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ABSTRACT

This report describes and evaluates various team teaching models that were implemented through the Training Rural Special Educators in Kentucky through Distance Learning (TREK-DL) project at the University of Kentucky. During the TREK-DL project, five special education courses were taught via distance education, each using a different team teaching approach: the use of lead and supplemental instructors, multiple instructors, guest lecturers, co-instructors, and an approach in which two instructors taught the content of two courses concurrently. Distance learning approaches included the use of satellite courses, interactive television, and toll-free conference calls. Average grades of participating students revealed few differences between on- and off-campus students. Additionally, there were few variations in student course evaluations when comparing team-taught distance learning courses with single-instructor-taught distance learning courses. However, participating faculty identified major advantages to team teaching: (1) team teaching allowed students from diverse geographic regions to share viewpoints and experiences; (2) multiple instructors brought a broader base of examples to the course; (3) exposure to multiple faculty provided opportunities to observe different points of view and a collaborative approach to teaching; (4) instructors became familiar with the work of more students than they would have had they taught their section alone; and (5) responsibilities of designing and teaching a class were easier when shared with another teacher. The use of team teaching appears to be a viable option for the effective and efficient delivery of distance education coursework. (LP)

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USING TEAM TEACHING TO DELIVER COURSEWORK VIA DISTANCE LEARNING TECHNOLOGY [1]

[1] A fuller version of this manuscript has been accepted for publication in Teacher Education and Special Education.

This article describes the team teaching models used during the TREK-DL (Training Rural Special Educators in Kentucky through Distance Learning) project at the University of Kentucky (UK) and provides the results of these models in terms of student evaluations and student grades, as well as faculty opinions of each model. Students' evaluations are reported in the form of mean ratings. Courses and teaching were evaluated using rating scales based on a four point system with four being the highest and one being the lowest ratings. Two ratings were given per class section; the first responded to the Quality of the Course (QC), and the second responded to the Quality of the Teaching (QT). In order to report, compare, and discuss the grades of the on- and off-campus students, a mean grade was calculated for each class section. A's were counted as four points, B's were given three points, C's counted two points, D's one point, and E's no points. Grade points were totaled and divided by the number of students. Also, advantages of team teaching via distance learning (as reported by the four participating faculty members) are presented.

MODELS FOR TEAM TEACHING IN DISTANCE EDUCATION

During the TREK-DL project, five courses were taught using team teaching models. Each of the five courses that employed team teaching was taught using a different model. In the following sections, each model will be discussed including: (a) a description; (b) a rationale; (c) procedures for planning, teaching, and assessment; (d) student evaluation of course/instructors; and (e) student performance data. In addition, Table 1 provides an overview of mean grades and mean evaluation ratings for on- and off-campus students across the team teaching models.

Lead/Supplemental Instructors

This model was used to teach Principles of Behavior Management and Instruction for Exceptional Learners, a required course for students seeking special education certification. This introductory applied behavior analysis (ABA) course is a prerequisite to advanced ABA courses that all graduate students must take. This was the only distance learning class offered to both undergraduate and graduate students simultaneously. The course covers the basic terms and concepts of ABA as well as practical applications of ABA related to classroom organization, instructional design, and behavior management. Students write detailed programs designed to increase and decrease selected social behaviors.

The course was delivered via satellite during summer school. Nine off-campus students located at four community college sites in Eastern Kentucky and 21 on-campus students enrolled in the course. Off-campus students used a toll free number to call the instructors during class to make comments and/or ask and answer questions. Due to limited satellite availability, the class met four hours per session, four mornings per week for three consecutive weeks.

The lead instructor was a faculty member who traditionally taught the course during summer school. The supplemental instructor had never taught the course but, as director of the distance learning project, had served as instructor and/or advisor to the off-campus students enrolled in the course. Both instructors were present for all class sessions (with the exception of two absences of the lead instructor due to illness). The lead instructor designed all course materials and was responsible for the majority of course lectures, activities and discussions. The supplemental instructor was in charge of three sessions focusing on her areas of expertise (e.g., systematic instruction, single subject research design, and generalization).

Due to the 3-week time frame dictated by satellite availability, the course was redesigned by the lead instructor to better meet the schedule of fewer class sessions with longer hours. Also due to the short duration of the course and the need to provide prompt feedback to students regarding their quizzes and assignments, off-campus students were encouraged to fax their work to the instructors at no expense to the student. Assignments also were returned to students by fax. Both instructors were involved in the evaluation of students' products. All daily quizzes and assignments were graded by the supplemental instructor. The final examination was evaluated and scored by the lead instructor. Evaluation of the instructional program projects (i.e., two programs per student) was shared by the two instructors.

Due to satellite time restrictions, the course ended before evaluation materials were provided by the college; therefore, no formal student evaluations exist. However, informal student comments were positive, especially relative to the organization of the course and the immediacy with which the feedback was provided; no specific complaints or concerns were received. All 9 students who completed the course off-campus earned an A (grade mean = 4.0). The grade distribution for the on-campus students included 15 A's, 1 B, 4 C's, and 1 E (grade mean = 3.3).

Multiple Instructor Model

This model was used to conduct class for students enrolled in multiple sections of Advanced Practicum in Moderate and Severe Disabilities (MSD) or Advanced Practicum in Early Childhood Special Education (ECSE). Across semesters, students majoring in ECSE complete 3 semesters (9 hours) of practica while students majoring in MSD complete 5 semesters (21 hours). Although coursework was completed by students at their worksites or in field placements under the supervision of their practicum supervisors, students were required to attend three 2 1/2 hour Saturday meetings conducted using interactive television. This allowed the four practicum supervisors and all practicum students to interact with each other both visually and verbally. These meetings were used for advising, presentations by guest speakers, special education videos, and discussion of current issues in special education.

Although the practicum courses were offered every semester, the Project Director collaborated with three other practicum supervisors in conducting the joint practicum meetings during one semester only. During that semester, 11 off-campus students met via distance education technology with 5 on-campus students from the ECSE program and 6 on-campus students from the MSD program. Occasionally, some off-campus students opted to attend these sessions at the University site rather than at the off-campus sites.

The four practicum supervisors worked together to plan the supplemental class meetings. During the first meeting, students completed an informal needs assessment to determine future topics of interest, and a lawyer from the Kentucky Department of Protection and Advocacy talked to students. During the second meeting, former students answered current students' questions about the Department's program and presented overviews of their theses. During the third meeting, doctoral students from the department presented an overview of distance education technology. Aside from these meetings, each practicum supervisor was responsible for the outside supervision and grading of assignments of the students enrolled in their respective practicum sections. For the most part, each section used the same course syllabi with minor modifications.

Ratings for this course were strong. Both on-campus and off-campus students rated QC and QT as 4.0. While the off-campus students gave the practicum high ratings, one student commented that the Saturday sessions were not particularly beneficial. Whether this was due to the content of those sessions, the manner in which they were delivered, or the time of the sessions cannot be determined. Since graded assignments were not part of the Saturday sessions, grades received by students during the course are not relevant.

Guest Lecturer Model

This model was used to teach the Single Subject Research Designs in Special Education course. Students seeking a Master's degree are required to take this course prior to implementing their thesis. During this course, students study single subject research designs and the single subject literature, select their research committees, and develop proposals that typically are used for their theses. When the guest lecturer model was used to teach this course, a total of 16 students were enrolled. Five participated on-site, while 11 were enrolled in five off-campus sites. Instruction occurred via satellite, and toll-free conference calls were used during each class, enabling off-campus students to participate and interact with on-campus students, the instructor, and the guest lecturer. The class met for 2 1/2 hours, two nights per week for eight weeks. In addition, all students were required to attend two on-campus sessions at the end of the course. During these two sessions, the students provided oral presentations of their research proposals.

This model involved one instructor who had primary responsibility for all aspects of the course. In addition, another faculty member served as a guest lecturer for 4 of the 16 sessions. Unlike the other team teaching models used in the TREK-DL project, the guest lecturer was not compensated for his involvement. This model was chosen because the instructor who traditionally taught this course was unavailable to co-teach the course but agreed to serve as an occasional guest lecturer. This helped to maintain the consistency of course content across instructors and sections and provided off-campus students with at least minimal contact with another faculty member.

Primary responsibilities of the instructor included developing the course syllabus, quizzes, and the final examination. In addition to delivering four lectures, the guest lecturer assisted in the grading of research proposals developed by the students. Following collaboration on topic coverage, the instructor and the guest lecturer developed their respective lectures independently. Interaction between on- and off-campus students and instructors during class were facilitated by the use of prescheduled conference calls.

Final grades for the on-campus and off-campus students were similar, with on-campus students receiving 1 A, 2 B's, and 2 C's (grade mean = 2.8) and off-campus students receiving 2 A's, 5 B's, 2 C's and 2 E's (grade mean = 2.5). Student course evaluations also were similar. On-campus students rated both the QC and the QT 3.8 (mean). Off-campus students rated both the QC and the QT 4.0 (mean). The mean student evaluations for this course were above the overall means for the Department as well as the College of Education.

Co-Instructors

Single content course. This model also was used to teach the Single Subject Research Designs in Special Education course. As stated previously, students seeking a Master's degree are required to take this course prior to implementing a thesis. When the co-instructors model was used with this course, a total of 13 students were enrolled. Five were students from the original TREK program who attended class at a single site located in a public library approximately 80 miles from UK. The remaining 8 students attended the course on-campus. Instruction was delivered to the off-campus site via satellite and toll-free calls. The class met for 16 days, 4 days per week for 2 1/2 hours each session. In addition, all students attended an on-campus session at the end of the summer to present and defend their written research proposal.

This model involved two instructors who shared responsibilities for all aspects of the course. The model was chosen since both the on-campus and off-campus sections were going to be taught concurrently. The two instructors decided to merge the two sections for several reasons, including (a) students would have interaction with a wider variety of students, (b) students would have access to another faculty member they had not known previously, and (c) the instructors' teaching loads would be more manageable, allowing each instructor to provide more feedback and guidance to their students. Both instructors were present for most class meetings but were responsible only for selected lectures and corresponding quizzes. Both instructors reviewed quizzes before and after student completion. Although both instructors reviewed the research proposals, the on-campus instructor was responsible for grading the on-campus students' proposals while the off-campus instructor was responsible for grading the off-campus students' proposals. While the on-campus instructor (who had traditionally taught the course) modified the course syllabus from the previous semester, both instructors worked together to compile the course readings. The on-campus instructor also developed the final examination with the off-campus instructor offering revisions and conducting reliability of the grading. The off-campus instructor had not taught this course previously.

Overall, 3 of the 13 students initially received an "Incomplete" grade in order to have more time to complete their projects. The final grade distribution of the off-campus students was 1 A, 1 B, 2 C's, and 1 E (grade mean = 2.2). The final grade distribution of the on-campus students was 4 A's and 4 B's (grade mean = 3.5). Numerous possibilities exist for the differing grade distribution across the two groups of students including competence levels of students, differing amounts of time for studying since off-campus students had further distances to drive daily to get to class, and difficulty of the off-campus students in adapting to distance education technology after having had previous instruction delivered on-site.

Student evaluations were mixed. On-campus students rated the QC 3.9 and the QT 3.9 while the off-campus students rated QC 2.8 and the QT 3.4. On-campus students rated the course higher than off-campus students and were complimentary of the teamwork provided by the instructors. Negative comments from off-campus students centered around the use of the technology to deliver coursework rather than on the ability of the instructors or the team teaching situation. Negative comments focused on the delay in receiving test feedback (which was done by mail), the mode of delivery (television), the time of the class (late afternoon to accommodate satellite hours and student employment), and the number of class hours per week (i.e., 10 hours).

Content of two courses taught concurrently. A model in which two instructors shared responsibilities was used to teach a seminar course which combined the content of two courses: Basic Skills Training for Students with Severe Disabilities and Issues and Trends in ECSE. Students in the MSD program are required to take both courses while ECSE students are required to take only the ECSE course. Both of these courses focus on research related to current issues in their respective fields. When this model was used, 11 on-campus and 20 off-campus students were enrolled. The 20 off-campus students attended class at six community college sites in Eastern Kentucky. Instruction was delivered via satellite. In addition, conference calls were planned each night according to the class agenda. These calls were used as an opportunity for off-campus students to ask and answer questions about the material covered in class and to interact with other students and the instructors. The course met for 2 1/2 hours once a week for 15 weeks.

The instructors shared all responsibilities related including syllabus development, class preparation, test/quiz development, lectures, and grading. The on-campus instructor taught all classes that addressed ECSE issues while the off-campus instructor taught all classes that addressed severe disabilities issues. When the issues overlapped (e.g., families, transition), the instructors each delivered part of the class lecture. Both were present during all classes and provided input. The instructors shared all grading responsibilities. The on-campus instructor graded the on-campus students' papers, and the off-campus instructor graded the off-campus

students' papers. However, weekly quizzes were developed and graded by one or both instructors depending on who was responsible for the topic content. For three class meetings, the ECSE students and the MSD students met separately to address issues specific to their respective fields.

Merging the content of two courses into one was a unique feature of this class. Since the off-campus students were enrolled in either the ECSE program or the MSD program, both of the courses (i.e., Basic Skills Training for Students with Severe Disabilities and Issues and Trends in ECSE) had to be taught. The off-campus instructor made a decision to combine the two courses due to the limited satellite time. During the same semester, the on-campus instructor was planning to teach the ECSE course. Rather than teach two sections, the instructors agreed to combine the content into one course and co-teach the course to both on- and off-campus students. It was determined that all could benefit from the combined content because ECSE teachers were likely to teach children with severe disabilities and teachers of students with severe disabilities were likely to work with young children. Students were required to tailor their assignments to the population of students with whom they planned to work.

The instructors shared course responsibilities for several reasons. First, it provided both groups of students with exposure to two different faculty. This was particularly effective given that the course focused on issues, and the use of two instructors provided the students with multiple viewpoints on a given issue. Second, the use of two instructors provided the students with exposure to additional faculty who could potentially serve on their thesis committees.

The off-campus students' grades included 16 A's, 3 B's, and 1 C, while the on-campus students' grades included 8 A's and 3 B's. While eight off-campus students initially received grades of "Incomplete" in order to finish all assignments, none of the on-campus students received grades of "Incomplete". There are two possible explanations for this discrepancy. First, the majority of the off-campus students had full-time jobs and were taking an additional course. While the majority of the on-campus students were taking multiple courses, most of them were not employed full-time. Second, the off-campus students may have had a more difficult time obtaining reference materials and scheduling meetings with the instructors.

The course evaluations from on- and off-campus students were similar with both groups giving the course high ratings (on-campus students: QC = 3.6 and QT = 3.8; off-campus students: QC = 3.6 and QT = 3.8). Student comments indicated that the instructors, content, lectures, and text were strengths of the course. The negative comments were related to the heavy workload associated with the course in terms of readings, quizzes, and class assignments. One on-campus student indicated concern about the shift between preschool and severe disabilities issues.

ADVANTAGES OF TEAM TEACHING VIA DISTANCE LEARNING

The four faculty members involved identified five major advantages to team teaching. First, offering courses to on- and off-campus students allowed students from diverse geographic regions to share viewpoints and experiences. Second, multiple instructors brought a broader base of examples to the course. Of the four professors involved in the team-teaching models discussed here, two of them specialized in MSD, one specialized in ECSE, and one in the mild disability areas. Third, student exposure to multiple faculty provided the opportunity for students to observe different points of view and to observe a collaborative approach to teaching. Exposure to multiple faculty also allowed students opportunities to interact with faculty who could potentially serve as members of thesis committees. Fourth, when it was possible to share in the grading of tests and projects, instructors became familiar with the work of more students than they would if teaching their section alone. This was especially true in the classes where pilot or actual thesis proposals were written. Professors had the opportunity to see and provide feedback on proposals prior to serving on thesis committees, and students had the opportunity to receive feedback from potential committee members. Last, the instructors involved in team teaching the courses found that "two

heads were better than one" in that the responsibilities of designing and teaching a class (e.g., development of course materials, preparation of lectures, and sharing lecture responsibilities) were made easier when shared. These advantages were realized more in some models than others.

CONCLUSION

The team teaching models employed in the project are examples of how team teaching can be used to deliver coursework via distance education technology. An analysis of the data from the courses appear consistent with the findings of Egan (1988). There was little discrepancy in the grades of on- and off-campus students. As shown in Table 1, the two lowest grade averages resulted from the Guest Lecturer (2.56) and the Co-Instructor-Single Content (3.0) models. It is interesting to note that each of these models was used when teaching the same course (Single Subject Research Design). It is likely that the lower grades are more a result of the course content than the models used to teach the course. The first time the course was taught, the Co-Instructor team teaching model was used. The off-campus students earned the lowest grade average (2.2) and rated the course the lowest across all models. The on-campus students earned a grade average of 3.5 and rated the course and the instructor very favorably. Two years later when the same course was team taught using the Guest Lecturer model, the grade average across all students decreased .44 points with the off-campus students and the on-campus students earning close to the same averages (2.5 and 2.8 respectively); however, both groups of students rated the course and the teaching extremely high. This course is considered, by students, one of the most rigorous. The course results in a research proposal which often serves as the students' thesis proposal. It is not unusual that students have difficulty with this course. It is encouraging, however, that the students' rankings improved (even when the overall grades did not) when the course was team taught by the same two instructors who had previously taught it using a different model.

The Lead/Supplemental model resulted in an overall grade average of 3.56. All off-campus students made A's which is unusual and inexplicable based on available data. This course was not evaluated due to time; however, informal comments were quite favorable. They enjoyed having the opportunity to complete the course in three weeks and appreciated the quick turn-around time on assignments. Speedy turn-around time on assignments was possible only because there were two instructors and fax machines were used for turning in and handing back assignments.

The Co-Instructor-Two Courses Combined model resulted in an identical overall grade average between the two groups of students (3.7 and 3.7). The students' evaluations of the course also were identical with both groups giving QC a 3.6 rating and QT a 3.8 rating. The only comment made by some students that could be construed as a disadvantage was their difficulty in adapting to the differing style of the two instructors.

Grades for the Multiple Instructor Model are not reported because the students did not earn grades based on the Saturday meetings that made up this approach. This model was used for meetings that responded to the procedural needs of students and instructors related to practicum. Each student was supervised and evaluated in the practicum site. Students were implementing procedures in the practicum site that they had learned in courses taken previously. The course ratings should be viewed with caution regarding the DL team teaching aspects of the course. The evaluations likely are more a result of the students' views of the practicum requirements and the supervision that they received in the field than of the collaborative supplemental course meetings.

During the project cycle, the Project Director taught four additional courses via distance learning (two to off-campus students only and two to on- and off-campus students simultaneously). Aside from practicum, none of the four courses were the same courses taught by the teams; therefore, direct comparisons are not possible. Student evaluations of these four courses ranged from 3.6 to 4.0 for QC and 3.7 to 4.0 for QT. The team taught course evaluations from the on-campus students ranged from 3.6 to 4.0 for QC and 3.8 to 4.0 for QT. Off-campus

student evaluations for team taught courses ranged from 2.8 to 4.0 for QC and 3.4 to 4.0 for QT. Except for the one course evaluation from the off-campus students on the Single Subject Research Design course taught using the Co-Instructor Model (QC = 2.8, QT = 3.4), there were no sizable discrepancies in course evaluations when comparing the team taught distance learning courses with the single instructor taught distance learning courses. This suggests that, in the opinions of the students, distance learning team teaching and distance learning single instructor teaching are comparable in terms of course and teaching quality. However, as previously discussed, there are advantages to both students and faculty when a team teaching model is used.

UK is committed to providing distance education to serve the needs of the Commonwealth. The University's Office of Distance Learning Programs has provided funding for the technology to deliver this coursework as well as other supplemental services (e.g., site-monitors, library services, on-site or telephone registration, etc.). While this may be atypical of many institutions of higher education, the Department has not incurred any costs of satellite or compressed video time.

Faculty distribution of effort and faculty salary issues were addressed by treating each course as having two sections (i.e., one section for on-campus students and one section for off-campus students). The on-campus instructor was paid through regular departmental funding whereas the off-campus instructor was paid with distance learning funds (from either the TREK-DL federal funds or UK's Office of Distance Learning Programs funds). The College's commitment to graduate education allows departments to offer a course when at least 5 students are enrolled. This also applies to graduate level distance learning courses. All of the courses discussed here had at least 5 on-campus and 5 off-campus students enrolled. The resources that UK commits to distance learning makes it possible to use team teaching models even when small numbers enrolled. As emphasized by Quinn and Kanter (1984), administrative support is an important feature of team teaching. The approach of providing distance learning simultaneously with on-campus instruction via team teaching was strongly supported by the Department as well as the UK Office of Distance Learning Programs.

It is the intent of the faculty in the Department of Special Education and Rehabilitation Counseling at the UK to continue to monitor, evaluate, and adjust models of course delivery in distance education. Ideas to be incorporated in future distance education projects include the involvement of more faculty in instruction, with the Project Director devoting more time to coordinating instructors rather than acting as the principal instructor for all coursework. However, the involvement of the Project Director in all courses during the TREK-DL project has been beneficial. The Project Director has been a link between off-campus sites and the university, focusing on the unique needs of persons in rural settings while tending to the extra tasks required in distance education programs (e.g., working with site monitors and extended campus personnel, mailing or faxing course materials, arranging conference calls, formatting instructional materials and quizzes for television). However, it is recognized that students need exposure to multiple faculty in developing a broad knowledge base, forming research committees, and receiving reliable, unbiased evaluations. Based on the data (grades, evaluations, and comments) and the participating instructors' experiences with the process, the use of team teaching appears to be a viable option for the effective and efficient delivery of distance education coursework.

Egan, M. W. (1988). Rural preservice teacher preparation using two-way interactive television. Rural and Special Education Quarterly, 9(3), 27-33.

Quinn, S. L., & Kanter, S. B. (1984). Team teaching: An alternative to lecture fatigue. Innovation Abstracts, 6, 34.

Table 1

Grade Averages and Student Course Evaluations Across Team Teaching Models

Model / Course	Average Grades Earned by Students			Course Evaluations	
	All Students Combined	On-Campus Students	Off-Campus Students	On-Campus Students	Off-Campus Students
Lead-Supplemental Instructor / Principles of Behavior Management	3.6	3.3	4.0	Not Evaluated	Not Evaluated
Multiple Instructor / Advanced Practica	Grades Not Applicable	Grades Not Applicable	Grades Not Applicable	QC = 4.0 QT = 4.0	QC = 4.0 QT = 4.0
Guest Lecturer / Single Subject Research	2.6	2.8	2.5	QC = 3.8 QT = 3.8	QC = 4.0 QT = 4.0
Co-Instructor- Single Content / Single Subject Research	3.0	3.5	2.2	QC = 3.9 QT = 3.9	QC = 2.8 QT = 3.4
Co-Instructor-Two Courses Combined / Basic Skills Training (MSD) and Issues in ECSE	3.7	3.75	3.7	QC = 3.6 QT = 3.8	QC = 3.6 QT = 3.8