

Videotape Utilization and Effective Videotape Instructional Practices in an Off-Campus Agriculture Degree Program

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"Educational media alone do not influence the achievement of students. Researchers who have attempted to demonstrate the superior influence of educational technologies on achievement have been unsuccessful. On the other hand, researchers who have attempted to identify the appropriate techniques of message organization and the correct process of instructional delivery with technology have been more in the mainstream of what is considered appropriate." (Thompson, Simonson, and Hargrave, 1991, p. 1). Thompson et al.'s (1991) assertion supports that of Perraton (1987), who argued that communication media do not differ in their educational effectiveness.

A single comprehensive theory of distance education may not be possible (Perraton, 1987); several authors, however, have identified instructional practices believed to be effective in teaching through videotape. Thompson et al. (1991) reviewed the literature on effective one-way instructional television and identified a number of characteristics associated with effective programs. Cyrs and Smith (1990) assembled several instruments for evaluating teleclass teaching. From a review of research and from experience, Gibson (1985) proposed a list of heuristics for instructional design in distance education. Wilson (1991) identified several conditions specific to distance education necessary for student learning.

"Most instructors in adult education programs are experts in the content that they teach, but they usually have little preparation in the process of helping adults learn" (Knox, 1986, p. xi). Agricultural educators have not engaged in research regarding the teaching and learning process to a suitable degree (Crunkilton, 1988), but several researchers have recognized the importance of placing greater emphasis on how the content is taught (Martin, 1987; Martin & Odubiya, 1991; Martin & Omer, 1990; Voight, 1992).

Videotaped courses have become the primary delivery system for the Iowa State

University College of Agriculture distance education program, according to Miller and Honeyman (1993). The use of videotaped instruction is expected to increase, and research is needed to develop and improve instructional strategies effective for teaching through videotape. Intra-medium studies (Thompson et al., 1991) should be conducted in the context of the off-campus program.

Agricultural educators have a role to play in developing and improving the method and process of technology-mediated instruction (Newcomb, 1993). To do this most effectively, agricultural educators must know their audience, identify effective distance education practices, and tailor programs to meet the needs of agricultural audiences (Miller & Honeyman, 1993). Do instructional practices for videotape, identified as effective in the literature, enhance student achievement and satisfaction? To what extent are these practices utilized by agricultural educators? What strategies do students utilize to achieve success in distance education programs? This study will provide a basis to begin formulating answers to these questions.

Purpose and Objectives

The purpose of this descriptive correlational study was to investigate the videotape-utilization practices of students enrolled in the Iowa State University College of Agriculture off-campus degree program. Additionally, the researchers sought to investigate student perceptions of the importance and occurrence of effective videotape instructional practices. The objectives of the study were as follows:

Describe videotape-utilization practices of students enrolled in the Iowa State University College of Agriculture off-campus videotaped courses during Fall Semester, 1992.

Describe student perceptions regarding the importance of, and the extent to which, effective-videotape instructional practices were utilized.

Describe relationships among selected demographic variables, selected videotape-utilization practices, the perceived importance of effective videotape instructional practices, and student perceptions of the extent to which effective videotape instructional practices were utilized.

Procedures

Population and Sample

The population for the study consisted only of active students who enrolled in off-campus videotaped courses offered by the College of Agriculture at Iowa State University (N=200). Any student who enrolled in at least one videotaped course during 1992 was considered active. The accessible population consisted of students enrolled in two distinct videotaped courses for Fall Semester of 1992. Seventy-eight students were enrolled during Fall Semester, and all were included in the sample.

Instrumentation

The questionnaire utilized in the study was developed by the researchers and consisted of four parts: the importance of effective videotape instructional practices, the occurrence of effective videotape instructional practices, attitude toward videotaped instruction, videotape utilization practices, and selected demographic questions. Content and face validity for the questionnaire were established by a panel of faculty in the Iowa State University Agricultural Education and Studies Department.

Thirty-five statements representing effective videotape instructional practices were identified from the literature (Cyr & Smith, 1990; Gibson, 1985; Thompson et al., 1991; Wilson, 1991). Students were asked to indicate their level of agreement with statements regarding the extent to which the practices were important and the extent to which they occurred, by using a Likert-type scale with five response categories ranging from strongly disagree to strongly agree. Cronbach's

alpha was calculated to estimate the reliability of the scales. The resulting coefficients were .95 for the importance scale and .94 for the occurrence scale.

The attitudinal instrument consisted of 13 Likert-type items, with five response categories ranging from strongly disagree to strongly agree. Cronbach's alpha was used to assess the reliability of the attitudinal instrument. The resulting coefficient was .83.

Data Collection

Data for the study were collected by mailed questionnaire. The questionnaire, along with a cover letter and a stamped return envelope, was sent to all students enrolled in an off-campus videotaped course during the Fall Semester of 1992. Approximately three weeks after the initial package was mailed, telephone calls were made to all nonrespondents, encouraging them to complete the questionnaire and return it in the envelope provided. Approximately one week after the first follow-up, a second telephone follow-up of nonrespondents was completed. After each follow-up, additional questionnaires were sent to all students who had lost or discarded the original questionnaire. Sixty-one students completed and returned the questionnaire for a response rate of 78 percent. Students participating in the study were not a probability sample of active students who enrolled in off-campus videotaped courses. Also, no formal means were utilized to compare respondents and non-respondents. Results were not generalized beyond the respondents.

Data Analysis

All data were analyzed with the SPSS/PC+ personal computer program. Appropriate statistics for description were used, including frequencies, percents, means, standard deviations, point biserial correlations, phi coefficients, and Pearson correlations. All correlation coefficients were interpreted using Davis' (1971) descriptors.

Results

Table 1 shows the frequencies and percentages of students who reported using selected videotape-utilization practices. Approximately 39 percent of the respondents watched the videotapes straight through without interruption, 54.1 percent watched the videos more

than one time, 98.4 percent took notes, and 45.9 percent viewed the videotapes when they were received.

Table 1. Videotape-Utilization Practices of Students

Practice	f	%
Watch videos straight through without interruption	24	39.3
Watch videos more than once	33	54.1
Take notes	60	98.4
View videos when received	28	45.9

Students were asked to indicate the average amount of time they spent viewing each 120-minute videotape. Viewing time ranged from a low of 61 to a high of 360 minutes. The mean viewing time reported by respondents was 184.1 minutes, with a standard deviation of 57.8 (Table 2.)

Table 2. Amount of Time Spent Viewing Each 120-minute Videotape

Minutes	f	%	Cum %
61-120	9	15.5	15.5
121-180	27	46.6	62.1
181-240	15	25.8	87.9
241-300	6	10.4	98.3
301-360	1	1.7	100.0
Total	58	100.0	100.0
Mean = 184.1			
Standard Deviation = 57.8			

Table 3 presents the times of day during which respondents typically viewed the videotapes. A majority (62.3%) of the respondents reported typically viewing the videotapes during the evening hours (6:00 to 11:59 p.m.). The second most (14.8%) frequently cited viewing time was during the morning hours (6:00 to 11:59 a.m.).

Table 3. Time of Day During Which Videotapes Are Typically Viewed

Time	f	%
6:00 to 11:59 AM	9	14.8
12:00 to 5:59 PM	5	8.2
6:00 to 11:59 PM	38	62.3
12:00 to 5:59 AM	4	6.6
Marked more than one time period	5	8.2
Total	61	100.0

On a five-point scale, students were asked to indicate how important each of 35 effective videotape instructional practices was to them in regard to their learning. Table 4 shows that 1.6 percent (1) of the students provided a mean score in the range of 2.01 to 2.50 (disagree) and 1.6 percent (1) provided a mean score between 2.51 and 3.50 (undecided). The remaining 96.7 percent (59) of the respondents provided mean scores greater than 3.50 (agree to strongly agree). The overall mean score for perceived importance of the 35 effective videotape instructional practices was 4.19 (agree) with a standard deviation of .48.

Table 4. Overall Mean Scores for the Perceived Importance of 35 Effective Videotape Instructional Practices

Mean	f	%	Cum. %
2.01-2.50	1	1.6	1.6
2.51-3.00	0	0.0	1.6
3.01-3.50	1	1.6	3.3
3.51-4.00	16	26.2	29.5
4.01-4.50	28	45.9	75.4
4.51-5.00	15	24.6	100.0
Total	61	100.0	100.0
Mean=4.19, Std. Dev.=.48			

Note: Based on scale: 1=strongly disagree; 2=disagree; 3=undecided; 4=agree; 5=strongly agree.

On a five-point scale, students were asked to indicate the extent to which 35 effective videotape instructional practices had occurred. Table 5 shows that 1.6 percent (1) of the students provided a mean score in the range of 2.01 to 2.50 (disagree), and 14.8 percent (9) provided mean scores between 2.51 and 3.50 (undecided). The

Table 5. Overall Mean Scores for the Perceived Occurrence of 35 Effective Videotape Instructional Practices

Mean	f	%	Cum. %
2.01-2.50	1	1.6	1.6
2.51-3.00	4	6.6	8.2
3.01-3.50	5	8.2	16.4
3.51-4.00	32	52.5	68.9
4.01-4.50	14	22.9	91.8
4.51-5.00	5	8.2	100.0
Total	61	100.0	100.0
Mean = 3.81, Std. Dev. = .50			

Note: Based on scale: 1=strongly disagree; 2=disagree; 3=undecided; 4=agree; 5=strongly agree.

Table 6. Summary of relationships among selected demographic variables, selected videotape utilization practices, and perceived importance and occurrence of effective video instructional practices.

Variable	(X1)	(X2)	(X3)	(X4)	(X5)	(X6)	(X7)	(X8)	(X9)	(Y1)
Facilitator of learning ^a (X1)	1.00	-.07	-.09	-.03	-.08	-.02	-.18	-.16	-.37	-.30
Watch video more than once ^b (X2)		1.00	-.11	.03	.13	-.16	.46	.03	.12	.12
View videos as received ^b (X3)			1.00	-.13	-.13	-.06	.01	.03	-.04	-.02
Watch video straight through without interruption ^b (X4)				1.00	-.28	.10	.11	.16	.15	.12
Student age (X5)					1.00	.24	-.08	-.05	.17	.24
Number of video courses taken (X6)						1.00	.07	.09	.02	.24
Time spent viewing each video (X7)							1.00	.18	.23	.25
Importance of effective practices (X8)								1.00	.57	.17
Occurrence of effective practices (X9)									1.00	.52
Attitude toward videotaped instruction (Y1)										1.00

^a0 = Facilitator of learning; 1 = information provider

^b0 = No; 1 = yes.

Note: Phi coefficients were reported for relationships among variables (X1)-(X4), point biserial coefficients were reported for relationships between variables (X1)-(X4) and (X5)-(Y1), Pearson correlations were reported for relationships among variables (X5)-(Y1).

remaining 83.6 percent (51) students provided mean scores greater than 3.50 (agree to strongly agree). The overall mean score for the perceived occurrence of the 35 effective videotape instructional practices was 3.81 (agree) with a standard deviation of .50.

Pearson correlations, point biserial correlations, and phi coefficients were calculated to describe the relationships among selected demographic variables, selected videotape-utilization practices, and perceived importance and occurrence of effective videotape instructional practices. Low positive relationships were found between student attitude toward videotaped instruction and student age, number of videotaped courses taken, and time spent viewing each videotape. Students with more positive attitudes toward videotaped instruction were older, had taken more videotaped courses, and spent more time viewing each videotape. A moderate negative relationship was found between student attitude and whether students perceived the instructor to be an information provider or a facilitator of learning. Students who perceived their instructor to be a facilitator of learning had more positive attitudes

toward videotaped instruction. A substantial positive relationship was found between student attitude and perceived occurrence of effective videotape instructional practices. Students had more positive attitudes toward videotaped instruction when they perceived to be a greater extent the occurrence of effective videotape instructional practices. A moderate negative association was found between whether instructors were perceived by students as information providers or as facilitators of learning and the perceived occurrence of effective videotape instructional practices. Students who perceived to a greater extent the occurrence of effective videotape instructional practices were more likely to perceive their instructor as a facilitator of learning (Table 6).

Students were asked to describe briefly the strategies they have found to be effective in learning from videotape. Approximately 98 percent (56) of the respondents described their approach to learning from the videotaped lectures. Several students described strategies that might

suggest the instructors covered too much material too quickly. Some of the statements include:

I watch the tapes usually in one hour segments.

I like to watch the tape first without taking notes and then take notes the second time through after the content and pace of delivery is familiar to me.

I pause many times through each session.

Often, the material is presented too quickly (rewinding is used frequently).

I can usually only watch about half the tape at one setting.

I watch the tape when received at about thirty minutes per session.

Students provided many other comments that may prove useful in designing more effective video taped lectures. Some of these include:

It works best for me to have a scheduled time to view a tape, much the same as a classroom

I often put the tape on still in order to copy notes, charts, etc., so I can then concentrate on what is being said.

I record important information with the tape number and counter number so I can fast forward to the exact spot if I need to review.

One student commented that "these courses care less if the student learns for real world application". Although this comment did not describe a learning strategy, it certainly sheds light on the desire of some students to understand the application of the material that they learn.

Conclusions

Most of the respondents do not watch videotapes straight through without interruption, and almost half of the students watch the videotapes more than one time. In fact, 84 percent of the students spent two or more hours viewing each of the two-hour videotapes. Perhaps students

were capitalizing on their ability to control the pace of instruction, or more likely they were compensating for the fact that instructors operate more as information providers and less as facilitators of learning.

Students perceived the 35 effective-videotape instructional practices identified in the literature as being important to their learning.

Overall, students perceived that their instructors were utilizing the 35 effective videotape instructional practices identified from the literature. However, the level of agreement for the perceived occurrence of the practices was consistently less than the level of agreement with their perceived importance.

Students had more positive attitudes toward videotaped instruction when they perceived their instructor to be a facilitator of learning as opposed to an information provider.

Students had more positive attitudes toward videotaped instruction when they perceived to a greater extent the occurrence of effective videotape instructional practices.

Recommendations

Instructors for videotaped classes should slow the pace of their lessons to accommodate the preferences and learning strategies of their students. Perhaps the instructors could identify the most important concepts they wish to teach, and use examples and activities to demonstrate their real-world application. In fact, the highest mean for an individual item on the importance scale was "real-world application of content is stressed by the instructor." The amount of material covered would necessarily be less, but student learning and satisfaction could be increased.

Instructors for videotaped courses offered by the Iowa State University College of Agriculture should be provided an opportunity to participate in a workshop designed to improve their videotape-teaching skills. During the workshops, instructors would learn about the videotape utilization practices of students, student learning strategies, and strategies for integrating effective videotape instructional practices into their lessons. Instructors of videotaped classes must learn to be

more than "talking heads." They should become facilitators of the learning process.

Further research is needed to test experimentally the influence of so-called effective videotape instructional practices on student achievement and satisfaction. Based upon the results of this study, manipulating the videotaped lesson to accommodate the attention span and viewing patterns of students is recommended. Another promising manipulation would involve the insertion of activities that emphasize real-world application of concepts and higher-order thinking skills at specified intervals.

Respondents indicated a desire to receive suggestions on how they could learn most effectively from videotape. Findings from this study do not provide a sufficient basis for making such suggestions. Research should be conducted to contrast the videotape utilization-practices of high- and low-achieving students in videotaped courses.

References

- Crunkilton, J. (1988). Thinking out loud about this process we call teaching. The Journal of the American Association of Teacher Educators in Agriculture, 29(1): 2-10.
- Cyrs, T.E., & Smith, F.A. (1990). Teleclass teaching: A resource guide. (2nd ed.) Las Cruces: New Mexico State University, College of Human and Community Services, Center for Educational Development.
- Davis, J.A. (1971). Elementary survey analysis. Englewood Cliffs, NJ: Prentice-Hall.
- Gibson, T.L. (1985). Heuristics of instructional design for distance education. (ERIC Document Reproduction Service No. Ed 337 081).
- Knox, A.B. (1986). Helping adults learn. San Francisco: Jossey-Bass.
- Martin, R.A. (1987). Analysis of needs of young and adult farmers. The Journal of the American Association of Teacher Educators in Agriculture, 28(1): 56-64.
- Martin, R.A., & Odubiya, A. (1991). Perceptions of Iowa vocational agriculture teachers regarding methods used in agricultural education. Journal of Agricultural Education, 32(1): 13-17.
- Martin, R.A., & Omer, M.H. (1990). Perceptions regarding instructional methods used in adult agricultural education programs. Journal of Agricultural Education, 31(2): 2-6.
- Miller, G., & Honeyman, M. (1993). Attributes and attitudes of students enrolled in agriculture off-campus videotaped courses. Manuscript submitted to the Journal of Agricultural Education.
- Newcomb, L.H. (1993). Transforming university programs of agricultural education. Journal of Agricultural Education, 34(1): 1-10.
- Perraton, H. (1987). The roles of theory and generalization in the practice of distance education: Three related systems. (ERIC Document Reproduction Service No. ED 290 015).
- Thompson, A.D., Simonson, M.R., & Hargrave, C.P. (1991). Educational technology: A review of the research. Ames: Iowa State University, College of Education, Department of curriculum and Instruction.
- Voight, D. (1992). An assessment of the educational delivery systems employed by commercial field agronomists in publicly and privately owned cooperatives. Unpublished master's thesis, Iowa State University, Ames.
- Wilson, C. (1991). Trends in distance education: A viable alternative for higher education. (ERIC Document Reproduction Service No. ED 337 081).