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EDITORIAL

Distance education has long been recognized as an effective way to expand access to educational opportunities. Inter-institutional collaboration can allow colleges and universities to extend that access even further. In this issue of DEOSNEWS, Dr. John Witherspoon describes a collaborative program that uses interactive video technology to provide students at Coastline Community College with access to a baccalaureate program at California State University, Dominguez Hills. Dr. Witherspoon presents data on students' perceptions of the distance learning experience; reports on the educational and cost effectiveness of the program; and discusses the logistical and technical issues involved in this example of collaborative programming.

A "2+2" BACCALAUREATE PROGRAM USING INTERACTIVE VIDEO

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INTRODUCTION

For five semesters beginning in Fall 1992, California State University, Dominguez Hills, and Coastline Community College conducted a pilot program which permitted community college graduates to remain at their college site while completing much of their course work toward baccalaureate degrees. In this "2+2" partnership, interactive video was used to extend Dominguez Hills classes to the Coastline students at the college's Fountain Valley site, about 25 congested urban miles away. The program was supported in part by GTE California, Inc.

It worked remarkably well. After four semesters the program had its first group of graduates. Throughout the pilot period the students at the Coastline site had slightly better grades than their on-campus peers at Dominguez Hills. The two institutions forged a close, ongoing working relationship, and the trial has evolved into a permanent operational program.

The pilot project was "intended for the benefit of qualified Coastline transfer students who may be unable to transfer to a public four-year institution due to reductions in State fiscal support or whose personal or professional circumstances may make it difficult to pursue an upper-division instructional program in residence at a campus."

The students were working adults, part of the cohort sometimes called the new majority student: older and with many more family

and job obligations than the stereotypical 18-22 year old undergraduate.

CSU Dominguez Hills prides itself on being community-centered, prepared to make a quality education realistically available to working adult students. Coastline is a college without a campus, founded on the idea of reaching students at home or in community locations. Both make substantial use of electronic media and other information technology. GTE, seeking solid information on applications of modern telecommunication technology in education, helped fund the project and commissioned an independent evaluation.

The evaluation tracked the program from its initial semester. At the end of every semester students responded to a survey and a Coastline-based class met as a focus group with the evaluator. The grades of students on the Dominguez Hills home campus were compared with those of students at the Fountain Valley site. Instructors and project administrators were interviewed periodically. At the mid-point of the program there was an internal evaluation seminar that involved faculty, administrators, those responsible for technical and faculty support, and students. That seminar was augmented by additional personal interviews with the chief academic officers of both institutions. At the conclusion of the pilot program there was a meeting of senior institutional administrators, those directly responsible for the program, and the evaluator in order to add summary perspective and to discuss the program's future course.

EVALUATION SUMMARY

The five-semester pilot ended with the Fall 1994 semester. Perhaps the strongest evaluative statement was made by the institutions themselves: they continued the program without missing a beat. The discussion at the end of the pilot period was not about whether to proceed, but how to expand.

A class at Coastline's Fountain Valley site typically enrolls 10-15 students, or half to two-thirds of the enrollment in the Dominguez Hills section of the course. Approximately five courses per semester are offered, all on evenings or weekends, and most Fountain Valley students take more than one.

Two years after the program began, eight of the Coastline students completed their programs and were awarded baccalaureate degrees by CSU Dominguez Hills. Grades achieved by Coastline students were marginally but consistently higher than those of campus-based Dominguez Hills students.

For the working adult students at Coastline, the program represented a major saving, both in money and in precious time. For the institutions the initial price tag was acceptable, although they recognize that per-student technical costs must be reduced over time. Both believe that the program advances their institutional missions. This project is a remarkably positive example of inter-institutional cooperation, a concept that is universally praised but seldom achieved.

The courses and instructors win high marks from the students. The interactive television system is perceived as a way to extend

educational opportunity while suggesting ways to improve teaching and learning.

Difficult technical and logistical issues were addressed over the course of the pilot project, and there has been steady improvement. Some problems remain, ranging from microphone pickups to the inter-site handling of exams and course materials. While further improvement is needed in these areas, program effectiveness seems not to have suffered significantly. As the program proceeds, both administrations look toward expanding the range and number of course offerings, perhaps the involvement of other colleges, and the use of other technologies in addition to interactive video.

COMPARING STUDENT ACHIEVEMENT

>From the outset, the average grades of Fountain Valley classes were marginally to half-a-grade better than those of their campus-bound counterparts. During semesters three to five, when formal comparisons were included in the evaluation, the difference was slight but consistent in each course: one-tenth to three-tenths of a point on the standard grading scale of 4.0 (three-tenths of a point is the difference between, for example, a B and a B+). During the three semesters analyzed there was only one course in which Dominguez Hills students scored higher than those in Fountain Valley; the difference was .02 (2.88 vs. 2.90).

Two points should be noted concerning this comparison:

1. Given the relatively small number of students and the relatively slight differences in their grades, the important observation is the consistency of the pattern.
2. It cannot be concluded that the technology provides a reason for the difference, since the groups were not demographically matched. It is clear, however, that the system did what it was designed to do, since those who relied on it performed at least as well as those who were face-to-face with the instructor.

THE FIRST GRADUATES

Two years after the program's launch, eight of its students graduated from CSU Dominguez Hills. In many ways they represent the group sometimes called "the new majority student:" older, working, with job and family obligations. There were four men and four women. Their ages ranged from 24 to 50, with a median of 36.

All were working outside the home, all but two full-time (defined as 40 hours or more per week). Five had dependent children, and two listed spouses as dependents. They were not newcomers to higher education: five took their first college courses before 1980.

All had joined the Dominguez Hills -Coastline program at its inception. Four had taken a dozen of their degree courses via the interactive video system, and none took fewer than four courses via the system. Six of the eight prospective graduates had previously taken conventional telecourses in addition to the interactive video courses. The number of these telecourses ranged from one to six, with one person reporting that most lower-division work had been completed via telecourses.

THE STUDENTS REVIEW THE PROGRAM

During each semester of the program students at both locations were surveyed, and a focus group of Fountain Valley students met with the evaluator. They were asked a variety of questions about the technology, the courses, and their responses to participation in courses taught with the use of the interactive video system. Their responses were quite consistent throughout the 5-semester program.

The Coastline students, of course, were the veterans of interactive video. By the final semester of the program, 69 percent of those responding had taken three or more courses via the television system, and only one student in the group had not used the system previously. Most (57 percent) of the on-campus Dominguez Hills students who were enrolled in the same courses had not experienced the system previously.

Why Enroll in this Class? The survey began by asking students to choose from a list of reasons why they "enrolled in this particular course, meeting in this location, at this time." The choices were:

- A. Relatively convenient commute to class.
- B. Needed this course for my academic program.
- C. Class meets at a convenient time.
- D. Liked the idea of using TV and other technology.
- E. (For students at Coastline) I think the Coastline environment is more friendly and comfortable than that of a CSU campus.

Students were also invited to add other reasons, but no real variations from these choices were offered.

Fountain Valley students consistently chose "Relatively convenient commute . . ." followed by "Needed this course for my academic program." During most semesters approximately two-thirds chose "relatively convenient commute . . ." In the final semester of the pilot program, each of these choices was selected by 45 percent of the Coastline students.

Students on the Dominguez Hills campus overwhelmingly chose "Needed this course for my academic program" as a first choice, with "Class meets at a convenient time" as a distant second.

Very few students over the life of the program indicated that they were particularly attracted by the technology, and while Fountain Valley students liked the fact that they could attend class close to home, the Coastline environment was not a significant priority.

Concerning the Technology. The next issues surveyed concerned the use of television in delivering the courses. Students were presented a series of statements and asked for their level of agreement as follows:

- A. Agree
- B. Somewhat agree
- C. Neutral
- D. Somewhat disagree
- E. Disagree

The first statement was, "The use of television and other technology

probably made this course more interesting and easier to understand." The response to this statement has been largely neutral, with Fountain Valley students, as might be expected, more likely than the on-campus students to favor the positive end of the scale. In semester 5 nearly half the Fountain Valley students (46.7 percent) voted "neutral," while nearly the same number (43.3 percent) indicated some level of agreement. Among Dominguez Hills students just over a third (36 percent) were neutral in the most recent semester, and about the same percentage (37 percent) were negative to some degree.

The following statement, "The use of television and other technology probably made the course more informative," elicited similar responses.

The final statement in the series approached the issue as a negative: "The use of television and other technology interfered; it got in the way of my learning." As in previous semesters, and consistent with the response to the previous statements, Fountain Valley students were neutral (43.3 percent) to supportive of the technology (36.7 percent), while nearly half of the Dominguez Hills students (48 percent) expressed some level of agreement with the negative statement.

Students were also asked about their perceptions of the roles of technology in instruction. The question was posed, "When technology (television, fax, computers, etc.) is used in a course, what do you think it should accomplish?" A list of factors was offered:

- A. Make the course more convenient for students to take.
- B. Improve students' learning by using technology to present material in different ways.
- C. Make the course more economical for students.
- D. Make it possible to reach more students.

Again students were invited to add other responses, but there were no substantive additions.

Half of the Coastline students chose "Make the course more convenient to take" as top priority, followed by "Improve students' learning . . ." and "Make the course more convenient for students to take."

Students at Dominguez Hills said "Improve students learning . . ." (58 percent) followed by "Make the course more convenient for students to take."

Then students were asked, "As technology was actually used in this course, what do you think it accomplished?" The students at the two locations gave complementary answers. During the most recent semester 68 percent of Fountain Valley students said, "Made the course more convenient for students to take," while the answer most selected by their colleagues on the Dominguez Hills campus (41 percent) was, "Made it possible to reach more students."

Toward the end of the questionnaire, television was approached from yet another angle: "In thinking about this course in comparison with similar courses my strongest overall reaction to the use of television and other technologies was that:

- A. It intruded on the class and made life more complicated.
- B. It made it possible for me to take this course.
- C. It suggested the possibility of outside guests and/or the use of new techniques for teaching and learning.
- D. It will be valuable when they get the bugs worked out.
- E. None of the above. My strongest reaction is as follows:" . . .

The semester 5 results, generally similar to those of previous semesters, were as follows. Most of the Fountain Valley students (57 percent) responded that "It made it possible for me to take this course." At Dominguez Hills 42 percent said, "It will be valuable when they get the bugs worked out," and 28 percent reported that it intruded and made life more complicated.

The responses to these technology-oriented issues reflect the different perspectives of the two groups: at Fountain Valley, television is the mechanism that makes their class possible. At Dominguez Hills, where students are face-to-face with the instructor, television can be seen as complicating what otherwise would be a conventional class-room situation.

The Instructors and the Courses. The students' response to their instructors were quite positive. They were presented with the statement, "The instructor seemed to use TV effectively. I felt that the instructor was communicating well with me." Asked to agree or disagree using the five-point scale reported above, three-quarters of Fountain Valley students and well over half the Dominguez Hills students gave positive responses.

Students were also asked whether instructors' office hours were "conveniently scheduled and adequate in length" and whether students "had adequate opportunity to consult my instructor." Most students at both sites reported that their access to instructors was adequate. In focus groups there was a common reservation, however: students at Fountain Valley would like more opportunity to ask the spur-of-the-moment question before or after class, or during class breaks.

To compare the interactive video courses with "similar courses taught in a conventional closed classroom," the students were asked whether they thought they learned "more, less, or about the same" amount from these courses. Both groups said "about the same."

Asked whether the opportunity for classroom participation was "greater, less, or about the same" in these courses, most Fountain Valley students (56 percent) reported "about the same," but Dominguez Hills students were not so neutral: during the most recent semester 43 percent perceived their opportunity to be less in the interactive video courses, with a third reporting "about the same."

Questions on other student support issues -- advising, library resources, registration, and information about future courses -- drew neutral to positive responses from both groups.

Costs: Time and Money. Students at Coastline's Fountain Valley site report a substantial savings in time and money. Fountain Valley-based students report that taking a class at the Coastline site saves up to five hours per week, with nearly a third estimating the

saving at 5-10 hours.

The financial savings are also important. About half report that taking a course at the Coastline site saves "perhaps \$50," while the other half estimate "\$50-100." Some students have estimated savings as high as \$300. Note that the reported savings are per-course, and most students take more than one in a given week.

Savings of both time and money are related to the time and cost involved in commuting, parking, babysitting, and job-related factors.

REMAINING LOGISTICAL AND TECHNICAL PROBLEMS

The interactive video system was installed at almost the same time at which the pilot program began in 1992, and the inevitable start-up difficulties had to be confronted. It is universally agreed by students, faculty, and administrators that system performance improved steadily during the pilot period, and that a high degree of quality and reliability now prevails. Nevertheless, some logistical and technical issues need further work. They may be summarized as follows.

Timely Access to Course Materials. Course materials, exams, student papers, etc. are shuttled between the Dominguez Hills campus and the Coastline site by a scheduled courier service. Time delays can mean that students at the two sites do not receive all material (including exam grades etc.) at the same time. The installation of a fax machine at Fountain Valley has been a great help, although, of course, the fax machine cannot be used for grades and other confidential student information. The security of documents and student information is also under constant review.

Access to Instructors and Advising. Students applaud the instructors' availability for office hours and outside-class consultations. For the spur-of-the-moment, one-on-one question at class time, it is useful to leave the interactive video system on line a bit longer and during class breaks, although the system is not configured for a one-on-one conversation. Plans for the future include carrels equipped with interactive video, so that the system can be used for individual consultation.

Technical Issues. Once past the inevitable startup challenges, the video quality of the program has been consistently excellent. The most significant technical problems are related to the audio system, and specifically to the single-microphone approach to student participation.

The problem is both technical and operational. At Fountain Valley, the microphone is keyed to a camera tracking mechanism that is intended to aim the camera at the person using the microphone, but performance has been less than perfect. Also, there is the occasional need to replace a microphone battery in mid-class.

At least as important, the single mike is an impediment to class discussion. A student ready to speak must wait while the microphone is passed. This problem, not unexpectedly, is compounded by those who speak spontaneously, without the mike, with the result that those at the other site can't hear. Early in the pilot program it was asserted that a virtue of the single mike was that

it acted like the "talking stick" used in some societies to identify the person whose turn it is to speak; but cultures vary, and this "talking stick" is a problem. Although there are plans for an upgrade--to the newer multiple-microphone audio systems that overcome the traditional problems of ambient noise and feedback--implementation awaits funding.

It should be emphasized that these technical and logistical issues, while real and important, have not been fundamental impediments. They should be fixed, but meanwhile the program works.

LEADERSHIP PERSPECTIVES

Early in 1995, with five semesters of experience behind them, the institutions' senior administrators and those responsible for the program met to take stock. Major points of their discussion were:

The Faculty. Faculty response in both institutions has been positive. The interactive video system has been relatively non-threatening and may encourage faculty members to work with other technologies, as well. The program has attracted innovative teachers, and the institutions must continue to look for these pioneers. It will be important to maintain momentum, keep developing ideas, and look for new frontiers.

The Students. Their enthusiasm was impressive, they responded well to the quality of the courses, and they helped cement the close working relationship between the institutions.

The Courses. The quality of the courses has been deemed solid by the faculties and the students. The Vice President for Academic Affairs at CSU Dominguez Hills remarked that one challenge will be to achieve the same quality in conventional on-campus courses.

The Institutions. A major outcome of the program has been the close working relationship between the two institutions. The project's people have been key to that development. In the future they will work to expand their cooperative effort and involve other colleges as well.

The Technologies. The interactive video program has been a clear success, but it is important not to be tied to one technology. Both institutions also use other techniques, and it is important to seek combinations that respond to the curricular and logistical requirements of the specific situation. Furthermore, these programs can act as laboratories for development of technological components for campus-bound programs as well. The partner institutions anticipate a welcome reduction in transmission costs as they move from the initial T-1 system to ISDN.

The Future. Expand the program's offerings, using other class times and additional technologies. Build on success and look for further opportunities.

CONCLUSION

This "2+2" cooperative baccalaureate degree program, with its use of interactive video, has been a remarkable success. In two years it produced its first group of graduates. Students at the Coastline site performed slightly but consistently better than their counterparts on

campus. Students rate the program highly, and there is general praise for the quality of the courses. For the working adults who are the program's students, the opportunity to complete a degree largely from the Coastline site represents a significant saving in both dollars and time.

Technical and logistical issues remain, and the program will have a brighter future when they are definitively addressed. They have not, however, significantly dimmed the success of the pilot effort.

The success of the program is clear enough that CSU Dominguez Hills and Coastline Community College have committed themselves to continue it immediately and indefinitely, expanding the partnership which made it possible. That fact, based on solid working relationships and the demonstrated value of the program to their students, may be the most important assessment of this remarkable trial.

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