Distance Learning in Physical Education Teacher Education

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Advancing technology carries the promise of allowing rural and nontraditional learners the opportunity to participate in higher education. Students who had no chance to attend classes 15 years ago are registering for and completing college courses in record numbers, although they may never meet their instructors (Finkenberg, 1997; Price, 1996). At-home mothers, 9-to-5 workers, students in rural areas, individuals with disabilities, and even students on college campuses are taking advantage of distance learning (DL). Many institutions of higher education are beginning to offer courses, and in some cases degree programs, through interactive multimedia and Internet access. While these courses and programs are increasing in popularity, computer-based DL is not without its critics. The literature on DL in physical education is sparse. This paper identifies positive and negative aspects of DL and applies these concepts to the physical education profession.

Distance learning (DL), also known as distance education, has been reported as a viable option to traditional classroom coursework, with off-campus students attaining learning outcomes similar to—even surpassing—those of on-campus peers (Richards, Gabriel, & Clegg, 1995). From its beginnings with written correspondence courses, DL has been providing educational opportunities to individuals who might never have been able to pursue a graduate education (Hopey & Ginsburg, 1996; Porter, 1997). New technology is providing educators with alternatives to the “transmission of knowledge” format of correspondence courses, which are being replaced with interactive models where the learner is also a “teacher.”

However, DL adoption at colleges and universities is not always based on providing education to nontraditional students. Economics, politics, and power all contribute to DL program development. Although the reasons for providing courses and programs vary, the benefits for students are considerable, including individualized instruction, educational opportunities in rural areas, and the availability of

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continuing education to individuals already in the field, which is important since "education is a lifelong process" (Dubois, 1996, p. 20).

With new technological advances—primarily the popularity of personal computers—DL is evolving toward individualized instruction that takes into account student learning patterns and effective pedagogical strategies (Besser & Bohn, 1996).

New technology does not come without drawbacks, including cost, anxiety, and fear. Because not everyone can afford a personal computer, newer DL programs may become a battle between the Haves and Have-Not (Manzo, 1997; Mood, 1995; Silverman, 1997). However, access is improving with lower start-up costs and availability outside the home setting (e.g., local libraries). There are also concerns about devaluation of the teaching profession (Novek, 1996), but the fear of faculty being replaced by computers will also diminish as administrators realize that effective distance teaching requires human interaction and feedback (Crider & Garman, 1998; Price, 1996). Recent innovations and instructional strategies are changing the way higher education views DL by expanding the scope of materials and subjects it can effectively present.

**Definition and History of Distance Learning**

The term distance learning (DL) alludes to the process of education away from the traditional school setting. Through the past 100 years this has been accomplished in different ways and through different media, although the goals of distance education have remained the same. DL endeavors to offer educational opportunities to individuals who cannot or choose not to attend classes on a college campus. DL began in the 1800s with correspondence courses and changed little in its first 80 years. It has evolved quickly in the last 20 years with the advent of new technology and especially with the increasing popularity and availability of personal computers that provide Internet access. The popularity of DL is evidenced by The British Open University, which delivers distance education to almost 200,000 students every year through printed material, audio- and videotapes, and computer disks (Greenburg, 1994).

Early correspondence courses, comprised of packages of written materials, were sent to learners who then completed assignments and received credit through mail delivery systems. This method originated in the late 1800s and continues today. The University of South Africa, one of the largest DL universities in the English-speaking world, currently has almost 200,000 students, many of whom still learn and receive degrees through the mail (Laws, 1996). The first state-approved entirely DL school in America was founded in 1974 in California (Laws, 1996). Even though DL is a fairly recent development in the United States, it is being embraced strongly as an alternative to traditional forms of education. Although DL courses using printed materials have been employed successfully, they have a significant drawback for many students, namely, the time delay in receiving feedback on assignments and answers to questions (Mood, 1995).

Written material continues to be an effective model for some individuals in DL programs. Hodes (1993) reported adult learners' preferences in delivery systems for a higher-level undergraduate course. Even though students were technical professionals with little anxiety about technology, they showed strong agreement that correspondence-type printed materials were more convenient than traditional classroom or computer-based presentation. Although some individuals
can progress with only written materials, many have difficulty with motivation and a paucity of feedback and social interaction, which printed material can’t provide, thus leading to drop-out rates as high as 50% (Anderson & Garrison, 1995; Price, 1996). With technological advances in the late 20th century, there is a shift toward electronic media for DL delivery, and factors such as motivation, social interaction, and student learning styles can now be addressed. DL has progressed from written material to audio- and videotape lessons, live satellite (off-campus) classrooms, interactive video, videoconferencing, and ultimately exclusive Internet availability (Powers, 1997).

Audiotape lessons improved on written materials by providing human voices that included inflection and correct pronunciation. Video lessons, whether taped or live one-way broadcasts, provided visual examples but still could not address the lack of interaction between teacher and learner. Linn (1996) described the drawback of one-way communication when she wrote: “Limited learning occurs when students take a passive stance toward learning and designers take a transmission stance toward instruction” (p. 826). One-way communication combined with student personality characteristics decreased DL program enrollment. A study of personality traits that predict achievement in televised courses indicated that the most successful students were resourceful, self-directed, and preferred making their own decisions (Biner, Bink, Huffman, & Dean, 1995). Unfortunately, many distance learners were not self-directed, and drop-out rates remained high. A key component of effective learning was still missing.

Anderson and Garrison (1995) shed some light on the missing component when they suggested that the teacher-learner interaction is essential to stimulating, motivating, and facilitating educational activities. The importance of this interaction is provided by two studies reporting on instructional strategies and student learning. Jackrnan and Swan (1996) found that students preferred instructional models that actively engaged them as learners, both physically and mentally. Jones (1996) supported this, reporting: “Courses whose teachers used more interactive questioning and technology strategies were generally better received” (p. 1).

An important evolutionary step for DL was taken with the development of interactive television, offering two-way communication such that students could interact with professors in real time, “thus becoming more active participants in their own learning” (Garland & Loranger, 1995, p. 251). A review of traditional classroom studies showed that teacher-student interaction was a major factor in accounting for students’ cognitive learning, interest in school subjects and learning, and self-confidence in their own learning abilities (Bloom, 1981). DL could now provide crucial student-teacher interactions, but it still did not foster interaction among learners that was similar to traditional classrooms (McHenry & Bozik, 1995).

Teacher-student interactions as well as those among students have increased dramatically with online technology. Desktop Video Conferencing (DVC) provides concurrent audio and video signals. Along with text-based communication systems, including e-mail and related services (e.g., listservs and chat rooms), DVC makes interaction easy and personal. The availability of listservs and chat rooms, where individuals with similar interests communicate over the Internet, encourages students to develop social interactions and move toward becoming a “community of learners” (Powers, 1997). Karayan and Crowe (1997) surveyed professors and students who were participating in electronic discussion groups (EDG) and
found that students were more likely to exhibit desired behaviors as a participant in EDGs than in isolated DL. These behaviors included answering more questions and developing positive relationships with the teacher and peers as well as thinking more before answering questions. One of the more interesting benefits of online communication is the opportunity for students to participate in “electronic field trips” (Goggin et al., 1997) with experts in their field. Neither the expert nor the students need to leave their desks, so time and travel expenses are eliminated.

With the increasing availability of and access to personal computers, Internet courses are becoming more popular as the newest alternative in distance education. Benefits of online courses include one-on-one instruction, rapid feedback, and availability at home, work, or the library (Richards, Gabriel, & Clegg, 1995). Lower education costs are also a perceived benefit. While administration may expect high enrollment numbers in return for funding a distance education program, effective DL requires that class size is limited to numbers that are similar to or lower than those for traditional classrooms (Crider & Garman, 1998).

Computer prices have dropped to an affordable level for most families, and children are learning as early as first grade how to “surf” (navigate) the Internet. Internet courses provide several benefits, including “access to current resources, communication in real time, and relatively low cost” (Goggin et al., 1997, p. 284). Instruction can be tailored to each student, and communication via e-mail provides a consistent supply of feedback to students and educators (Crider & Garman, 1998; Karayan & Crowe, 1997). However, electronic DL also has drawbacks.

As DL moves toward higher technology to deliver education to off-campus learners, several disadvantages become apparent. The first is consistent communication transmission. Any educational method that relies on telephone lines or electricity can only work as long as the supporting system is operational. This might be a problem when weather or other factors conspire to deactivate communication lines. Even when transmission capability exists, system access may be unavailable (e.g., current America Online access problems). Transmission access and consistency will become less problematic with additional time for development, and the current trend in computer technology shows prices decreasing on current systems as they are replaced by more powerful units. However, there will always be a percentage of students who cannot afford or have access to computers and other technology (Doring, 1996). Hodes (1993) recognized this and surmised that technology gaps and learner preferences will keep the print-medium course in use for some time. Fortunately, even older computers, which can be purchased for a fraction of the original cost, can utilize current software and are Internet compatible.

Even with its perceived disadvantages and teething problems, computer DL holds the promise of providing higher education to individuals who might otherwise have difficulty furthering their education (Paist, 1995; Porter, 1997; Thompson, 1996). This medium is viewed as a viable option to meet the educational needs of our changing society (Goodwin, Miklich, & Overall, 1993). As Denman reported in a 1995 study reviewing difficulties with a multimedia course, in spite of equipment problems and delayed feedback on completed work, student response to the program was enthusiastic. DL provided through computer-based programs can emulate the traditional classroom setting for off-campus learners, providing quality instruction with the social interaction between teachers and students that is so crucial to learning. Computer experience and access are reducing "techno-fear,"
and teachers can now tailor coursework to the subject matter and accommodate individual students for enhanced learning.

Educators must become acutely aware of student motivations and needs in this new medium by studying the type of learners who take advantage of this service. In an article on faculty planning for distance teaching, Wolcott (1993) suggested that faculty lacked an understanding of distance learners, “in particular an understanding of the characteristics of the adult learners who constituted the greater part of the student population” (p. 33).

Who Are These Distance Learners?

DL can deliver education to almost every individual who is interested in higher education including: those working full-time during normal class hours, individuals with disabilities, people in rural areas far from campus, and minorities. Belcher (1996), who surveyed current and potential graduate students at Boise State University, reported obstacles in attending graduate school. Findings showed that DL courses were desirable to a population who reported work schedules and course availability as major obstacles. Several articles offer insights regarding these obstacles, mainly that most distance students are working adults (Anderson & Garrison, 1995; Biner et al., 1995; Mood, 1995; Richards et al., 1995; Thompson, 1996), who Dubois (1996) described as the “new majority” in higher education.

Richards et al.’s (1995) demographic survey described the typical DL student who uses a computer with modem as a part-time, white female student, age 26–35, with a full-time job. A typical on-campus student in the same study was younger and unemployed. Adults are generally more autonomous, motivated, and self-directed (Mood, 1995), which may partially explain study results that show better outcomes for distance learners than traditional classroom students taking the same course. Biner et al. (1995), in a study exploring distance learners’ personality characteristics, found that telecourse students were more intelligent, emotionally stable, and trusting than traditional college students. They were also 14 years older on average.

Bink, Biner, Huffman, Geer, and Dean (1995) reported on demographic predictors of performance in distance continuing education classes. Students were age 37 on average. No age, gender, socioeconomic status, or income predictors were found, although prior GPA and year in college (e.g., junior, senior) were both strong performance predictors. More mature and self-motivated students usually perform well in DL programs (McHenry & Bozik, 1995), and the medium is suited better for some adults, especially teachers (Thompson, 1996). Once working a normal schedule in the field, few teachers have the time to return to school to update or continue their education, and “many practicing educators in rural and remote communities have been denied advanced educational opportunities because they did not live within commuting distance of a university” (p. 31).

In an article by Manzo (1997), Thomas MacCalla, vice-president of Multicultural Affairs at National University, stated that with DL availability, “older students and minority students have a chance to do something they didn’t earlier on” (p. 43). The location and scheduling flexibility that attracts older students to DL also makes it more accessible to minorities and individuals with disabilities. Accommodations can be made in course delivery systems on an individual basis for students who cannot get to campus or function effectively in a classroom setting.
An adaptable DL program can “result in access and accommodation that will give students with disabilities what may be their first positive encounter with educational opportunity” (Paist, 1995. p. 70).

As with faculty members, students with weak technology skills can become computer literate through DL program experience. Ross (1996) reported that weak computer skills had less effect on participation in a computer communication skills course than gender or prior knowledge of course content. Further, Hesser and Kontos (1995) indicated high satisfaction with technological DL delivery systems, even though most students entered the program with minimal computer experience. Students who were inexperienced and apprehensive about new technology were willing to try the program if it helped their education (Abbott, Dallat, Livingston, & Robinson, 1994).

DL provides equal access to higher education for individuals who might not otherwise be able to pursue college degrees. Successful programs provide DL not as a separate component but as an extension of the traditional curricula and completion requirements of similar courses on campus (Manzo, 1997). However, equal access may not always lead to equal education. The importance of credibility for DL degrees must be considered when developing courses and programs. Educators must be conscious of student and employer perceptions about the value of DL degrees.

Quality and Status of DL Programs

Many faculty and general citizens believe that DL is second-class education (Mood, 1995) and that students who learn through this medium are not receiving the same level of quality education as traditional classroom peers. However, evidence has shown that, in most cases, well-planned DL programs resulted in equal if not superior scores compared to traditional on-campus methods (Collins, Hemmeter, Schuster, & Stevens, 1996; Denman, 1995). MacFarland (1996) compared the scores of on-campus and off-campus students who were taking a common final exam in the same course; results showed that off-campus students had higher average scores.

In a study of team-teaching methods in special education courses taught via distance education, Collins et al. (1996) found that average grades revealed few differences between on- and off-campus students. Denman (1995) studied a DL program that was being taught via satellite television. Participants were West Virginia residents who had never attended college or “stopped out” of college for any time period. Results indicated that work quality was comparable to that of nontraditional students in evening sections of the basic course on campus. In addition to outcomes, students also perceived distance education as equal or superior compared to traditional classes (Richards et al., 1995).

A survey evaluation of degree program worth by the Distance Education and Training Council in Washington, DC (1994) provides insight about the educational quality of DL programs. Nearly 95% of the distance educated graduates who returned surveys considered the course material sufficiently comprehensive and their degree worth the effort, and they rated their distance degree as equal or more valuable than other resident school degrees. Employers and supervisors of these graduates also responded to different questions on the same survey with the following results: 84% knew the graduate had a distance degree, 94% thought
these students compared favorably with peers holding resident degrees, and 92% would hire others with distance degrees.

Distance learners’ outcomes are similar to or better than those of traditional classroom students. However, as stated previously, this may be partially explained by the average distance learner’s age and personality traits. DL graduates and their employers assign equal value to DL degrees compared to resident degrees, perceiving them less as a second-class education and more as an effective, alternative graduate education.

Emerging Teacher and Student Roles in Distance Learning

Without new technology, distance education probably would not be experiencing the current explosion of programs in higher education. The availability of personal computers with multimedia capabilities provides more individuals with daily access to incredible resources. A detailed perspective on new technology is beyond the scope of this paper; please refer to several articles that present this information in detail (e.g., Elliott & Manross, 1996a, 1996b; Finkenberg, 1997; Silverman, 1997). For this technology to be effective in the DL process, students and professors alike may need to assume different roles than those in the classroom.

Every teacher has different strengths and skills in the classroom, and professors who initiate and teach DL courses will need many of these, including course planning, instructional design, editing, and knowledge transmission (Mood, 1995). Although some faculty members worry that they will be replaced or devalued by computer-based DL, signaling the demise of professors in higher education may be premature. “However, the teacher’s role in distance education is quite different from that of a teacher in a traditional setting” (Mood, 1995, p. 78). Beyond classroom skills, teachers will also become technical experts, troubleshooters, marketers, salespeople, motivators, and “cheerleaders” (Mood, 1995).

Faculty attitudes toward using technology for distance education may be related more to their comfort in using technology than to other factors. This comfort level may be the difference between a professor tackling or avoiding the formidable task of developing a DL program. Technology will bring new challenges to proven methods, which may create anxiety among established professionals. As Seagren and Watwood (1997) wrote: “Both students and faculty are going to have to unlearn past practices in order to succeed in the active learning mode of the future. This process involves profound change, and change is uncomfortable to most.” With advancing technology, such as computers, there is the distinct chance that students will be better versed in its use than faculty members (Silverman, 1997). However, as shown by results of a desktop videoconferencing study, teachers with little or no computer experience at the beginning of a DL project become competent and literate with technology as they develop and administer DL programs (Edmonds, 1996).

Before developing technical expertise, it is imperative to determine the why, what, and who in providing a DL program (Tulloch, 1996). The first question establishes the basis for the next two. Once a well-researched reason for instituting a distance learning program is established, the marketing phase begins. DL advocates need to devise surveys for determining which courses can be taught with this method, deciding whether there is a demand for them, and, most importantly, identifying who might take them (Belcher, 1996; Crider & Garman, 1998; Stanbrough
Once a market is established, the professor puts on the salesperson hat, first visiting other faculty and administration. Without administrative and faculty support and collaboration, offering a DL program becomes difficult (Sedlack & Cartwright, 1997; Tulloch, 1996). The next step is actively soliciting students through e-mail, listservs, mailing, and advertisements (Crider & Garman, 1998; Haynes, Pouraghhabagher, & Seu, 1997; Stanbrough & Stinson, 1998).

Armed with a valid reason to offer DL, faculty and administrative support, and potential students, the educator is ready to start developing, pilot testing, and administering a DL program. Several studies have reported that implementing a DL program required more preparation and administrative time than traditional classroom teaching (Crider & Garman, 1998; Hassenplug, Karlin, & Harnish, 1995; Richards et al., 1995). The same articles also reported that most of these same teachers had positive attitudes and would be willing to teach via DL again. The roles of technical expert and troubleshooter become important as hardware and software develop problems or require updating. Teachers must be able to fix their own problems and those of their students, which are not always technology based.

Students enrolled in DL courses are often working in isolation, and teachers must understand their needs. Many students become easily discouraged or do not allocate enough time for study and thus fall behind. Bauer and Rezabek (1993) explored interaction patterns of students in two-way teleconferenced sites and traditional classrooms. They found that students in the traditional classroom interacted significantly more than their DL peers, leading to the conclusion that students are more likely to interact when the instructor is physically present. DL does not allow this option, but there are strategies to keep motivation high, including the “cheerleading” role. Towles, Ellis, and Spenser (1993) reported that faculty-initiated contact significantly improved course persistence among freshman students in a DL environment.

From cheerleader to troubleshooter, technical expert to marketer and salesperson, the professor who is developing and implementing a DL program must assume new roles beyond those of a classroom teacher. The instructor must become comfortable with technology and develop collaborative relationships with other faculty and administrators. Two physical education instructors recently tackled this process and proved that DL can be an effective medium for providing quality courses online.

Two DL Success Stories in Higher Physical Education

Computer-based DL in physical education is a relatively new concept, and few institutions are tapping into the vast student base that is flocking to distance education in other fields. Physical education may not seem like an ideal subject for this medium. In some instances, such as activity-based courses, DL will not be appropriate. However, computer-based DL has worked effectively in classroom (Stanbrough & Stinson, 1998, Emporia State University [ESU], KS) and fitness activity courses (Crider & Garman, 1998, Kutztown University, PA) in physical education.

As in other fields, computer-based DL in physical education will enhance rather than replace traditional classroom programs (Hopey & Ginsburgh, 1996), attracting students to the field who might have chosen another DL option and providing a variety of learning methods to accommodate a diverse learner population.
Before developing their DL courses, ESU and Kutztown University professors prepared to meet the challenge through marketing. Stanbrough and Stinson (1998) developed a survey with questions about content areas relative to career goals, and familiarity with DL, the Internet, and e-mail. After analyzing the survey, they selected course and delivery methods, focusing on course content and compatibility with the capabilities of the ESU support system. Program development was followed by a publicity campaign consisting of professional mailings, continuing education mailings and advertising, professional listservs, and word-of-mouth at conferences.

Both programs delivered courses primarily over the Internet, using homepage websites as a base for accessing class materials, assignments, bulletin boards, chat rooms, and links to related websites. ESU courses also featured interactive two-way desktop videoconferencing for group communication and interaction and for access to guest speakers. The Kutztown University course demonstrated that even activity courses can be successfully delivered through DL when they are designed and developed properly. Students participated in fitness activities outside the school setting (e.g., local health clubs) during the semester, and a fitness postassessment was performed at the end of the course. Every student showed fitness improvements.

While both courses were regarded as successful and were enthusiastically received, they were not without teething problems. As Crider stated during a conference presentation: “In distance learning, things will go wrong.” He recommended pilot testing any new course with one or two good students to work out the bugs. Course development and maintenance also require a tremendous time commitment as does course presentation (e.g., answering e-mails, providing feedback, and securing chat room availability).

Institutions that have not embraced distance education will almost certainly do so in the near future. DL has been around for over a century and shows no signs of departure. In fact, the introduction of new technology has prompted an explosion of new courses and programs that are now offered over the Internet and World Wide Web. Faculty in physical education programs at institutions of higher learning may want to take a proactive position and start planning for DL soon. As Crider (1998) stated:

> Educators may find it beneficial and less painful to become a part of the change now, while the entire education community is experiencing the technological evolution. It is far easier to make small adaptive changes to meet future needs and survive than it is to resist those changes and face academic extinction, or at the very least, professional stagnation. (p. 3)

**Conclusion**

Computer-based DL is a viable alternative to the traditional on-campus classroom setting. It offers the opportunity to reach learners who might never be able to obtain a graduate education through on-campus courses, including working adults, minorities, individuals in rural areas, and people with disabilities. New technology offers the promise of individualized programming that can accommodate a diverse range of students, learning styles, subject matter, and pedagogical strategies. Online
communication methods, such as e-mail, chat rooms, listservs, and DVC, promote student interaction, thus forming communities of learners. More importantly, these same communication lines also foster the teacher-student interactions that are crucial to learning.

There are several successful physical education DL programs in higher education nationwide; ESU and Kutztown University are just two examples. Online exposure may attract individuals who are otherwise unaware that DL exists. Moreover, it will extend the educational process to people who cannot attend classes on college campuses, especially those professionals who work hard in our public schools every day.

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