Special Education Teacher and Paraprofessional Training Using Live, Internet-Based Courses Delivered to Four Distant Sites

Robert L. Morgan  
Utah State University

D. E. Forbush

J. Nelson

T. Christensen

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Special education teacher and paraprofessional training using live, internet-based courses delivered to four distant sites

Robert L. Morgan; David E. Forbush; Jon Nelson; Todd Christensen

* Department of Special Education and Rehabilitation, Utah State University,

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Federal mandates now require training for instructional paraprofessionals working in special education and Title I programs. Training for supervising teachers is also recommended. State and local education agencies face complex issues in meeting the mandates because of limitations in resources. A project developed, implemented, and evaluated one training format: live, Internet-based courses with real-time video and audio. Using iVisit video-conferencing software, an instructor delivered two courses to 79 special education paraprofessionals located in New Castle, Delaware; Rexburg, Idaho; Turbotville, Pennsylvania; and Brigham City, Utah. A second instructor delivered two courses to 61 paraprofessionals and their supervising teachers at the same four sites. Site coordinators managed activities at each site. This article describes the need for the courses, technology, instructional format, and brief course evaluation data. Also, it examines the implications of the delivery system in relation to the needs of state and local education agencies to achieve training mandates.

Federal legislation has mandated that states increase training requirements for special education and Title I paraprofessionals (Individuals with Disabilities Education Act, 1997; No Child Left Behind Act, 2001). The legislative mandates are consistent with recommendations from scholars for significantly enhanced paraprofessional training (Killoran, Templemann, Peters, & Udell, 2001; Pickett, 2003; Yssel & Hadadian, 1998). According to the Individuals with Disabilities Education Act (IDEA) re-authorization of 1997, each state must have laws, regulations, or written policy on training, use, and supervision of paraprofessionals. Appropriately trained and supervised paraprofessionals may assist in providing special education and related services. As described in the No Child Left Behind Act (NCLB) of 2001, local education agencies receiving
Title I funds to sponsor school-wide programs must ensure that paraprofessionals with instructional responsibilities hired after the effective date of the law (January 2002) demonstrate two years of postsecondary education, possess an associate's degree, or provide evidence of being "highly qualified" by passing a state-sponsored assessment. Instructional paraprofessionals employed in Title I programs before passage of NCLB must meet this requirement by January, 2006.

As paraprofessional training requirements increase, so must the supervising teacher's skills. Supervision of a paraprofessional is often the responsibility of a teacher (French, 2003) who assigns tasks, conducts on-the-job training, and monitors performance. Yet, according to two national surveys of preservice special education programs in the 1980s (Lindemann & Beegle, 1988; May & Marozas, 1986), less than 25% of these programs included substantial course content for training teachers to supervise paraprofessionals. In a more recent survey of special education teachers in one state, Drecktrah (2000) found only 10% of respondents reported receiving instruction in supervision of paraprofessionals. At a preservice level, teachers have few opportunities to learn and practice supervision skills (Vasa, Steckelberg, & Pickett, 2003). Nevertheless, the responsibility rests with the teacher to demonstrate effective supervision skills. Given limited training opportunities, French and Pickert (1997) articulated a framework for State education agencies to develop teacher supervision standards and training policies. Clearly, paraprofessionals and teachers need training to enhance their skills in working together and working with children. It is less clear how to deliver training to paraprofessionals and teachers in a cost efficient and effective way.

One potentially cost efficient and effective way to deliver training is remote distance education. Remote distance education is defined as delivery of programs or courses in which the teacher is in a different location than the learners (Distance Education Clearinghouse, 2003). It requires special methods of communication (e.g., electronic or other course delivery) and special techniques of instructional design. For example, in one remote format, an instructor may communicate via Internet signal to groups of learners at multiple distance sites. Remote distance formats have been used in special education teacher training (Ludlow, 1995; Spooner, Spooner, Algozzine, & Jordan, 1998) and paraprofessional training (Vasa et al., 2003). The most common type of remote distance format is on-line, self-study courses in which learners read assignments, the instructor
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administers tests, and the two interact for the most part in an asynchronous, or indirect, manner (Matthews, 1999; Miller, Smith, & Tilstone, 1998). For example, Vasa and Steckelberg (2003) arranged a series of self-study training modules for special education paraprofessionals. The chief advantage of the self-study course is flexible scheduling (Vasa & Steckelberg, 2003) because learners can access instruction at any time. The self-study course assumes that learners need minimal assistance from the instructor (Menlove, HANSford, & Lignugaris/Kraft, 2000; Miller et al., 1998). However, for some learners, this assumption may be incorrect. For example, many paraprofessionals have little experience with higher education or have not participated in formal education for several years. As Pickett (1999) noted, the self-study course makes an assumption that paraprofessionals “possess effective study habits and transfer theory to practice” (p. 8). Pickett (1999) suggested paraprofessionals need motivation available from peers or an instructor and often perform better in interactive classes. Teachers learning supervision skills may also benefit from instructor interaction and feedback as well as opportunities to practice supervision skills with their classroom paraprofessionals (French & Pickett, 1997).

The remote distance education format should be designed to maximize interaction between instructor and learner (Gilbert & Moore, 1998; Miller, McKenna, & Ramsey, 1993). Miller et al. (1993) recommended distance courses with two-way video and audio as an effective means of establishing opportunities for real-time interaction between learners and instructors. Cooke and deBettencourt (2001) delivered a course to 68 participants at six remote sites. Participants at four sites were involved in interactive sessions, while participants at two sites watched videotapes of the same sessions one week later. Interactive participants rated the course much higher than videotape participants. To create high participant-instructor interactions, what is needed is live, two-way video and audio course offerings for paraprofessionals and teachers.

Live, Internet-Based Courses for Special Education Paraprofessionals and Teachers

The goal of a federal grant awarded to the Department of Special Education and Rehabilitation at Utah State University by the U.S. Department of Education was to develop and evaluate a live, two-way video and audio format for training paraprofessionals and their supervising teachers across the U.S. The project sought to create a national "community of learners" with participants interacting in real
time at four sites. Special education teachers and paraprofessionals collaborated as learners in some of the courses. To date, teachers and paraprofessionals have not been trained together as instructional teams in a live, multi-site, distance-based format. Other project features included using the Internet for course broadcasts, establishing district personnel as on-site assistants, and arranging for assistants to teach course segments.

Using iVisit video conferencing software (iVisit, 2003) and the Internet, one instructor delivered two courses over two semesters to 79 special education paraprofessionals located in New Castle, Delaware; Rexburg, Idaho; Turbotville, Pennsylvania; and Brigham City, Utah. A second instructor delivered two courses over two semesters to 61 paraprofessionals and their supervising teachers (i.e., classroom teams) at the same four sites. Of the 79 paraprofessionals in the first set of courses, 31 concurrently participated in the second set of courses with their supervising teachers.

**Curricula for the Courses**

The project developed a sequence of two, 9-week courses for paraprofessionals. Two college credits for each of the courses were available to participating paraprofessionals. The first course, *Introductory Experience with Students with Disabilities*, provided an overview of disabilities, special education mandates, and communication strategies. The second course, *Effective Behavior Management Practices for Paraeducators*, introduced paraprofessionals to applied behavior analysis and classroom management procedures. The instructor awarded a certificate of completion to paraprofessionals who passed each course. Paraprofessionals taking courses for university credit were graded on a "pass/fail" basis. Paraprofessionals who failed to pass the course could retake it at a later time or arrange alternative training through their district.

For the two paraprofessional courses, the project used a curriculum called *Enhancing Skills of Paraeducators*, 2nd edition (ESP: 2; Morgan, Forbush, & Avis, 2001). The primary objective of the ESP: 2 curriculum was to increase competencies of paraprofessionals working with students in special and inclusive education classrooms. The content of ESP: 2 was identified from (a) analysis of survey data gathered from paraprofessionals and teachers at multiple sites across the U.S. (Salzberg, Morgan, Gassman, Merrill, & Pickett, 1993), (b) field evaluation (Morgan, 1996), (c) experimental analysis (Gassman, 1995), (d) a review of literature (Morgan, 1996), (e) interviews with
experts in special education paraprofessional training, and (f) feedback from consumers of the first edition of ESP. The ESP: 2 program included instructor and paraprofessional manuals, an instructor's guide, and video exercises. The video displayed school situations that allowed paraprofessionals to analyze problems, make decisions, and decide how to respond in similar situations.

For the two courses designed for paraprofessionals and their supervising teachers (i.e., classroom teams), the project used a curriculum called *Colleagues in the Classroom* (Morgan, Gee, Brenchley, Merrill, & Gerity, 1997). Curriculum content and materials were similar to ESP: 2. One college credit was available for each of the two courses. Teachers received graduate-level credit by completing course requirements beyond those required of the paraprofessionals. The first course, Building and Maintaining Classroom Teams, addressed leadership skills in the classroom, delineation of roles and responsibilities, and effective communication skills. The second course, Addressing Potential Classroom Team Problems, addressed preventing problems, solving problems, and evaluating staff performance.

Utah State University instructors delivered the courses using live video and audio signals to 79 paraprofessional participants and to 61 classroom team members at four sites. For the paraprofessional courses, sessions were scheduled once per week for three hours each. For the classroom team courses, three 3-hour sessions were scheduled over a semester (i.e., about once per month). Class sessions were scheduled in the early evening. A local site coordinator, who served as a special education teacher or district director, facilitated instruction at each site. At times, in coordination with the instructor, coordinators taught participants on designated topics. The coordinator recruited participants, assisted in organizing course sessions, answered questions, graded quizzes, referred questions to the instructor at the broadcast site, and met periodically with the instructor using the distance technology. When technical difficulties prevented distance delivery, the coordinator assumed responsibility for teaching lessons. A technician managed the broadcast technology at each site, thereby allowing the coordinator to focus on learner needs. The technician, usually the district computer services expert, set up equipment and established the Internet connection.

Before instruction began, the technician logged onto the project Web site and established a connection with each broadcast site. Using a projector and a computer camera, site personnel viewed the instructor and all participants at other sites. Using microphones and
speaker systems, the instructor and paraprofessionals spoke to one another across sites.

To start a session, the instructor addressed participants at four sites, reviewed the scheduled session activities, and answered questions regarding the weekly reading assignment. Also, the instructor presented slides summarizing the readings and briefly lectured on particular topics. Further, the instructor arranged group discussion activities in which participants at each site considered a problem, identified solutions, and summarized their solutions in reports to the other sites. Following the lecture and activities, the instructor led participants through a series of video exercises addressing the reading topics. Video scenes generated questions to promote group discussion across sites. Each video exercise was followed by 2 to 5 minutes of inter-site group discussion. These discussions provided the instructor, site coordinator, and participants with opportunities to compare and contrast methods of addressing issues. To facilitate discussion, coordinators passed microphones to individual participants. Coordinators signaled to the instructor that a participant wished to respond by waving a "flag" in view of the camera. In turn, the instructor acknowledged the site and the participant responded.

**Instruction Delivery Technology**

The project staff included two graduate students with expertise in instructional technology. Their objective was to develop a live, Internet-based system with a high degree of technical control at the broadcast site and a low degree of complexity at the training sites. Selection, development, and implementation of the distance delivery technology were guided by three principles:

1. **Expense.** Because of the budgetary limitations within districts for training paraprofessionals, the solution had to produce minimal expense.
2. **Ease of Use.** Technology had to be easy to use to maximize the number of individuals that could be drawn upon to launch and maintain the system.
3. **Portability.** Technology had to be portable so courses could be delivered to any location.

**Software**

Project staff used a software application called iVisit. This software provided two advantages. First, it was available as a free
download from the Internet. Second, it supported two-way audio and video, and did not require additional hardware for transmission. The site needed only a standard microphone, a Web camera, and a reasonably fast Internet connection. Because iVisit was free and did not require additional hardware, it clearly met the need to be inexpensive. The iVisit application was easy to use because the software only required three setting changes to be functional. It was portable because the only technical requirement that any location needed was an Internet connection. The computer, microphone, and camera were fairly easy to transport. Two of the four sites changed locations three different times. Fortunately, these sites used a laptop computer, so relocation was relatively easy.

**Audio Equipment**

One of the major limitations of communication over the Internet was audio quality. This was not a limitation of iVisit itself, but a function of Internet technology and computer hardware at the time. Many commercially available computers come with inexpensive microphones. However, these microphones were not of sufficient quality for professional broadcast. Project staff decided that each site should purchase two performance-quality microphones and an audio mixer. The cost for the two microphones and an eight-channel mixer was about $250. The purchase of the audio equipment was the single largest expense of each site but provided the quality needed. Because the mixers were relatively small, it was still easy to move the equipment to different locations.

**Slide Tool**

Instructors needed to deliver lectures and other class activities using visual outlines, such as a slide tool. Many instructors use tools such as Microsoft PowerPoint to organize lessons, lecture on text-based content, and summarize major points. Instructors for these courses needed a slide presentation tool; however tools such as Powerpoint did not interface with the iVisit software. Instead, project staff used iVisit's built-in Web page sharing feature. The iVisit application allowed one site to navigate through the Web site while other sites watched on their own computer. The problem was the Web page was not directly shareable, as it is with presentation software. To solve this problem, staff made each slide into its own Web page and then linked pages to one Web site. The instructor then navigated to the Web site and moved through each page of the Web site (the individual slides). The iVisit application automatically updated all of
the other computers that were logged into the class so that sites were able to follow along. This solution was free, easy to use, and portable. The only expense was the time required for slide-presentation development and Web page conversion. Because the presentation was a collection of Web pages stored on the project’s server, it was operated exclusively by the instructor and project staff.

Streaming Video

The instructors sought to present video exercises during course sessions. The original format of the curricula used VHS videotapes. Although convenient for local, face-to-face instruction, the VHS format was not suited for Web-based video streaming. The goal was to deliver exercises to each site simultaneously with control maintained by the instructor. Staff sought to integrate the video segments into a computer-based delivery system. The solution was to digitize each video segment and use Windows Media Streaming technology to stream video segments. In this way, staff created a Web page linking back to the project’s central server where all video segments were stored. The video Web page was inserted anywhere into the presentation and delivered using the Web page sharing feature of iVisit already used for presentation of slides.

The last issue related to classroom management was how sites received the broadcast. When broadcasting to a classroom of 20 or more participants, one obvious limitation was that viewers were unable to discern images on a single computer monitor. To solve the problem, each site used an LCD projector to project the image from the computer onto a screen measuring about 5 feet across by 4 feet high. Also, because there were so many images to be displayed on the screen, it was necessary to set the display function on the monitor at a resolution of 1024 x 768 pixels. Figure 1 presents a sample screen shown during one course session.

Selection and Development of Distance Education Sites

Project staff delivered courses to paraprofessionals and classroom teams at the same four sites. Initially, project staff identified six prospective sites by following leads from national and state educational leaders in paraprofessional development. Staff gathered data from each site on the number of paraprofessional trainees and prospective coordinators and technicians. During early tests of the iVisit software, staff determined a maximum of four sites could be
Figure 1. A sample screen from a paraprofessional course, Effective Behavior Management Practices for Paraeducators, as it appeared to participants at sites.

accommodated. Therefore, to select sites, three criteria were established:

1. A school district was required to employ 40 or more paraprofessionals, so there would be a high probability of 20 volunteer participants.
2. A district was required to possess or purchase the hardware and software.
3. The district needed to provide administrative support by signing a letter of agreement enumerating their responsibilities and project responsibilities. District responsibilities included (a) identification of the site coordinator and technician, (b) recruitment of participants for each course, (c) reservation of conference room space, (d) support of participants, (e) maintenance of ongoing communications among coordinators, technicians, and project staff, and (f) completion of course evaluations and tests. Project staff responsibilities included weekly course delivery, training of site coordinators and technicians, payment of a stipend to offset text costs and, if applicable, course credit fees, and delivery of a certificate to
participants upon completion of each course. Although they worked for local districts, site coordinators and technicians were hired as part-time employees and compensated by Utah State University.

**Demographic Characteristics of Sites**

The selected sites were Box Elder School District in Brigham City, Utah; Colonial District in New Castle, Delaware; Madison School District in Rexburg, Idaho; and Warrior Run School District in Turbotville, Pennsylvania. Sites differed in a variety of ways including community population, number of paraprofessional and teacher participants, and geographic location. For example, the Colonial School District in New Castle, Delaware was relatively small but was located near Wilmington, Delaware, a city of approximately 100,000 residents. The other sites represented small communities (i.e., Rexburg, Idaho: 20,000; Brigham City, Utah: 16,000; Turbotville, Pennsylvania: 1,000), none of which were located near large cities. The Colonial District had the largest number of paraprofessional participants \( n = 25 \) whereas the Warrior Run District had the largest number of teacher participants \( n = 12 \). About 49% of paraprofessional participants (i.e., 39 of 79) elected to take the courses for university credit. All of the teacher participants \( n = 30 \) elected to take the courses for university credit.

**Scheduling**

The Warrior Run and Colonial Districts were in the Eastern time zone and Box Elder and Madison Districts were in the Mountain time zone. Site coordinators and project staff decided to start the 3-hour sessions at 3:30 p.m. Mountain time (5:30 p.m. Eastern). This decision required consideration of each district’s school day, participants’ travel time to the classroom site, and completion time in the Eastern time zone (8:30 p.m.).

**Training Site Coordinators and Technicians**

Before delivering courses, staff conducted seven training sessions (20 hours total) with site coordinators. Training topics included facilitating local discussion, launching the technology system, responding to technical difficulties, streaming video, grading procedures, and using the project Web site.
Status of Course Delivery

Project staff and site participants have completed two semesters of course delivery. Across two semesters and four courses, staff conducted 24 sessions (i.e., 9 sessions in each of two paraprofessional courses plus 3 sessions in each of 2 classroom team courses) that added up to 72 broadcast hours. The Colonial District site discontinued course delivery before the spring semester because of “firewall” restrictions (i.e., prevention of broadcast signals from outside sources to assure system security). These restrictions were imposed by the state education agency. Project staff subsequently supported this district in providing local training.

Evaluation of Courses

To evaluate the courses, the project used the Research and Development Cycle (Gall, Borg, & Gall, 1996) that calls for using multiple measures in formative evaluation. At the end of each course, participants who registered for credit were required to complete a Utah State University course evaluation. This evaluation form consisted of 27 questions categorized into three primary evaluation areas, including, “general course evaluation,” “information about the course,” and “information about instruction.” Overall, 20 of 22 questions required students to rate a dimension of the course (6 = excellent, 5 = very good, 4 = good, 3 = fair, 2 = poor, 1 = very poor, and NA = not applicable). The remaining questions required a narrative response.

Table 1 provides mean response scores for 20 questions to which participants responded. Only data from the spring semester courses are shown because they reflect improvements made after fall semester. The average “overall quality of course” score at Utah State University was 4.9; the college of education average was 5.2; and Department of Special Education and Rehabilitation average was 4.9. For the spring-semester paraprofessional course and the instructional team course, the average “overall quality of course” scores were 5.2 and 5.0, respectively.

The average “instructor effectiveness” score at Utah State University was 5.0; the college of education was 5.2; and the Department of Special Education and Rehabilitation was 4.9. For the spring semester courses, the “instructor effectiveness” scores were 5.3 for the paraprofessional course and 5.2 for the instructional team course. These scores represented the combined effectiveness of the instructor and site coordinators.
Table 1

Course Evaluation Data

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Paraprofessional Course Mean Score</th>
<th>Team Course Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity of course objectives</td>
<td>5.1</td>
<td>5.1</td>
</tr>
<tr>
<td>Relevance of assignments</td>
<td>5.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Relevance of material</td>
<td>5.1</td>
<td>5.3</td>
</tr>
<tr>
<td>Appropriateness of workload</td>
<td>4.8</td>
<td>5.2</td>
</tr>
<tr>
<td>Relevance of exams</td>
<td>5.1</td>
<td>5.2</td>
</tr>
<tr>
<td>Fairness of grading procedures</td>
<td>5.0</td>
<td>5.4</td>
</tr>
<tr>
<td>Clarity of responsibilities</td>
<td>5.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Helpfulness of texts/readings</td>
<td>5.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Course organization</td>
<td>5.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Helpfulness of explanations</td>
<td>5.2</td>
<td>5.4</td>
</tr>
<tr>
<td>Use of examples</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Use of class time</td>
<td>5.0</td>
<td>5.1</td>
</tr>
<tr>
<td>Enthusiasm for the subject</td>
<td>5.4</td>
<td>5.5</td>
</tr>
<tr>
<td>Helpfulness in resolving questions</td>
<td>5.3</td>
<td>5.4</td>
</tr>
<tr>
<td>Prepared for class</td>
<td>5.5</td>
<td>5.6</td>
</tr>
<tr>
<td>Opportunity to ask questions</td>
<td>5.1</td>
<td>5.4</td>
</tr>
<tr>
<td>Opportunity to comment &amp; express opinion</td>
<td>5.1</td>
<td>5.4</td>
</tr>
<tr>
<td>Availability of extra help</td>
<td>5.0</td>
<td>5.3</td>
</tr>
</tbody>
</table>

To evaluate acquisition of critical knowledge, all paraprofessionals and teachers who participated in spring courses received a multiple-choice pretest and then received the same multiple-choice test at the end of the course (i.e., posttest). On the posttest, the sequence of questions and multiple-choice options within questions was changed. For the paraprofessional course, participants correctly responded to 71% of the items on the pretest and 97% of the items on the posttest. For the instructional team course, participants correctly responded to 78% of the items on the pretest and 87% of the items on the posttest. All participants passed the courses.
Summary

Although the live, Internet-based format awaits more extensive evaluation, interpretation of initial course evaluation data suggests the quality of course organization and instruction either equals or surpasses evaluative data offered by students receiving face to face instruction on the Utah State University campus. Examination of differences in pretest and posttest data, although not experimentally controlled, suggest critical knowledge was acquired as a function of participation in courses. These data provide empirical support for an innovative, Internet-based training system representing an additional training option for state and local education agencies. As such, this particular option offers a potentially high quality, effective course format and creates a national “community of learners” who became acquainted with colleagues in other states. In response to course evaluations by participants and site coordinators, project staff are currently revising syllabi and lesson plans for next year’s courses.

With federal training mandates, education agencies need a variety of options from which to select. Several options will allow education agencies to assess their own needs and select the most appropriate alternative. Given further evaluation, the live, Internet-based format may work well for organizations with no local experts available to deliver training. For agencies in rural and remote areas, the format provides an instructor at a broadcast site and an established delivery method. For example, a state educational agency may hire an instructor, set up the technology, and deliver training from a broadcast location to several distant sites. Or, a rural district may broadcast to several dispersed locations.

Firewall problems experienced by the Colonial District raise planning issues for future course delivery. Both the broadcast and distance sites must carefully assess restrictions to incoming signals at the state level and decide whether or not to proceed with courses. Staff and Colonial District personnel had completed one semester of broadcast and had planned a second semester when the restrictions were applied. Therefore, assessment and communications with state departments need to be ongoing to prevent restrictions from being applied.

This project delivered a sequence of two courses to paraprofessionals and classroom teams. Participants developed long distance associations as they compared and contrasted practices, policies, and methods. Instructors and site coordinators effectively
taught as “long-distance teams.” Collaborative relationships were established with district personnel.

Far more instruction is needed to obtain an associate’s degree or meet the minimum number of credits required by the federal mandate. The courses provided by this project only begin to meet the requirements of the mandate. However, by establishing a live, Internet-based system, a community college or other higher education program may be poised to deliver several courses leading to such a degree. Future research and development will determine the extent to which the system is adaptable to different training needs and configurations.

References


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