

A Comparative Study of Traditional Instruction and Distance Education Formats: Student Characteristics and Preferences

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Abstract

We surveyed students in two courses delivered by a mixture of synchronous and asynchronous; traditional (face-to-face) and distance formats. We compared student characteristics, satisfaction, and preferences in these courses and formats. Our results indicate that although there were strong similarities between traditional and distance respondents, there were differences which should be recognized and considered to offer a satisfactory learning experience. The data indicates that a distinguishing factor between traditional and distance students was not work hours outside of school but the additional role of primary caretaker of a child or adult. The traditional course format was preferred among all respondents. Students using a distance format preferred individual distance delivery-formats over group-delivery formats. For the most part traditional format students were better able to deal with class logistics than distance students, indicating the need for more extensive preparation and explanation of process by instructors and/or distance education staff. In addition to these findings, this study tends to support previous work that found response rates from surveys distributed using a web-based format tend to be critically lower than surveys distributed in the classroom.

Introduction

Distance education has rapidly evolved from something delivered by postal mail to the delivery channels of television, videotapes, satellite links, various forms of computer storage, and completely web-based. The education and information revolution have merged to form new and expanding distance education formats. Assessing whether these distance education offerings are successful has many facets. Institutional evaluation often looks at the financial efficiency (e.g. enrollments, cost, and revenues) of technology modes and individual course offerings, as well as the ubiquitous and fairly standardized course evaluation statistics (Ehrmann, 1995; Strauss, 2003; Twigg, 2003; Williams and Paparozzi, 2002). Faculties often evaluate distance course offerings by the time required for course

development and revision, and institutional incentives offered to faculty and departments for these endeavors (Daugherty and Funke, 1998; Lindner et al., 2002; Steel and Hudson, 2001; Wingenbach and Ladner, 2002). Students evaluate these courses by considering access, quality of content and teaching effort, and their own performance and reward (Monteith and Smith, 2001; Najjar, 1996; Sammons, 1995).

Studies of students who have taken courses with extensive use of technology have shown mixed satisfaction results (Smith and Woody, 2000). The results likely reflect the varying combination of technology, student learning styles, and faculty teaching styles. In Sammons (1995) and in Smith and Woody (2000), students ranked the organization, legibility, and attraction of lectures based on technology very highly. However, students ranked lower the ability for technology to increase their learning or memory. Students working with synchronous web-based modes (delivery of in-class and distance formats simultaneously at a fixed time) expressed dissatisfaction with chat rooms but scored discussion boards highly. The 'chattiness' and spontaneity of chat rooms moved from being useful dialogue to "a waste of time" quickly, whereas discussion boards solicited more thoughtful responses (Williams and Paparozzi, 2002). Monteith and Smith's (2001) extensive 'virtual campus' study found that students were not afraid of the technology and reacted positively to its increased use. However, students consistently reveal a desire to have traditional contact. In addition, those students in the classroom may feel their own learning is hampered by the intrusion of technology into a traditional course setting (Spence, 2003).

Analysis by Stephenson et al. (2005) of students in an introductory agricultural economics course asynchronously (in-class and distance formats not delivered simultaneously or at a fixed time) delivered live and via the internet found traditional (face-to-face) instruction produced better educational outcomes in every metric used in their study. Students' opinion of instructional quality was significantly higher and gifted students learned more with traditional instruction. Students with below

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average Scholastic Aptitude Test and Scholastic Assessment Test (SAT) scores did considerably worse in the distance course.

Henning et al. (2005) looked at students' perceptions of and adaptation to electronic delivery formats in agricultural economics courses and found that students expect more web-based delivery of their courses. Overall current college student populations are exposed to technology at an early stage and its academic use created few barriers. Henning et al. (2005) found the need for personal contact was still required for a complete and successful educational experience.

In this study we evaluated two of the first agricultural economics courses delivered synchronously by a hybrid of traditional and distance formats. Our specific objectives were to determine if there were differences between traditional and distance students and in some cases between distance delivery formats, using 1) demographics; 2) familiarity with and preferences for technology and distance education formats; and 3) expectations and experiences in courses.

Methods

Surveys were used to collect student preference and demographic information from 2001 through 2003 from two courses, taught by two different faculty members in the Department of Agricultural and Resource Economics at Oregon State University (OSU). The first course was an introductory course, Evolution of U.S. Environmental and Natural Resource Policy (AREC 253), offered through several formats: traditional, synchronous satellite broadcast to various locations, live, and archived web-video and videotapes of traditional classroom sessions. The second course was an upper division course, Natural Resource Economics and Policy (AREC 351), and was delivered traditional and on pre-recorded (not tapes of traditional classroom sessions) videotapes. Both courses were supported by a website using Blackboard Learning System™ (2003) but the tools used on each site varied by course and instructor. Each course used a single website for all students regardless of delivery format.

We used two voluntary surveys of students enrolled in these courses to collect data for this research. We surveyed students during

the first two weeks of the course ("Expectations Survey") and a second time during the last two weeks of the course ("Post-evaluation Survey"). Faculty administered the survey in the classroom and posted the survey on the course website in two common software formats for distance students to complete and return. Distance students returned their surveys through email, fax, or postal mail. A test survey, distributed a term previous to the beginning of our study, found the survey question format to be statistically valid.

The Expectations Survey solicited information on students' reasons for taking the class; familiarity with all formats; expectations of the chosen format; technology; course content; instructor; and demographics such as age, gender, class standing, and working status. In the Post-evaluation Survey we asked students to evaluate the format of their course and format preferences. In addition, expectation questions from the earlier survey were repeated and students were asked to score their actual experience as "less-more-about the same" as their expectations. The numbers of potential and actual responses are presented in Table 1. Response rates for the surveys were low (Expectation Survey n=155, 33%; Post-Evaluation n=96, 21%) but responses were fairly evenly distributed among traditional and distance students (Expectation Survey 59% and 41%; Post-evaluation Survey 45% and 55%, respectively). The low response rate restricted the validity of statistical inferences to the population but some interesting information can be drawn from the sample. Several sets of data were broken into format categories and tested for independence with a chi-squared test. Low response rates to surveys administered in class were

Table 1. Summary of student survey response rates

	Expectation Survey			Post-evaluation Survey		
	N ^z	N ^y	% of N ^x	n	% of N ^x	
AREC 253						
Traditional	168	43	3	12	7	
Distance	71	26	36.6	17	24	
AREC 253 Subtotal	239	69	29	29	12	
AREC 351						
Traditional	69	49	71	31	45	
Distance	156	37	24.7	36	23	
AREC 351 Subtotal	225	86	38	67	30	
TOTAL	464	155	33	96	21	
Traditional	237	92	39	43	18	45
Distance	227	63	28	53	23.3	55

^z The number of registered students during the second week of the term. Students may have dropped the course subsequently.

^y The number of completed surveys or responses.

^x The response rate.

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factors of class attendance, time provided, and faculty or teaching assistant facilitation. Surveying distance education courses via a web-based tool often results in poor response rates due to their voluntary nature, poor incentives for completion, and the inability to control their distribution. Other studies have found low response rates of online-delivered surveys (Crawford et al., 2001; Tse, 1998) and evaluations related to student-computer interface problems (Handwerk et al., 2000; Schmidt, 1997).

Results and Discussion

Student Demographics and Previous Experience

A majority of both traditional and distance students were seeking a degree from OSU and taking the study courses as a requirement for their degree. A slightly higher percentage of distance students were non-degree seeking and taking the courses as an undergraduate elective (Table 2). Over 85% of the total sample and of the subsets of traditional and distance formats were upperclassman. All of the students who identified themselves as post-baccalaureate were distance students but they made up less than 10% of the distance responses. Another demographic of interest was the employment status of students. Often faculty perception is that a majority of distance students are employed for more hours than traditional students. In our sample 23% of all students worked full-time (>30 hrs per week), 41% part-time (<30 hrs per week), and 44% were both working full-time and considered themselves a primary caretaker of a child or adult. Only 17% of distance students worked part-time and 16% full-time without being a primary caretaker. However, 50% of the distance respondents categorized themselves as full-time and a primary caretaker. In comparison, 40% of traditional students worked part-time and 12% full-time but none identified themselves as working primary caretakers. The data

indicates that a distinguishing factor between traditional and distance students was not in fact hours worked but the additional role of primary caretaker. Responses were statistically dependent on whether students used traditional or distance formats (at the $\alpha = 0.05$ level).

Table 2. Summary of student demographics based on completed surveys

Student Demographics	Total Survey Response Rate (%)	Traditional Response Rate ^z (%)	Distance Response Rate ^z (%)
Degree Institution	(n=155) ^y (n=92) ^y (n=63) ^y
Same as course institution	91	94	87
Other geographically close land-grants	3	3	3
Other	1	1	0
Non-degree seeking	5	2	10
Reason for Enrollment	(n=155)	(n=92)	(n=63)
Required for UG major	74	77	68
Required for UG minor	8	10	6
Elective for UG	10	9	13
Graduate degree	4	3	5
Professional development	3	1	5
Interest	5	2	8
Gender	(n=152)	(n=90)	(n=62)
Female	44	40	50
Male	56	60	50
Current Education Level	(n=152)	(n=90)	(n=62)
High School	5	6	3
College	90	91	87
Freshman	4	6	0
Sophomore	6	7	4
Junior	31	31	30
Senior	56	54	56
Post-baccalaureate	4	0	9
No response	2	4	11
Non-degree	6	10	10
Work Hours	(n=140)	(n=83)	(n=57)
Zero	34	47	6
< 30 hours per week	41	40	17
> 30 hours per week	23	12	16
Primary caretaker (n=9)	6	1	6
< 30 hours per week & primary caretaker	0	0	0
> 30 hours per week & primary caretaker	44	0	50

^z The response rates to these characteristics were found to be statistically dependent on the format of the course (traditional or distance) at the $\alpha=0.05$ level using a chi-squared test.

^y n is the number of responses to each question within the traditional or distance category.

Student Experiences

Students experienced with courses using the variety of formats in this study were limited (Table 3). Over half of the respondents had experience with courses that utilized the website (57%), few had ever been exposed to satellite (18%), and less than half had taken a course via videotape (35%). Only 20% of those respondents taking a video format course had previous experience in that format. Traditional respondents had less experience with web-based formats than distance respondents. Those taking a

course via satellite had very little previous experience with that format (8%) or with video courses (4%). Overall distance students have more experience with video and web-based course formats than the traditional students.

Format Preference and Evaluation

The Post-evaluation Survey elicited students' preferred format using a Likert scale (1= most preferred format to 6=least preferred format). We report average results of total, traditional, and distance student responses in Table 4. Videotape and

satellite were separated into two subgroups: receiving or watching the course with a group of other students or individually. Total average rankings indicate that receiving the course via satellite-individual was the least preferred (4.18). The most preferred format overall was a live course (1.8), while a satellite link-group of students was ranked a distant second (3.6).

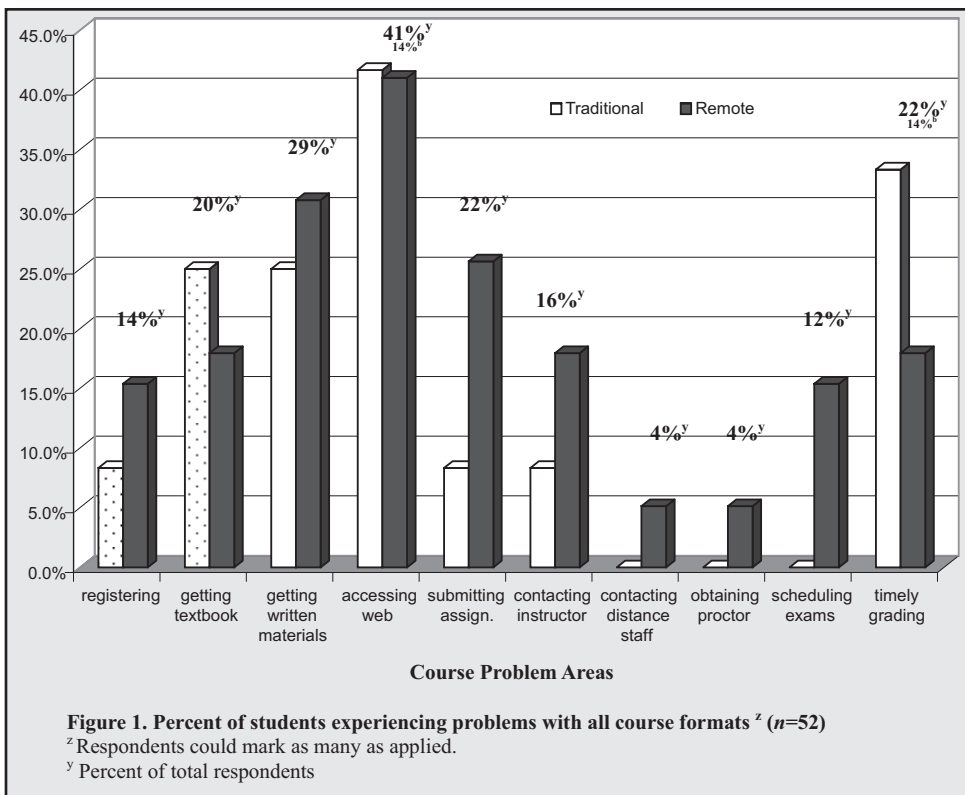
Comparing distance and traditional responses, the most preferred format among both groups was traditional format, while the remaining preference rankings vary. Distance respondents ranked videotape-individual delivery second (3.2) and web-based course-individual third. Distance students showed a strong preference against group delivery except in a traditional situation. However, among traditional respondents group delivery was preferred over individual delivery and web-individual, was ranked the lowest.

A chi-squared test for independence between format and selected statements of satisfaction/dissatisfaction in Table 5 was conducted. Using an $\alpha = 0.05$ independence was rejected, indicating that responses to the satisfaction questions were dependent on the delivery format. Few video delivery respondents felt the format was distracting to them (25%) as compared to traditional (47%) and satellite students (50%). Traditional students had interaction with distance formats when the course was being satellite

Table 5. Student satisfaction with formats

	Delivery Format ^z		
	Traditional On-Campus <i>n</i> =19	Satellite <i>n</i> =6	Videotape <i>n</i> =40
	Reponses Rates		
Distance delivery distracted me.	47%	50%	25%
Distance delivery was detrimental to my learning.	0%	33%	10%
Interaction between on and off-campus students during class.	26%	17%	12%
Instructor interacted with off-campus students.	21%	100%	NA
Adequate opportunity to ask questions.	53%	67%	47%
Instructor was distracted by distance delivery.	16%	0%	13%
On-Campus student received fair faculty attention.	47%	83%	NA
Distance students received fair faculty attention.	26%	33%	58%

^z The responses rates to satisfaction questions were found to be statistically dependent on delivery format at the $\alpha=0.05$ level using a chi-squared test.



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broadcast and/or taped in the classroom. None of the students enrolled in the traditional course felt that the distance format of their course affected their learning. However, 16% of them found it was distracting to the instructor. Approximately a third of the satellite

respondents); with traditional respondents having more trouble (over 30%) than distance students. Remote students had more problems with simple logistics which might occur more easily in the classroom for traditional students, including

getting and submitting materials, and contacting and scheduling appointments with pertinent faculty and staff.

Percent Respondents with Previous Experience	Distance Formats ^z		
	Satellite <i>n</i> =28	Video <i>n</i> =50	Web <i>n</i> =82
Taking course satellite (<i>nn</i> ^x =24)	8 ^w 4	^w	21 ^w
Taking course video (<i>nn</i> ^x =142)	4 ^w	20 ^w	25 ^w
Taking course w/web (<i>nn</i> ^x =21)	10 ^w	19 ^w	24 ^w
Taking course traditional (<i>nn</i> ^x =254) 7	^w 7	^w	14 ^w

^z These response rates were found to be statistically dependent on the format the student had previous experience in at the $\alpha=0.05$ level using a chi-squared test.
^y Percent of total respondents (*n*).
^x Number of respondents currently taking the surveyed courses in the specified row format.
^w Percent of total respondents with previous experience with delivery format (columns), currently taking the surveyed courses in this format (rows; *mn*).

Student Perceptions and Realizations

Students asked to describe the actual level of difficulty they observed with content, workload, and delivery system, as well as their enjoyment of the instructor compared to their expectations. Experiences were ranked as "more," "less," or "the same" level as they expected. Generally, student expectation and

students and 10% of the video students felt that the delivery format was detrimental to their learning experience.

Over half of respondents receiving the videotaped format felt that distance students received fair attention as compared to a third of satellite and 26% of live respondents. For satellite delivered courses, 100% of students found good instructor interaction and 67% found that a proctor enhanced the delivery. Since the majority of respondents using videotape format were watching video prepared outside of the classroom (78%), respondents could not view nor evaluate instructor interaction with traditional students. However, 58% of students receiving videotapes found the videos to be well prepared. Of these, 61% of those watching pre-recorded tapes evaluated them as "well-prepared" (61%); while only 45% of those watching traditional class tapes judged them as "well-prepared". Interestingly, traditional respondents felt distance students did not receive fair faculty attention more so than distance students themselves.

Students were also asked to indicate what aspects of the course presented problems for them (Figure 1). All respondents had problems with accessing the website (41% of all respondents) and receiving materials in a timely fashion (22% of all

actual experience was "the same" as expected (Table 6). Expectations of content difficulty were split between more difficult (49%) and the same as expected (48%). Traditional and satellite students more frequently found the content more difficult than expected (52% and 67%, respectively), while a majority of video respondents found the content as expected (54%). Most students found the workload as expected (54%); when disaggregated into delivery formats the results were similar. Difficulty with the format also tended to meet expectations; although 24% of video respondents found the format more difficult than expected. Over half of students in each format found the instructor as enjoyable as they expected. Video students had a slightly higher percentage of responses finding the instructor less enjoyable than they expected (13%), while tradi-

Course Format	Total Average Response Value ^z	Traditional Average Response Value ^z	Distance Average Response Value ^z
Live, on-campus classroom	1.8 (1.3) ^y	1.4 (0.7)	2.2 (1.6)
Simulcast satellite, group	3.61 (1.4)	3.00 (1.0)	4.04 (1.3)
Simulcast satellite, individually	4.18 (1.0)	3.92 (1.0)	4.34 (0.9)
Videotape, group	3.95 (1.1)	3.78 (1.2)	4.08 (1.1)
Videotape, individually	3.65 (1.5)	4.29 (1.1)	3.20 (1.6)
Web only, individually	3.92 (1.6)	4.80 (1.3)	3.28 (1.6)

^z Likert scale values of 1 to 6, with 1 being the most preferred and 6 the least preferred.
^y Standard deviations are included in parentheses.

tional students had a higher percentage who found the instructor even more enjoyable than expected (31%) than the other formats.

Summary

Our results support much of the previous research on student preferences for distance delivery formats and technology and several unique interesting considerations for distance instructors did arise. Instructors of distance courses must be aware of the audience to which their courses are delivered. As the geographic and demographic characteristics of their students become more diverse, knowing the student audience may be more important and yet more difficult. One of the primary distinguishing characteristics between traditional and distance respondents was not their part-or full-time employment status, but the addition of being a primary caretaker. In addition, most distance students were looking to complete an undergraduate degree from the same institution that was offering the courses surveyed (Table 2). A majority of respondents had some experience with courses using a website but few students, including current distance students, had any experience with other forms of distance format.

Respondents felt strongly that a traditional course was the preferred format. Interestingly, respondents with some distance format experience felt that distance format was better experienced as an individual than with a group. On-campus students found simultaneous satellite delivery distracting for the students and instructor in the on-campus classroom but did not feel this was detrimental to their learning experience. This finding supported previous studies that have found that obtrusive technology in the classroom can lead to a poorer learning experience (Spence, 2003). Although students ranked a satellite format slightly above videotapes, the results indicate that students taking videotape courses had fewer technical difficulties, less distraction, and felt more strongly that they received “fair attention” from the instructor. There was also some indication that satellite delivery may require a fully participatory facilitator/proctor to become a satisfactory learning experience for the student

Table 6. Student self-comparison of expectations and realization of selected course characteristics

Course Characteristic	Student Expectation/Realization Response Rates ^z			
	Total	Traditional	Satellite	Video
Content difficulty of this course was:	(n ^y =87)			
more than expected	49%	52%	67%	44%
less than expected	3%	5%	0%	3%
the same as expected	48%	43%	33%	54%
Workload difficulty of this course was:	(n ^y =86)			
more than expected	34%	34%	0%	39%
less than expected	12%	15%	33%	7%
the same as expected	54%	51%	67%	54%
Delivery system difficulty of this course was:	(n ^y =85)			
more than expected	19%	15%	17%	24%
less than expected	19%	12%	17%	26%
the same as expected	62%	73%	67%	50%
Enjoyment of the instructor of this course was:	(n ^y =87)			
more than expected	33%	318%	33%	29%
less than expected	8%	5%	0%	13%
the same as expected	59%	64%	67%	58%

^z These responses rates were found to be statistically dependent on the delivery format at the $\alpha=0.05$ level using a chi-squared test.

^y Number of respondents.

Respondents' difficulties in courses may also be related to their expectations versus actual experiences. Overall students were fairly good judges of what to expect, their expectations of these courses closely matched their actual experience. Distance respondents were the poorer judges of course content difficulty than traditional respondents. There were greater false expectations about difficulty with course format among distance than traditional respondents, although over half of distance students judged the format difficulty correctly. There were some similarities among the problems encountered by traditional and distance respondents in this study. However, distance students appeared to experience more difficulty in the logistics of a course, many of which are taken care of in the classroom for a traditional course.

Both incorrect expectations and poorly understood directions for class logistics detract from the effectiveness of a distance delivered course. Faculty need to be more specific about course requirements and procedures before a student registers for a course. Distance courses may address this by expanding their offering of sample course syllabi and other free preview materials. In addition, a course and/or distance instructor may build a “reputation” among distance students, as is done on campus, after offering the course for extended length of time.

Another conclusion from this study is the need for additional work on providing effective incentives and formats for student response to web-related

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surveys. Norris and Conn (2005) conducted a study which found that simple strategies, including careful timing and placement of announcements, the survey link, and carefully constructed student-computer interfaces, can raise the response rate to those of surveys distributed in the classroom. Options discussed among the instructors of the studied courses included restricting student access of portions of the website until a survey was completed or until the faculty clears the student for access if the student wishes to not complete the survey.

A follow-up study may be conducted to determine changes in student preferences and previous experiences with traditional and distance formats. Further studies may also test options for increasing response rates.

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