The Impact of WebCT ~~of Distance Learning Using Internet Software~~ on Student Attitudes Toward Instruction and its Impact on Learning

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Introduction

Distance learning is defined (Moore & Thompson, 1997) as an instructional arrangement in which the separation of the teacher and learner requires communication through the media. In recent years, the use of distance learning has been noted in correspondence study, home study, and independent study (Spooner, Jordan, Algozzine & Spooner, 1999). As telecommunications and computer technologies have become more powerful, more common-place and less expensive, distance learning is increasingly associated with the Internet, multimedia and computer related tools. Certainly, distance learning allows a learner to access instruction which otherwise would not be possible. As the name implies, it allows learners in remote locations to have access to instruction and is an alternative for those whose career would not allow attendance in regular classes, for those with disabilities and for those who are homebound with children (Brickates, 1998 & English, 1998).

Applications. Current distance learning instructional processes are used in many arenas. Distance learning has been used as a part of gifted education (Washington, 1997), television courses for colleges (Wagoner N. & Thompson, D., 1997), classroom instruction for elementary and secondary students (Kitchen, 1986), science teacher education (Jaeger, 1995), and business education (Pirrong, G. & Lathen, W., 1990).

Distance learning and computer-assisted learning are not necessarily the same. However, these two approaches may share common elements such as digital video, use of computer technology as a vehicle for delivery, and a software interface. Although research comparing computer-assisted instruction to traditional instructional methods in physical education and sport education are plentiful, research describing distance learning is not common.

Effectiveness of Distance Learning Programs. When evaluating the effectiveness of a new or novel approach to instruction, the results are compared with results from a more standard instructional approach. In the case of distance learning, the student scores would be compared to scores generated from traditional instruction where exists a face to face interaction between teachers and students. Gibbins' (1989) review suggested that televised instruction resulted in higher scores than more traditional methods of instruction. Kitchen (1987) reported that scores between students using interactive television and traditional classroom instruction were not significantly different. Therefore, one might suggest that for those with limited budgets and/or limited access to traditional instruction; the development of a web page designed for distance learning could prove to be an invaluable tool.

Benefits to TLT. Often, new instructional strategies are implemented without consideration to its effectiveness. Instructors make small but significant alterations in instructional approaches from semester to semester. WebCT, which is a distance learning development software environment, that allows an instructor to develop web-based courses (including quizzes, chat rooms, bulletin boards, classroom instruction, etc.) may be used for a variety of purposes and its instructional scope can also vary widely. For example, some instructors may use WebCT as an instructional strategy which is ancillary to the primary mode of instruction. Others however, may use WebCT as a primary mode of instruction. In the Department of Health Leisure and Exercise Science at Appalachian State University, use of WebCT has moved from an ancillary method to a more primary mode of instruction. During the Spring 2000 semester, WebCT is being used in combination with more traditional methods to provide instruction to students participating in an extension course (PE 3556) at Cleveland Community College. Based upon student feedback, the purpose of this study is to compare and contrast the impact of distance learning using Internet software on student attitudes toward instruction and its impact on learning. Although the proposed research will be conducted on the Appalachian State University campus, the data resulting from procedures and techniques developed for this project will be of value to and made available to all institutions in the UNC System.

Proposed Methods and Procedures

Nine classes in a physical education teacher education program will be used with students in all classes randomly divided into one of two treatment groups. Treatment I (N=70+) will use WebCT during 10 class meetings during the regularly scheduled class time, but from a computer outside of class. Treatment II (N=70+) will not use WebCT, but will be involved in class activities similar to those assigned to the Treatment I group. During each of the 10 class sessions, different student each session in Treatment II will be assigned to correspond with Treatment I subjects utilizing the class web page to provide them with information being covered in class and questions posed by the instructor. This will be in the chat room set up for the class. The information and format for information presentation will be similar for all subjects whether on-line or in class. For example, when group problem-solving interactions are assigned in class, the chat room can be utilized for a similar discussion for those assigned to that treatment group.

Project Evaluation

Students in PE 3002 (Motor Development), PE 2020 (Measurement and Evaluation), and PE 3556 (Pedagogy) will be randomly assigned to one of two treatment groups as described above. Following random assignment of subjects, each subject will complete the following pre-assessments: (a) attitude survey related to using technology; and a (b) pre-test on course content. Additionally, during each of the 10 treatment days, subjects will complete (a) a quiz at the beginning of the class session on the assigned readings for the day; and (b) and a quiz at the end of each class session. At the end of the semester, a post-assessment will be administered on the same items which were pre-assessed (course content knowledge and attitude toward using technology).

Data Analysis

Dependent variables include: (a) attitude scores; (b) course knowledge scores; (c) average pre-class quiz score; (d) average post-class quiz score; (e) average gain scores from class session quizzes; (f) final numerical course grades of subjects; and (g) instructor course evaluations. Data will be analyzed by a multivariate analysis of variance (MANOVA) with repeated measures for variables a-d. Variables e-g will be analyzed with an analysis of variance (ANOVA). Appropriate follow-up measures (post hoc) will be applied as well.

Budget Items	Units	Unit Cost
IBM Thinkpad 390X Laptop	3	$ 2,589.00
EtherJet Adaptor Card	3	$ -129.00
Proxima Data Projector	1	$ 4,599.00
Taxes and S&H		$ 1,577.14
Sub Total		$14,719.99
Graduate Research Assistant	3	$ 1,000.00
Subtotal		$ 1,000.00
		$15,719.99
University Indirect Costs		$ 2, 358.00
Total Project Cost		$18,077.99

Rationale for budget: A single notebook with WEB CT software and appropriate memory and speed will be needed for each of the three courses which will be taught. This is especially needed in order to conduct the chat room for Treatment II while in class with Treatment I. A data projector is needed to convey needed project information to all subjects at various points of the time line. The graduate research assistants are needed to provide information from on-going classes (in class) to those in Treatment II who are on line.

References

Brickates, EV (1998). Learning goes the distance over the world wide web. Boston Business Journal, 18(37), pp. 40-44.

English, D. (1998) The dog at my disk. Business First - Western New York, 14(21), pp 33-36.

Gibbins, M.P. (1989). AThe effectiveness of Technology Applied to Instruction: A summary of the Research Literature (Paper prepared for the Center for Communications, San Diego State University, 1989), pp. 2-5).

Jaeger, M. (1995). Science teacher education at a distance. The American Journal of Distance Education, 1, pp. 13-36.

Kitchen, W. (1989) AEducation and Telecommunications: Partners in Progress,@ ERIC ED 282 551 (Testimony before U.S., Senate, Committee on Labor and Human Services, 11 Mar. 1987).

Moore , M.G. & Thompson, M.M. (1997). The effects of distance learning (Rev. Ed.) (ASCDE Research Monograph No 15). University Park: The Pennsylvania State University, American Center for the Study of Distance Education.

Morrison, C., & Reeve, J. (1989). Effect of different videotape instructional units on undergraduate physical education majors' qualitative analysis of skill. Perceptual and Motor Skills, 69, 111-114.

Pirrong. G., & Lathen, W. (1990). The use of interactive television in business education. Educational Technology, pp. 49-54.

Spooner, F., Jordan, L., Algozzine, B. and Spooner, M. (1999). Student ratings of instruction in distance learning and on-campus classes. Journal of Educational Research, 92(3): p 132-149.

Washington, M.F. (1997). Real hope for the gifted. Gifted Child Today Magazine, 20(6), pp 3-7.

Wagoner, N. and Thompson, D.D. (1997). Teaching with television: One university's model. International Journal of Instructional Media, 24(3), pp 221-225.