarming to see a larger-than-life version of yourself standing behind you!

The students did have some negative responses to the distance education component of the classroom. Forty-two percent of the students claimed they were distracted by the inclusion of Santa Ana students, and only 32% said that the far site did not distract their learning. The remainder was neutral. Fewer were bothered by the large screen projection of their instructor in front of the classroom, only 22% said they were distracted by that technology. There was a nearly even split on opinions about the microphones in the classroom: 42% thought they were helpful in communicating with Santa Ana, while 38.8% said they weren't.

As an instructor, one of the main concerns with teaching on- and off-campus students simultaneously is the degree of interaction with the two groups of students. At Cal Poly, 71% of the students thought the instructor interaction was equal between the two groups. However,

there were some students who did not like sharing my time with the Santa Ana students; about 20% thought my attention to Santa Ana distracted from their learning.

Overall, feelings were mixed about the inclusion of a distance education component in an on-campus course. Forty-two percent of the students would have preferred to take the class without the distant education component, while only 25.8% would have chosen to include a distant site. However, the students did not want to return to traditional chalkboards and overheads as teaching tools. Seventy-one percent of the students preferred the technology available in the distance education classroom.

At Cal Poly, it appears there is a need to make on-campus students more comfortable with the idea of bringing distant sites into the classroom. This is just one of the many challenges facing those who teach on- and off-campus students simultaneously . From my education in distance learning, I offer the following tips for others entering this rewarding yet challenging mode of teaching.

1. **Active learning techniques are even more vital in distance situations.** Class discussions, small group problem-solving, or worksheets that pairs of students complete are just a few ways to get both the on-campus and far-site students involved in the class, and also provides the instructor a forum by which to get interaction between students at the two sites.
2. **Have on-site technical assistance**. This is probably the most important aspect for the instructor's peace of mind, to make sure the sound and video connections are working for the entire class. This is particularly crucial when the classroom is designed for the instructor to be self-sufficient. At Cal Poly, the instructor touches a keypad to switch the video camera from her or himself to the variety of other projections: the computer for PowerPoint or Internet, the document camera, the VCR, or the classroom camera. The instructor wears a

device that allows the camera to follow him or her around the classroom. All of the components must be working properly, and the technician should become your best friend during the distance course.

3. **Use a co-instructor or teaching assistant at the far site.** This is another important component of a successful distance education course. At minimum, someone must distribute and collect materials at the far site, and it's even better if the main instructor is able to get input and/or feedback from the co-instructor. Also, classroom management is much easier when there is a person with some authority at the far site.
4. **Use the Internet as a communication and distribution tool.** Posting the course syllabus and assignments on a web page provides a very efficient means of distribution. E-mail, of course, is becoming the universal communication tool, and provides that much-needed interaction with off-site students. Next fall, we plan to use the course website to post lecture notes, self-test materials and a hypermail link to provide more opportunities for interaction.
5. **Create learning guides or partially complete lecture notes for students.** When using PowerPoint, both on- and off-campus students benefit from having a map of the lecture. Student-teacher interaction is not compromised if the key points are left blank for the students to fill in during lecture. These guides can be compiled into a course notebook that students can purchase at the campus copy center, reducing both the cost to the department and the weekly distribution effort by the instructor.
6. **Learn students' names and use them, if class size permits.** One of the best ways to help students feel connected to the class, whether they on or off-campus, is to use their names in class. Instructors need every tool possible to bridge the distance within the class, and

learning students' names really helps to accomplish this. If class size doesn't permit this, refer to the other campus by name throughout the lecture.

Agribusiness 101 will be taught again in the Fall of 1999 with Santa Ana College. We will use the same format, but will incorporate more web-based instructional materials into the course. We will also take Santa Ana's evaluation into account, when it is available. The learning curve is still steep, but the experience gained from the first class will help us provide even better service to students at both sites. Cal Poly and Santa Ana are working on ways to continue the partnership outside of grant funding in order to continue to expand the availability of college-level agribusiness and food system education to more diverse student populations.

References

Burton, Robert O. "Costs and Benefits of Increasing Access to a Traditional Agricultural Economics Course." *Amer. J. Agr. Econ.* 80(Number 5 1998): 979-983.

Muggli-Cockett, N.E., et al. "Preparing and Implementing an Animal Science Course for Distance Education at Utah State University." *J. Dairy Sci*. 75(Number 11. November 1992): 3257-3260.

Newcomb, L.H. "Preparing a Course for Distance Delivery." *The Agricultural Education Magazine*. v. 66(Number 8. February 1994): 7-9.

Nichols, Laurie Stenberg and Betty Lea Trout. "Team Teaching via Two-Way Interactive Video." *The Agricultural Education Magazine*. v. 66(Number 8. February 1994): 10-11,17.