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Student Perceptions of Online Distance Education in Undergraduate Agricultural Economic Programs

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Undergraduate Food and Resource Economics majors and those with different majors were surveyed to determine the perceived advantages and disadvantages of distance and online education courses from a student perspective. Specific objectives included determining if students who have been exposed to more online courses are more likely to rate online education as positive or negative relative to the traditional classroom setting. In general, Food and Resource Economics majors tended to view distance and online education courses less favorably than did the others.

Key Words: distance education, online courses

JEL Classifications: A2

In a study conducted at the University of Florida by Sterns et al., the authors estimated the average additional costs associated with distance education compared with on-campus courses to be \$16,631 per course and \$1,661 per student taught. The authors substantiated several general findings: courses taught via distance are more costly to an academic unit than courses taught on campus, both in terms of per course taught and per student taught; estimates of costs will vary, depending on assumptions made about what costs should be included in the analysis; and quantifying the costs of distance education ultimately must be evaluated within the broader context of potential benefits and tradeoffs across departmental and college program priorities.

A number of researchers have provided suggestions for how to estimate the costs of

distance education technologies and programs. For example, Taylor et al. provided an example of estimating the costs of distance education in the Texas A&M University system. Their cost estimates, calculated on a cost per semester hour basis, summed operating, administrative, and other direct costs. Similarly, Sharratt calculated the break-even points and returns on investments for different modes of delivery, and Rumble outlined the various types of costs to be considered when analyzing the benefits and costs of distance education programs.

However, each of these studies examined costs from the perspective of the education supplier and did not consider the customer's perspective. In addition to providing a literature review on potential student costs and benefits of distance education and a background of distance delivery of courses at the University of Florida, the goal of this research was to determine the perceived advantages and disadvantages of distance and online education courses from a student perspective.

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Results from a survey of undergraduates both within an agricultural economics program and from other majors are presented. Specific objectives include determining if students who have been exposed to more online courses are more likely to rate online education more positively or negatively compared with students with less exposure to online education.

Potential Student Benefits of Distance Education

Carswell et al. found that the Internet, when used to deliver course materials, offers students a rapid and convenient communication medium that can enable increased interaction with fellow students. In this study of computer science undergraduate students in England, the biggest gain for Internet students was the improved turnaround time of assignments, so that students could receive timely feedback. Internet students also reported improved interaction with fellow students, including an increased amount of extended learning experiences, such as problem-solving sessions with fellow students compared with students in the traditional on-campus classroom.

Carswell et al. reported no statistical difference in performance or learning outcomes when comparing students who took the computer science course via the Internet compared with students who took the course in a traditional classroom.

Other authors have noted that the relative advantage of online learning is related to saving time and more convenient scheduling. In addition, online learning may enable students to attend more classes (O'Malley and McCraw). Daugherty and Funk found that student benefits of web-based instruction included (a) meaningful learning of technology through the integration of course content and computer applications, (b) increased access to the most current and global content information available, (c) increased motivation, and (d) convenience. In addition, faculty respondents consistently identified convenience and improved learning as advantages for students enrolled in web-based instruction.

Potential Student Costs of Distance Education

Unfamiliarity with a given technology (e.g., chat rooms, Internet surfing, WebCT) and cultural experiences of both students and instructors are costs of delivering distance education that must be considered. Web-based delivery of course materials requires a culture shift by both students and instructors (Carswell et al.) because both must learn how to effectively communicate in an asynchronous environment.

More than any other teaching method, distance learning requires a collaborative effort between student and teacher, unbounded by the traditional limits of time, space, and single instructor effort. The instructor is no longer the sole source of knowledge and, as such, must play the role of a facilitator much more than in the traditional classroom (Galusha).

Contrary to the Carswell et al. study, O'Malley and McCraw found that students perceived that it was difficult to contribute to class discussions in an online course and that online courses require significant changes by the student, resulting in some negative conditions for the student. In fact, O'Malley and McCraw reported that distance learning does not seem to offer many advantages to students. Students do not believe that distance learning enables them to attend classes more frequently. In their study, students did not want more distance learning courses to be offered, leading them to conclude that students do not generally find that distance learning methodologies have much of an advantage over traditional methodologies.

History of Distance and Online Learning at the University of Florida

The University of Florida, as Florida's land grant university, has a statewide mandate to serve all of the people of Florida. Florida's governing body for higher education created the Institute of Food and Agricultural Sciences (UF/IFAS) in April 1964 by reorganizing the university's College of Agriculture,

School of Forestry, Agricultural Experiment Station, and the Cooperative Extension Service into a single unit. Today, UF/IFAS includes extension in each of the state's 67 counties and 13 research and education centers (RECs) throughout Florida. For decades these RECs focused on research and extension. However, in 1984 the state legislature authorized the University of Florida to establish its first off-campus degree program. The first off-campus degree program, located in Fort Lauderdale, FL, was an undergraduate degree in environmental horticulture. This location was selected because of three factors: (a) a large population, (b) a significant horticulture industry in the region, and (c) the existence of a major REC to house the program (Klock-Moore et al.). Today, this program is carried out in partnership with the local community college, Florida International University, and Florida Atlantic University.

In 1992, a second off-campus undergraduate degree program in natural resources was established in Milton, FL, near Pensacola, FL. In 1995, undergraduate degree programs in environmental horticulture and turfgrass science were added at the Milton location. A third off-campus program was authorized in 1997 for the Indian River Research and Education Center in Fort Pierce, FL. Two undergraduate degree programs were established in horticulture science and food and resource economics (FRE). As with the previous degree programs, the degree offered at the Fort Pierce REC is taught in partnership with the Indian River Community College and Florida Atlantic University. Since 1997, other off-campus degree programs have been authorized and are established or are being established at additional Florida locations, including environmental horticulture in Apopka, Plant City, and Homestead, FL, and natural resource conservation and agricultural education at Plant City. All degrees offered are Bachelor of Science degrees. The off-campus locations are responsible for course and student experiential learning activities, but the main campus is responsible for administrative activities, such as registration, fee

payment, financial aid, and determination of fulfillment of graduation requirements.

The FRE degree offered at the Gainesville, FL, main campus offers three specializations: (a) food and agribusiness marketing and management for students interested in careers in marketing, management, finance, sales, and international business in the food and agricultural field; (b) natural resource, environmental economics, and policy for students interested in careers in environmental economics, law, or policy; and (c) international FRE economics, which provides a broad background in economic theory and international trade. The off-campus degree offered at the Fort Pierce REC has only one specialization: food and agribusiness marketing and management. Currently, there are three FRE faculty teaching positions at the Fort Pierce REC: two tenure track lines and one instructor. Other instructors have been hired on a course-by-course basis as needed. The two tenure track positions have teaching/research and teaching/extension positions with teaching the majority appointment.

The students take the agribusiness marketing, agribusiness management, agribusiness finance, and agricultural economics course sequences primarily from University of Florida faculty. Most of these courses are taught at the REC by one of the faculty members located at the center. Occasionally, a course will be taught using a distance delivery method, such as WebCT, DVD, interactive videoconferencing, video tapes, or a combination of these methods.

Virtually all the students in the distance FRE program are from their local areas and are what would be considered place bound. Most have full-time employment, and consequently all on-site courses are offered in the late afternoon or evening. These students tend to be older and have more work experience than their main campus counterparts. However, because most of these students work full time, there are lower semester credit loads and a longer period for graduation.

The Warrington College of Business (COB) at the University of Florida was established in 1926. It currently offers the following degrees:

Bachelor of Science in Accounting from the Fisher School of Accounting, Bachelor of Science in Business Administration, Bachelor of Arts in Business Administration, and an online Bachelor of Arts in Business Administration. During the most recent academic year, the college had a total enrollment of more than 5,300 undergraduate students and awarded 1,143 undergraduate degrees annually.

Historically, the COB has offered various courses online. For decades the introductory microeconomics and macroeconomics were taught with one "live" section and "TV" replay. Initially, these TV replays were in a classroom setting, where students came to class and watched the videotapes. Eventually the lectures were made available on a local cable TV channel and through bookstores, and today these courses are hosted on the university's WebCT Vista system, and lecture replays are downloaded from the Internet. The online course offerings have expanded significantly such that for spring 2007 semester, 15 business courses were available using this platform.

Additionally, in 2002, the COB started an online business program. Lectures on campus are delivered over the Internet via streaming audio and video. Students receive support from professors, teaching assistants, and academic advisors through e-mail, discussion boards, and chat rooms. The online business program is designed to be completed in two years of year-round enrollment. Students who work full time and have less time to devote to classes are encouraged to slow down and take courses at a pace that works better for them.

Data and Methods

In January 2007, a survey of undergraduate students at the University of Florida was conducted to assess student perceptions of online courses. Students in the FRE department and students enrolled in a course taught in the FRE department taught mainly as a service course were invited to take the survey. The students were sent links to the online survey via email and informed of the

survey during classes. In total, 243 students in Selling Strategically (the service course) and 335 students in the FRE department were invited to take the survey, for a total of 559 students (19 FRE students were enrolled in the service course). Although the main goal of the study was to learn about student perceptions of distance and online courses in agricultural economics, the service course was included to reach students in the COB at the University of Florida, where online courses are very common. Students received one e-mail invitation to the survey immediately after an introductory announcement about the survey in classes. A total of 346 students responded, for a response rate of 61.9%.

Results from the survey are presented in Tables 1–3. As expected, there were statistically significant differences between FRE majors, COB majors, and other majors. Approximately 98% of COB students had already taken at least one online course, but only 82.5% of FRE students had. Additionally, COB students reported taking an average of 6.5 courses online for the last two years, whereas FRE students reported taking an average of 2.2 courses online during the same time period. Other differences existed between the FRE and COB students. The FRE students were older (7.1% younger than 21 years of age compared with 48.7% for COB majors; Figure 1) and were more likely to be working in addition to attending school (58.3% of FRE majors worked compared with 39.1% of COB majors).

Respondents were asked to respond to a series of 19 questions (using a 5-point Likert scale) about online courses (Table 2). Scales were created using subsets of these questions, and Cronbach's alpha, a measure of the unidimensionality, was used to estimate the reliability of the scales (SAS). Scales measuring flexibility of online courses, format of online courses, expectations of online courses, workload in online courses, and likeability of online courses were created. These scales are described in Table 3.

In general, students felt online courses did increase flexibility (the average flexibility score was 13.00, where 15 was the highest possible).

Table 1. Demographics and Rates Participation in Online Courses of Survey Participants

	Average Score	Average Score Food and Resource Economics Majors (n = 127)	Average Score College of Business Majors (n = 151)	Average Score Other Majors (n = 66)
Percent who have taken an online course	90.7	82.5	98.0	90.8
Average number of online courses taken in last year	2.1	0.8	3.2	1.3
Average number of online courses taken two years ago	2.4	1.4	3.3	1.7
Gender (% male)	65.7	67.2	68.2	59.1
Age (% younger than 21 years)	29.9	7.1	48.7	30.3
Status (% full-time student)	95.6	93.7	98.0	93.8
Work (% working)	46.5	58.3	39.1	40.1
If working, average hours worked per week	20.3	22.4	18.7	18.1

The FRE majors rated online courses slightly lower in flexibility, with an average scale score 0.44 lower than COB majors. Although FRE students are generally less exposed to online courses, the relationship between exposure to these courses and perceptions was further examined by comparing scale scores for students who had never taken an online course with those for students who reported taking 10 or more courses online. Those with many online courses rated flexibility 13.60, compared with 12.33 for those without a history of online courses. Although the difference is more than 1 point, students without a history of online courses still rated flexibility of online courses relatively high.

The second scale created represented the format of online courses. Respondents rated whether or not lack of contact with professors and other students or ability to contribute to discussion was difficult with online courses. Overall, respondents slightly agreed (average scale score = 10.51) that these features made online courses less attractive. The FRE students and students without exposure to online courses rated these difficulties as a larger problem compared with COB majors and those with many online courses. Students with 10 or more online courses on average did

not agree or disagree with this category of questions.

Next, respondents were asked to identify their expectations in online courses compared with traditional courses. This series of questions asked students to identify if they expected online courses to be easier or more difficult, if they expected to learn more or less, and what grade they expected to have. Overall, students slightly disagreed that they expected to learn the same or expected to be able to receive the same grades (average score 20.08 out of a possible 35; a score of 21 would indicate they did not believe they would learn more or less or have different grades as a result of a course being online). However, FRE students were more likely to disagree, with an average score of 17.44. Interestingly, students without a history of taking online courses were more neutral than FRE students (19.43), and students with many online courses agreed that they would learn more or receive better grades in online courses (23.69).

Similarly, students were asked if online courses reduced the workload or allowed them to take more courses in a year. In general, all but FRE students slightly agreed that workload was reduced with online courses, and students with a large online course history

Table 2. Response to 5-Point Likert Scale Questions on Perceptions of Online Courses

Question	Average Score	Average Score Food and Resource Economics Majors (<i>n</i> = 127)	Average Score College of Business Majors (<i>n</i> = 151)
1. Online courses allow me to do my academic work according to my own schedule.	4.45	4.31	4.53
2. Online courses allow me to do my academic work from any location.	4.43	4.44	4.44
3. Online courses allow me to balance my college demands with family or work demands better than traditional classes.	4.10	3.96	4.17
4. Absence of face-to-face conversations and socialization with other students makes online courses less attractive to me.	3.35	3.67	3.19
5. Absence of face-to-face conversation and contact with an instructor makes online courses less attractive to me.	3.48	3.81	3.29
6. Online teaching is more effective than in-class teaching.	2.44	2.12	2.68
7. I learn better through online courses.	2.63	2.22	2.91
8. I prefer online courses.	2.99	2.55	3.38
9. I believe I can learn the same amount in either online or traditional courses.	3.25	2.81	3.58
10. I believe I can earn the same grade in online and traditional courses.	3.33	2.87	3.68
11. I believe I can earn a better grade in an online course than in a traditional course.	2.74	2.48	2.95
12. I believe I will earn a worse grade in an online course compared with a traditional course.	2.93	3.33	2.71
13. I would benefit if there were more online courses.	3.09	2.94	3.18
14. Online courses require a significant change in behavior by students to be successful in the class.	3.79	3.87	3.76
15. I believe I can learn more in online courses than from traditional lectures.	2.61	2.31	2.81
16. Online courses make me feel uncomfortable.	2.30	2.59	2.06
17. Online courses take less time.	3.23	3.00	3.37

Table 2. (Continued)

Question	Average Score	Average Score Food and Resource Economics Majors (n = 127)	Average Score College of Business Majors (n = 151)
18. Online courses enable me to take more courses than the traditional method in one year.	3.14	3.05	3.14
19. It is difficult to contribute to discussions in online classes.	3.70	3.77	3.60

Note: 1 = strongly disagree to 5 = strongly agree.

believed the workload would be reduced with online courses more than any other group. The average respondent also tended to prefer online courses and felt comfortable taking them (6.71). All students and student groups tend to agree that online courses require a change in behavior, with an average score of 3.79 (FRE, 3.87 and COB, 3.76). Students tended to agree (3.23) that online courses take less time.

Finally, students were asked to recall the most recent course taken online (Table 4). An average of 57.2% stated the course was required (36.9% for FRE majors, 81.6% for COB majors), and 42.1% indicated the course was only offered online. More than half of the respondents indicated they felt the course would be easier online prior to taking it, but this declined to 46.5% after taking the course. The FRE majors dropped from 63.4% believing it would be easier online prior to the course to 32.4% believing it had been easier after the course. This may explain some of the reluctance of FRE students to take further

Table 3. Summary of Scaled Items on Student Perception of Online Courses (Cronbach's Alpha Reported in Parentheses for Average Score)

	Average Score	Average Score Food and Resource Economics Majors (n = 84)	Average Score College of Business Majors (n = 143)	Average Score Students with No Online Courses (n = 27)	Average Score Students with 10 or More Online Courses (n = 41)
Flexibility (questions 1, 2, and 3)	13.00 (0.82)	12.72	13.16	12.33	13.60
Course format (questions 4, 5, and 19)	10.51 (0.73)	11.19	10.12	11.04	9.18
Expectations (questions 6, 7, 9, 10, 11, 12 [reverse code], and 15)	20.08 (0.88)	17.44	21.87	19.43	23.69
Workload (questions 17 and 18)	6.34 (0.51)	5.99	6.50	6.54	7.12
Likeability (questions 8 and 16 [reverse code])	6.71 (0.57)	6.00	7.32	5.80	8.10

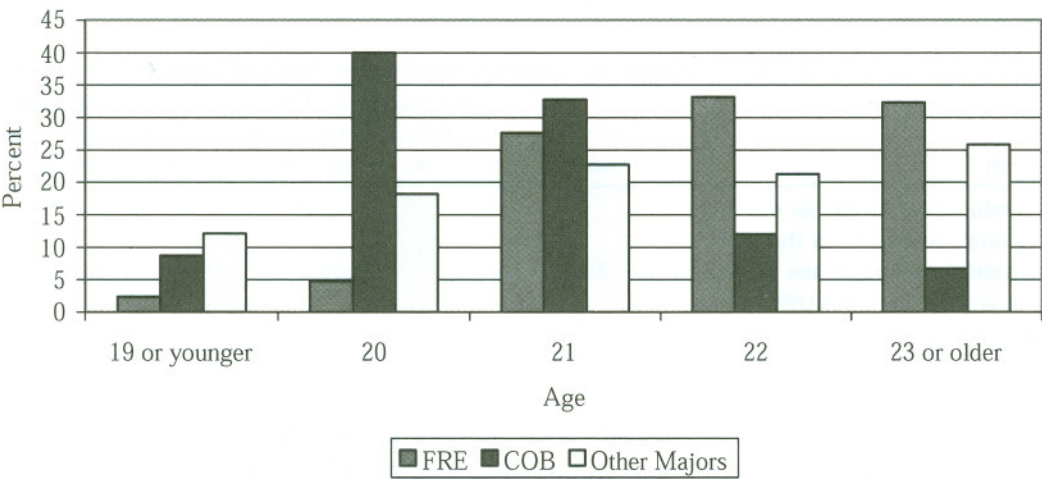


Figure 1. Age by Major

online courses. In contrast, COB majors started with 51.7% believing the course would be easier online, and this increased to 55.5% after taking the course.

Conclusions

Students at the University of Florida have long been exposed to different methods of teaching courses, from television replay more than 20 years ago to online video streamed courses today. However, the FRE department has struggled to find a balance between the perceived loss of communication and interaction in these courses and the flexibility it gives students. A survey conducted in January 2007

of both FRE and other students at the University of Florida found that there is reason for the FRE department to continue to try to identify alternatives to online courses. Students in the FRE department were less likely to accept online courses, with three times as many COB students than FRE students indicating they wanted more online courses (Figure 2). FRE students rated the online courses as flexible, but they had considerably lower expectations about their ability to learn and perform in online courses. FRE students were also the only group to slightly disagree that online courses had a lower workload and likeability (students with no history of online courses slightly

Table 4. Information About Most Recent Course Taken Online (% Indicating “Yes”)

	Average Score	Average Score Food and Resource Economics Majors	Average Score College of Business Majors	Average Score Other Majors
Was the course required?	57.2	36.9	81.6	33.3
Was the course only online?*	42.1	46.6	38.1	43.3
Prior to taking the course, did you think it would be easier online?	57.0	63.4	51.7	58.3
After taking the course, do you think it was easier online?	46.6	32.4	55.5	48.3

* Many online courses have a “live” section during which the lecture is being recorded, so many students commented they did not consider the course to be offered only online.

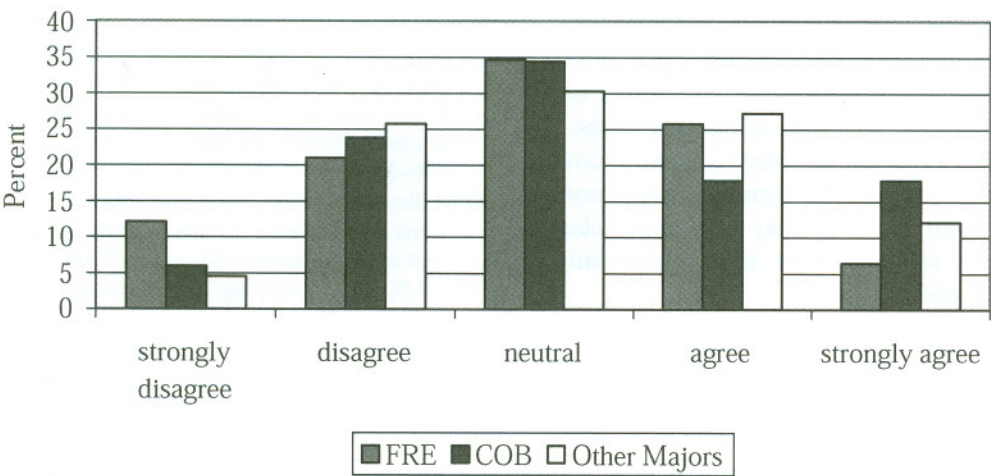


Figure 2. Response by Major to Need for More Online Courses

agreed the workload would be lower in online courses and were neutral on the subject of likeability).

A limitation of this research was that respondents were not asked to identify why they rated online courses the way they did. FRE students tended to be older and have heavier commitments to work. Though one might argue older students are less likely to like online courses, in this case, older meant juniors and seniors versus freshman and sophomores, not an age range likely to explain a difference in preference in technology. In fact, a hypothesis prior to this survey would be that students who work more would be more likely to prefer online courses, given the flexible features of the courses. However, this did not prove true (either in the case of FRE students as a group who worked more, or in independent tests of the data separating students into groups of working and non working.)

Additionally, the FRE department has many students who were formally students in the COB. These students have switched to FRE either because they were not succeeding in the COB or because they did not like the format. Therefore, FRE students who were exposed to online courses may have had a negative exposure to these courses. As a result of student and professor perceptions of online courses, the FRE department has tried to find innovative ways to offer courses

to nontraditional students (who may be better served by the flexibility of online courses) and traditional on-campus students. The nontraditional students have been offered distance courses at statewide RECs. Although a combination of in-class and online instruction is used in these courses, they are small in nature (10–20 students compared with the typical enrollment of 800–1,000 students in online courses in the COB).

Another way the FRE department has tried to combine online course instruction with the traditional classroom setting is a new course offering for the spring 2007 semester. For the first time, a course is being offered in cooperation with Kansas State University’s Department of Agricultural Economics. This course in international agriculture consists of streaming video lectures from instructors around the world. Students watch the video lectures but do so in a classroom setting with an instructor to discuss the lectures after the presentations. Offered as an elective meeting a policy requirement, the course attracted nearly 40 undergraduates the first semester. Students in the course have indicated they like the video lectures but were hesitant to take the course if the in-class portion was not offered.

Finally, in examining the reason for students who do like online courses, one possible explanation could be that as students become accustomed to online courses, they become more adapted to the teaching method. Un-

fortunately, we cannot test causality in our dataset; we can only identify that students who had taken more than 10 courses online were the most accepting of online courses. The question remains: do they take more courses because they like the format, or do they like the format more as they take more classes? Further research into this relationship is recommended.

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