

DEOSNEWS Vol. 2 No. 5.

Copyright 1992 DEOS - The Distance Education Online Symposium

Editor: Morten Flate Paulsen, MFP101@PSUVM.PSU.EDU

Review: Kenneth W. Borland

DEOS was established with a grant from the Annenberg/CPB Project.

ABSTRACT

At the post-secondary level, various studies have been conducted to evaluate the educational effectiveness of different distance learning technologies. No published study was found that compared the perceived effectiveness and satisfaction of university faculty teaching in traditional and distance education courses. This study gathered responses from 46 faculty who taught via the Washington Higher Education Telecommunication System (WHETS), a video interactive television system, over three semesters to evaluate their perceptions and satisfaction. In general, faculty were satisfied with their instruction over WHETS in terms of the effectiveness of their teaching strategies, lack of need to make major curricular adaptations, and ability to perform selected activities in the classroom. Over two-thirds said they were satisfied with teaching over WHETS. The major factor contributing to loss of satisfaction was quality of student--teacher interaction. Results are being used to design effective faculty development programs.

THE AUTHORS

Janet Ross Kendall, Assoc. Director, Extended Academic Programs
Washington State University, 202 Van Doren Hall, Pullman, WA 99164-5220
Bitnet: KENDALLJ@WSUVM1

Muriel Oaks is Director of Extended Academic Programs and WHETS at Washington State University.

EVALUATION OF PERCEIVED TEACHING EFFECTIVENESS:
COURSE DELIVERY VIA INTERACTIVE VIDEO TECHNOLOGY
VERSUS TRADITIONAL CLASSROOM METHODS

By Janet Ross Kendall and Muriel Oaks

Washington State University (WSU) has used the Washington Higher Education Telecommunication System (WHETS) since 1985 to deliver courses among students at WSU's four campuses -- Pullman, the main campus, located in a rural area near the Idaho and Oregon borders; and Spokane, Tri-Cities, and Vancouver, WSU's branch campuses, located in urban areas around the state. (A WHETS site is also available at the University of Washington in Seattle, and the University of Idaho is linked with an adjoining microwave system.) WHETS is a two-way video interactive telecommunications system that uses microwave technology to link sites. Students enrolled at the Pullman campus tend to be younger, full-time students. Students at the branch campuses are, for the most part, older (average age approximately 35 years), employed professionals who take courses on a part-time basis, although the demographics are beginning to change as more undergraduate programs are added.

Courses offered via WHETS are at both the graduate and undergraduate levels in such diverse areas as engineering, humanities, business administration, and human nutrition. The majority originate from the Pullman campus where most WSU faculty are located. About 30% of classes originate from one of the branch campuses. Courses taught to students at one campus may be delivered simultaneously to students at the other campuses. As of 1990, about 35 different courses are taught on WHETS each semester.

In recent years there has been a great increase in the use of distance education technologies to deliver courses to students at all educational levels. A recent report by the U.S. Office of Technology Assessment, *Linking for Learning: A New Course for Education* (1989), examines the use of such technologies to improve the quality of education for students and training for teachers at the elementary and secondary (K-12) levels. The report finds, for example, that prior to 1988, fewer than 10 states were significantly involved in distance learning; today virtually every state is involved in distance education activities.

At the post-secondary level, a number of studies have been conducted to evaluate the educational effectiveness of various technologies. Many have focused on the achievement of students in distance education and traditional classrooms (e.g., Chu & Schramm 1967, 1975; Ritchie & Newby 1989; Seigel & Davis 1990; Smith 1983; Whittington 1986). Almost without exception such studies have shown that students taking courses via distance education technologies achieve as well as students taking courses via traditional methods.

Others have examined students' satisfaction with various distance education technologies (e.g., Topper et al. 1975). For example, Barker and Platten (1988) sent a survey to the 31 students enrolled in a graduate teacher education course presented through the TI-IN Network. Responses indicated that 53.8 percent felt that the satellite instruction was as interesting as that received in a regular classroom; 38.4 said it was less interesting, while 7.6 percent said it was more interesting. Over two-thirds (69.2%) said they would enroll in other credit courses offered via satellite. Grimes, Nielsen and Niss (1988) evaluated the influence of student-teacher contact on on- and off-campus students' attitude toward the subject matter. Contrary to their expectations, there was little difference among groups; they stated, "we can not draw a general conclusion that greater student-teacher contact will lead to more positive attitude formation for students in a telecourse situation" (p. 42). Ritchie and Newby (1989) randomly assigned 26 college undergraduates to three classroom settings: traditional classroom with an instructor, TV studio with an instructor, and a "distant" studio classroom with television monitors and no instructor. In contrast to Grimes et al., their students in the "distant" classroom rated instruction less enjoyable than those students who had an instructor with them in the classroom; they also rated their involvement as significantly lower than the other two groups. However, the situation was somewhat contrived, and results may not generalize to students in real "distant" classrooms.

To our knowledge, no studies have compared the perceived effectiveness and satisfaction of university faculty teaching in traditional and distance education courses. Thus, the study reported here was conducted. Faculty were surveyed about their satisfaction with teaching over WHETS, the effectiveness of using the system to reach their educational goals, and their willingness to use the system again. Such information is critical in developing successful faculty development programs to increase faculty effectiveness in using the existing as well as the emerging distance education technologies.

METHOD

Instruments: Two questionnaires were used to collect the evaluation data reported here. Construction of the first questionnaire involved two steps. First, interviews were conducted with five WSU faculty members with experience teaching via WHETS as well as in traditional classrooms. The faculty were from five different academic departments and taught different types of courses (e.g., lecture vs. case study, graduate vs. undergraduate.) Their perceptions were used to construct a structured, self-administered questionnaire. The questionnaire consisted of demographic, open-ended, and forced-choice questions, several of which used a four-point Likert scale.

Because many of the forced-choice questions did not allow faculty to rate WHETS as "equally" effective in comparison to a traditional classroom, a revised questionnaire was prepared. This second questionnaire was intended to provide data more useful to personnel working on faculty development and support services. Personnel recognized the importance of knowing when WHETS is rated as equally effective so that time is not spent working on situations where WHETS and traditional classrooms do not differ. Three faculty who work with WHETS teachers identified 38 questions where an "equally effective" response would be more meaningful for faculty development planning; four questions judged to be unimportant were eliminated, and for the remaining 34 questions the four-point Likert scale was changed to a five-point scale (see Table 1 for example). Several additional questions were also written to collect information not included on the first questionnaire.

Table 1 EXAMPLE OF 4-POINT AND 5-POINT SCALE

	Strongly Disagree		Strongly Agree		
I have had to give up some favorite teaching techniques because they don't work on WHETS.	1	2	3	4	5

Subjects: All 46 faculty who taught over WHETS during the 1989 calendar year received a copy of the first questionnaire. Each of these faculty members also had several years of experience teaching in traditional classrooms.

The second questionnaire was sent to the 12 faculty who taught over WHETS during summer 1990 and the 33 faculty who taught over WHETS during fall 1990. All faculty had several years of experience teaching in traditional classrooms.

Procedures: To gather faculty perceptions used in constructing the first questionnaire, faculty were interviewed in a location and at a time of their choice. Interviews were tape recorded to ensure accuracy of reporting of responses. Faculty were assured of confidentiality and told that tapes would be erased when the report was completed.

The mail survey procedures suggested by Dillman (1978) were followed for distributing and collecting all sets of questionnaires (i.e., use of a cover letter, pre-addressed return envelope, follow-up letter thanking faculty for participation, follow-up letter to faculty who had not yet returned the survey).

Data Analysis: Frequency distributions and crosstabulation tables were constructed to examine faculty responses.

RESULTS AND DISCUSSION

The first questionnaire was returned by 32 of the 46 faculty who taught during 1989, a 70% response rate. The second questionnaire was returned by 11 of the 12 faculty (92%) who taught during Summer 1990 and by 25 of the 33 faculty (76%) who taught during Fall 1990. Responses were combined from the three sets of questionnaires when questions were identical, providing data from 68 faculty; responses were analyzed separately for the questions that were different on the 1989 and 1990 questionnaires.

Perceived instructional effectiveness: Faculty were asked to compare the effectiveness of their teaching strategies over WHETS versus the traditional classroom. As Table 2 shows, almost all faculty used lecture, group discussion and question/answer strategies; the other four strategies were used by a majority of faculty. Lecture, case study and question/answer strategies were judged to be as effective over WHETS as in the traditional classroom. Ten percent of faculty indicated lecture was more effective over WHETS, and nearly one-third felt similarly about lab/demonstration strategies. In contrast, a significant percentage said group discussion, seminar, socratic, and question/answer strategies were less effective.

Table 2 USE OF TEACHING STRATEGIES OVER WHETS*

Question 6. Some teaching strategies are believed to be better suited than others to use when teaching a course over WHETS. Select the statement which best describes your experience with the effectiveness of each teaching strategy when teaching on WHETS as compared to the traditional classroom setting.

Strategy	Who Uses % (N)	Effectiveness compared to traditional setting		
		Less %	Equal %	More %
Lecture	100 (68)	35	55	10
Group discussion	96 (65)	72	25	3
Case study	49 (33)	33	61	6
Seminar	54 (37)	62	35	3
Question/answer	96 (65)	48	48	4
Socratic	59 (40)	60	32	8
Lab/demonstration	64 (23)	35	35	30

* Table includes all 1989 and 1990 respondents except "lab/demonstration" (1990 only).

Table 3 describes curricular adaptations faculty said they made when they began teaching on WHETS. Few faculty felt they needed to make changes to their syllabus, their course organization, assignments or exams. The majority indicated they had to make adaptations to their delivery, audio--visual aids, and interaction with students.

Table 3 CURRICULAR ADAPTATIONS*

Question 5. Thinking now about the most recent course you taught on WHETS, what adaptations, if any, did you make when you began teaching the course on WHETS?

Curricular Components	No or minor changes (%)	Significant or major changes (%)
Course syllabus	79	21
Organization of Course	68	32
Interaction with students	38	62
Handouts	54	46

Audio-visual aids	48	52
Assignments	71	29
Exams	81	19
Delivery of content	49	51

* Table includes all 1989 and 1990 respondents.

Faculty were asked to indicate whether using WHETS has affected their ability to perform selected activities in the classroom (Table 4). Items to which the majority of the 68 faculty indicated their ability was no different whether using WHETS or not included: respect students' opinion and feelings, stimulate students' critical thinking skills, prepare lesson plans based on needs of the learner, and encourage expression of different points of view. Half the faculty said WHETS sharpened their ability to consciously plan for the instructional event, and over four-fifths said they could use audio-visual aids as well or better over WHETS. Consistent with the results reported above, half the faculty selected "cannot do as well when using WHETS" to describe their ability to give hands-on experience, encourage participation in class discussions, and actively involve students.

Table 4 PERCEPTIONS OF EFFECTIVE TEACHING USING WHETS*

Question 13. The following list contains characteristics of effective teachers as described by a group of WSU professors. Using the key given, indicate the number of the response choice which best describes you for each item on the list.

Teaching activities	Can't do as well on WHETS %	Equal %	Can do better with WHETS % (N)
Actively involve students	49	48	3 (67)
Encourage participation	54	40	6 (67)
Respect student's opinions	15	84	1 (67)
Stimulate critical thinking	26	72	2 (65)
Give hands-on experience	55	45	0 (66)
Consciously plan for the instructional event	5	46	49 (65)
Prepare lesson plans based on needs of learners	18	65	17 (66)
Encourage the expression of differing viewpoints	39	59	2 (66)
Use active, interesting audio-visual aids	18	42	40 (67)

* Table includes all 1989 and 1990 respondents.

Faculty were asked to respond to several open-ended questions. To "the one best thing about WHETS is . . .", 53% of the 68 faculty mentioned issues related to the value of increased access to education for place-bound students. One faculty member wrote: "It truly is providing desperately needed education to underserved areas." Time and cost savings for students and faculty were cited by 15% of respondents, and 12% mentioned that the quality and motivation of off-campus students was the one best thing about WHETS. Interestingly, there were a wider variety of comments made by faculty who taught in the fall 1990 semester than by those who taught during fall and spring semesters of 1989. Fewer faculty from a narrower range of academic departments had taught over WHETS as of 1989, and the institution viewed WHETS as a less expensive way to deliver high quality courses to placebound students; faculty seemed to be reflecting

this view. By fall 1990, more faculty had gained experience teaching over WHETS, and a number of undergraduate general studies classes were being taught to two branch campuses. The wider variety of comments probably is due to the greater number of faculty from more departments who could discuss their experiences in teaching over WHETS with each other and with their colleagues, and who were able to see more benefits, as well as drawbacks, inherent in the system.

Level of satisfaction: When asked to rate their level of satisfaction with their teaching careers as a whole, 97% of the 1989 faculty reported they were "satisfied" or "very satisfied." 1990 faculty responded similarly, with 94% rating their teaching careers the same. Sixty-nine percent of the 1989 faculty gave these same ratings when asked to describe their level of satisfaction when teaching on WHETS; 31% chose "not satisfied" or "not at all satisfied." 1990 faculty gave similar satisfaction ratings to teaching on WHETS: 58% chose "satisfied" or "very satisfied." However, 31% chose "equally satisfied", and only 11% indicated they were not satisfied. Although the percentages indicating satisfaction with teaching on WHETS are lower than those for their teaching careers as a whole, more than two-thirds of 1989 faculty are satisfied with teaching via WHETS, and 89% of 1990 faculty are equally as satisfied or better.

The major factor contributing to differences in satisfaction levels was a loss in the quality of the student-teacher interaction. Three-quarters of the faculty said what they missed most in teaching via WHETS was the lack of personal interaction with students at the other campuses at which the course was received. This can also be seen in responses to related forced-choice questions (see Tables 2, 3 and 4). For example, 88% of 1989 faculty and 83% of 1990 faculty agreed it was very important to visit students at other campuses. The five-point scale helped to clarify responses to another related question, "My teaching over WHETS is more impersonal than in an on-campus class." In 1989, 66% agreed that their teaching over WHETS was more impersonal than in a traditional class. 1990 responses showed that only 41% agreed, while 18% felt teaching was similar in either type of class setting.

Student characteristics: When asked to describe off-campus students in comparison to on-campus students, 1989 faculty were nearly unanimous that off-campus students were more motivated and had a higher achievement level (Table 5). The five-point scale modified faculty members' responses somewhat: two-thirds agreed that off-campus students were more motivated and had a higher achievement level, but one-quarter and one-third, respectively, indicated that there was no difference between the two groups of students. There was less agreement about students as "self-starters"; 62% of 1989 faculty chose "self-starter" while 38% said off-campus students need more direction than on-campus students. Thirty-eight percent of 1990 faculty chose "self-starter", 35% chose the neutral response, and 26% said off-campus students need more direction. This latter finding may be related to the larger number of undergraduate classes being taught in 1990, enrolling students less confident about their academic skills. In contrast, most courses taught in 1989 were graduate courses which, for the most part, enrolled working professionals.

Table 5 STUDENT CHARACTERISTICS (1)

 Question 4. How do off-campus WHETS students compare to on-campus students taking the same course?

	% selecting response	% selecting response	% selecting response
1989	1,2		3,4
1990	1,2	3	4,5

More motivated	87		13	Less
	64	24	12	motivated
More life experience	100		0	Less life experience
	70	21	9	
Older	87		13	Younger
	56	24	20	
High achievement level	83		17	Just get by
	62	32	6	
Self starters	62		38	Need
	38	38	26	direction
Academically (2) confident	18	56	26	Academically insecure

(1) Data reported separately for 1989 and 1990, as %.

(2) Question not asked in 1989.

CONCLUSIONS

In considering their teaching strategies, the majority of faculty perceive lecture, question/answer, and case studies as more or equally effective over WHETS in comparison to a traditional classroom setting; group discussion and seminars were rated as less effective by a majority of faculty. The professors surveyed felt their general instructional effectiveness was not significantly diminished; they identified several instructional activities they could perform equally well in a WHETS or traditional classroom. The major concern faculty had was with the loss of the active involvement with students that they experience in a traditional classroom. Data collected in 1989 suggested this concern affected their personal satisfaction with teaching over WHETS; responses to the five-point scale used in the 1990 questionnaire suggest most faculty (89%) are equally as satisfied or better with teaching via WHETS. In fact, if asked, 96% would teach over WHETS again. Personnel working with WHETS faculty will continue to recommend that faculty consciously implement strategies that enhance interaction. Improvement of communications between faculty and "receive--site" students could be enhanced by bringing the two closer together through large screen television monitors, frequent written feedback from students, making electronic mail and computer conferencing systems easier to access, and encouraging personal visits to the "remote" campuses receiving the course.

This questionnaire will be completed by faculty teaching via WHETS each semester. Future analyses will examine effectiveness ratings by various groupings of faculty (e.g., undergraduate general studies vs. graduate business administration). Student evaluations of faculty teaching effectiveness and students' course grades are also being collected and will be correlated with faculty responses. The ultimate purpose of the data collection and analyses is to design meaningful and effective faculty development programs.

REFERENCES

Barker, B.O., & Platten, M.R. 1988. Student perceptions on the effectiveness of college credit courses taught via satellite.

The American Journal of Distance Education 2: 44-50.

Chu, G.C., & Schramm, W. 1967. Learning from television: What the research says. Washington, D.C.: National Association of Educational Broadcasters.

_____. 1975. Learning from television: What the research says. Palo Alto: Stanford University. ERIC Document Reproduction Service, ED 109 985.

Dillman, D.A. 1978. Mail and telephone surveys: The total design method. New York: Wiley.

Grimes, P.W., Nielsen, J.E., & Niss, J.F. 1988. The performance of nonresident students in the "Economics U\$A" telecourse. The American Journal of Distance Education 2: 36-43.

Ritchie, H., & Newby, T.J. 1989. Classroom lecture discussion vs. live televised instruction: A comparison of effects on student performance, attitude, and interaction. The American Journal of Distance Education 3: 36-45.

Seigel, A.E. & Davis, C. 1990. Delivering undergraduate engineering courses on television: How do grades compare? [Abstract]. Proceedings of the Seventh Canadian Conference on Engineering Education (pp. 10-13). Toronto, Ontario, Canada.

Smith, J. 1983. Evaluation of the telecourse program at Saddleback College: Student retention and academic achievement. Unpublished doctoral dissertation, Nova University, Fort Lauderdale.

Topper, M.D., Singleton, W.L., Attebury, A., Birdwell, D.B., & Schumann, D. 1975. Telecourses: The "Open University" in Dallas. Southern Methodist University.

U.S. Office of Technology Assessment. 1989. Linking for learning: A new course for education. Report # OTA-SET-430. Washington, D.C.: U.S. Government Printing Office.

Whittington, N. 1986. Instructional television: A research review and status report. Austin: Coordinating Board, Texas College and University System, Division of Universities and Research.

----- End of DEOSNEWS Vol. 2 No. 5 -----

[Top of Page](#)