

# How Nontraditional Bachelor of Science Degree Technology Students Perceive Distance Learning

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This is a report of a questionnaire survey of 27 students. The intent was to determine their perceptions of distance education classes taken during a bachelor of science degree program designed for adult off-campus students. These distance education classes were offered by interactive audio and video transmissions at a set time to as many as five remote sites. The questionnaire covered:

1. Student learning—self-rated levels of learning and understanding of course content.
2. Instructional techniques—instructor's use of lecture, handouts, and visuals; instructor's ability to encourage students to participate and reflect.
3. Medium—how the technology affects the pace of the class, the quality of transmission, and how different sites interact.
4. Attitude—self-rated feeling about preferences for distance education instruction.
5. Possible uses of distance education—students' view of future uses of distance education.

Other studies and experts' views of the preceding areas are presented in the following discussion of distance education. This is followed by a brief report of our study that includes a description of the student group, their program of study, the questionnaire, and what we learned.

## A Description of Distance Education

"Distance education can best be described as the separation of student and instructor during the process of education delivery" (Swift, Wilson, & Wayland, 1997, p. 1). Distance education allows students to be in different geographic locations and receive instruction from the teacher at the same time. Steiner (1999) identified the defining elements of distance education as "the separation of teacher and learner during at least a majority of each instructional process and the use of educational media to unite teacher and learner and carry course content" (p. 1).

Many distance education programs are designed to meet the needs of the

nontraditional adult learner. The proportion of college students who are adult learners has been increasing steadily. Fewer than one in six undergraduates fit the traditional stereotype of the American college student: 18 to 22 years of age, attending college full time, and living on campus (Gatien & Griffiths, 1999). Adult learners are different in many ways. They differ in their view of the world, how they make judgments, and how they form values (Hand, 1992). There is wide acceptance of individual differences in ability, motivation, values, attitudes, and personality of adult learners (Perry, 1994).

## Areas Affecting Distance Education

Our literature review identified five areas that affect the success of distance education: student learning, instructional techniques, medium, attitudes, and possible uses of distance learning.

### *Student Learning*

Smith (1994) reported that students rated distance education courses similar in quality to traditionally taught courses; however, students and faculty members indicated a preference for conventional instruction over distance education. In his study at a technical college, Hogan (1998) found that distance learning students' grades were .27 points higher than those in traditional courses and that distance learning students had higher completion rates than traditional students. Koch (1998) also found that distance learning students earned higher grades than did students in traditional courses.

Shneiderman, Borkowski, Alavi, and Norman (1998) found that students rated their learning effectiveness in the distance education classroom significantly higher than in the traditional classroom. However, Treagust, Waldrip, and Horley (1993) found no statistically significant differences in student learning when comparing distance education courses with regularly scheduled courses.

### *Instructional Techniques*

Sherry, Fulford, and Zhang (1998) examined the opportunities for students to interact with instructors and other students in distance education and traditional classrooms.

In distance education, students perceived instructor-to-class interaction as positive and moderately correlated with the perception of learner-to-learner interaction. Students enrolled in distance education classes compared to students in traditional education courses indicated learner-to-instructor and learner-to-content interactions as important. Both groups indicated overall support for small group process. This indicates the need for faculty to visit each remote site at least once during the course, ensuring that all students have "in person" time with the instructor (Swift, et al., 1997).

Faculty members who teach by distance education must utilize a variety of teaching methods such as lecture, seminar-style discussions, case analyses, group presentations, individual presentations, video case studies, and computer demonstrations (Case, Gutknecht, Pickett, & Wilson as cited in Swift et al., 1997). Willis (1993) offered several instructional techniques needed to effectively teach by distance education:

1. "Hands-on" training with the technology used to deliver instruction is critical for both teacher and students.
2. The teacher must learn about students' backgrounds and experiences; discuss rules, procedures, guidelines, and standards; and consistently uphold procedures.
3. The teacher should contact each site or student every week.
4. Students must give regular feedback regarding course content, delivery problems, and instructional concerns.

The instructional techniques used in distance education may be a distraction for students at the host site.

Host site students were quite clear about their dislike of attending a distance learning classroom. One possible recommendation would be to simply do away with the host site group. The instructor could then focus entirely on students at the remote sites, and host site students could attend traditional classroom courses without any of the distractions caused by a distance learning course. (Thomerson & Smith, 1996, p. 46)

### **Medium**

The technology used to make distance education available to remote classrooms can affect the classroom environment and create problems for student learning. In one study, students reported that they liked the multimedia hands-on capabilities of the electronic distance classroom; however, factors

such as quality of transmission and capability of equipment could create problems (Shneiderman et al., 1998).

In a similar study, distance education students rated statements dealing with the learning environment lower than students in a traditional classroom. They had difficulty hearing at their remote sites and the equipment caused many problems, which disrupted the class. Class time was lost while equipment was adjusted to bring all sites on line (Thomerson & Smith, 1996).

### **Attitude**

Shneiderman et al. (1998) found that students were highly satisfied with their experiences and indicated that they would take another distance education course. He also found that technology-enhanced learning could lead to statistically significantly higher levels of perceived skill development, self-reported learning, and evaluation of classroom experiences as compared to collaborative learning in a traditional educational setting.

In a study of 288 undergraduate college students in distance education classes at remote sites, students reported overall satisfaction with the courses (Biner, Welsh, Barone, Summers, & Dean, 1997). This study supported the contention that remote site group size affects both the satisfaction and motivation of students enrolled in distance education college-level courses; larger classes were associated with more negative student attitudes, as well as with lower levels of relative performance. Other authors have reported that often students feel isolated, leading to negative feelings (Galusha, 1998; Wolcott, 1996).

There are no significant differences with satisfaction of distance education courses between men and women according to Koch (1998). He also found that students' age, marital status, or major were not related to students' anxiety toward distance education.

Pugh and Siantz (1995) assessed student satisfaction in a study between two university campuses (host sites) and between a university campus and a business location (remote sites). The instructor alternated between the two sites. This study found that the students preferred the host-site location to the remote site.

### **Possible Uses of Distance Education**

Distance education technology may be used to link students with interest groups such as community service groups or professional organizations. Business, educational, and

scientific experts can be connected to distant sites without leaving their work locations and clients (Musial & Kampmueller, 1996).

Educators must help all students become adept at distance interaction. The skills of information gathering from remote sources and of collaboration with dispersed team members are central to the future of the American workplace (Dede, 1996). Chute, Thompson, and Hancock (1999) stated that information resources will be everywhere, often separated from learners. Distance learning will be the bridge between learners and these resources.

#### The Study

##### *Student Group*

Twenty-seven students were enrolled in our distance education degree program at the University of Arkansas. All students were working full time as instructors at technical schools. Their technical areas were automotive technology, computer technology, culinary arts, diesel technology, electronics technology, machine technology, and nursing. The students were pursuing a bachelor's degree in vocational education.

Eight classes in the degree program were offered by interactive audio and video transmissions to seven sites in Arkansas. The class size at each site ranged from one to eight students. All of the students completed at least two of the classes offered by distance education. Approximately half of the students completed eight classes. All of the students agreed to participate in this study.

##### *Program of Study*

The distance education classes were part of the requirements for the bachelor's degree. In addition to the eight distance education classes, the students were required to complete 56 credits of general studies, 33 credits of technical requirements, and additional electives. The majority of credits were taken as traditional classes at a local college or university. The classes offered by distance education were Advanced Strategies in Technical Education, Analysis of Teaching in Technical Education, Curriculum Selection and Selection of Use in Technical Education, Surveying Special Student Populations in Technical Education, Use of Student Resources in Technical Education, Advanced Management in Technical Education Programs, Current Trends and Issues in Technical Education, and Tech Prep in Technical Education. Five different professors taught the

distance education classes.

##### *Questionnaire*

A 42-item questionnaire, adapted with permission from Treagust et al. (1993), was used to measure perceptions of the students. They were asked to rate their perceptions of student learning, instructional techniques, medium, attitudes, and possible uses of distance education using a 5-point Likert scale. Treagust et al. found reliability coefficients on the five areas ranging from 0.63 to 0.93, indicating that the areas have an acceptable reliability. A total of 27 usable questionnaires were returned for a response rate of 100%. Of the 27 students, 7 were female and 20 were male. Ages ranged from 25 to over 55 with the majority in the 45 to 54 age group.

The data were analyzed using the SPSS for Windows statistical software package. Mean score and frequency calculations were compiled for the five areas. Variables of interest were gender, age, size of class, and number of distance education classes completed.

##### *Findings*

Perceptions of all five areas of distance education were positive with possible uses of distance education having the highest mean score (see Table 1).

Table 1. Means of Areas of Distance Education

Area	Mean
Student learning	3.8
Instructional techniques	4.0
Medium	4.3
Attitudes	4.2
Possible uses of distance education	4.4

The specific statements that received the highest mean scores (> 4.5) in rank order were:

1. Distance education provides opportunities to take courses that may not normally be available (mean = 4.7).
2. I enjoyed having the opportunity to learn how to use distance education techniques (mean = 4.6).
3. Distance education would be an effective way to conduct professional development programs for professional people (mean = 4.6).

4. Distance education is a good form of learning for remote/rural students (mean = 4.6).
5. Distance education would improve access to learning for remote/rural students (mean = 4.5).
6. If I had known what was involved in the use of distance education I would have changed to another class (mean = 4.5). Note: Scores were reversed.
7. Distance education would be an effective way to conduct vocational education courses for people in the workforce in remote/rural areas (mean = 4.5).
8. Distance education would improve access to professional development/training for remote/rural workers (mean = 4.5).

Examining the variables of gender, age, size of class, and number of distance education classes completed, it was found that females, students over 55 years of age, and those completing more classes had a slightly more positive perception of all areas of distance education.

The areas rated the lowest were student learning and instructional techniques. The technology of distance education limits classroom interaction, the amount of content covered, kinds of instructional techniques used, and interpersonal relationships with the instructor and students at other sites. All of these affect students' perceptions of learning and instruction.

The students in our study felt very positive about the medium. They quickly learned to use the electronic classroom and were not

intimidated by the technology they were required to operate—control board for cameras, microphones, computers; video projection equipment; computer access and television monitors.

This program with distance education classes offered these students an opportunity to complete a bachelor's degree. Because of their rural locations throughout Arkansas, this was their first opportunity to complete a degree without long travel time or relocation. These students recognized the value of the program for themselves and the positive future use of distance education.

Our study shows the importance of using distance education as an avenue for the completion of a university degree. There are many adults in the workforce who value degree completion but are unable to make the sacrifice to attend university classes. Distance education, whether interactive classes or web based, combined with traditional classes offers this opportunity.

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