How an Online Course Compares to Its Classroom Counterpart: A Preliminary Investigation

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Abstract

Student satisfaction with, and performance in, an online agri-sales course is compared with that of students enrolled in a simultaneously-taught classroom course. Online and classroom students were equally satisfied with the course and the instructor using most measures, but had different motives for course enrollment. Overall student performance did not differ. However, online students tended to do better on exams and homework assignments while classroom students demonstrated a greater ability to apply course concepts to a practical setting. Results suggest instructors should be well-prepared to handle unique learner situations prior to marketing an online course and provide appropriate incentives such that students are motivated to complete online course components.

Introduction

The land-grant mission requires University faculty and staff work to identify and implement methods to improve the quality and availability of instruction to individuals throughout the state. Offering courses accessible to students around the state is in fact an important cornerstone of the North Dakota University System (Roundtable for the North Dakota Legislative Council, 2000). Fewer than 650,000 people live in the state of North Dakota. The isolation of many inhabitants and the long distances they must travel to a collective point of instruction (e.g., an institute of higher education) result in the unavailability of courses and experts in many subject areas to rural learners. Providing distance-taught courses to the state's residents will provide them access to a broader array of subject matter and experts and assist them in gaining experience with the associated technology.

We developed an existing agricultural sales course for an online environment. Our objectives were to diversify and expand the audience for this course, learn about the audience for distance education courses in agriculture, and provide more flexibility in course scheduling for students on campus. We also anticipate that taking an online course offered by North Dakota State University (NDSU) would encourage some to later attend the resident campus (e.g., see Batte et al., 2003). These goals have not only become increasingly important, but also increasingly achievable with advances in distance education technology. Finally, we were and continue to be intrigued about the relatively slow development of online courses in agricultural economics. The literature in part explains this. Dahlgran (2003) found that most online materials in agricultural economics were traditional static course documents corresponding to class handouts and offered two hypotheses to explain this: the subject matter is not amenable to Internet enhancement and the rewards for developing and offering online courses are not adequate to encourage such. In fact, the time and other resources to develop and offer a course online may be a disincentive. [We especially concur that the latter may be a hindrance for faculty by disclosing that the development of this particular online course was motivated by directive rather than choice.]

Assessing satisfaction and performance of students enrolled in an online agricultural sales course, and comparing such to those of students taking agri-sales in the classroom was the focus of this study. Evaluating the success of this online course in reaching rural residents and students on campus also serves as a feasibility study for the potential viability of online learning as a tool to expand the audience for other courses within the College of Agriculture, Food Systems, and Natural Resources. The results provide information that will help faculty and administrators decide whether the addition of online sections of existing courses is a good idea for NDSU, North Dakota, and states with similar demographic challenges. Finally, feedback of learners will aid in the revision of this course and the development of additional courses.

Methods

Course Design

The literature suggests that the design of online courses is an important contributor to student satisfaction with such (e.g., see Maki and Maki, 2002). A course in agri-sales offered each spring semester during the previous three years was revised for an online environment. PowerPoint® presentations and written materials such as the course

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syllabus, homework assignments, and descriptions of course projects, were revised for the online environment and for an eight-week (versus a traditional sixteen-week) course. Voice-overs were prepared and applied to correspond with each of eighteen PowerPoint® presentations. One presentation covered the introduction and course syllabus, activities, and expectations of the course. The course section on communication, which traditionally covers three 75-minute class periods, was offered to online learners in three presentations of lengths 15, 7, and 17 minutes. One presentation was developed for each of the remaining topics, each traditionally covered in one 75-minute classroom period.

Resulting online presentations ranged from 7.6 to 30.2 minutes. The average presentation length was 18.4 minutes. Presentations required RealTime Player® software for viewing and audio capability. All materials were available to enrolled students using Blackboard® accounts provided by the university. Online students requesting such were also provided with a CD with the PowerPoint® presentations with audio. The counterpart for the online presentations was traditional classroom lectures provided by the instructor, augmented with in-class activities, and presentations by professional salespeople. [Nine class sessions were presented by professionals.]

The design of communication and assessment of student performance components of the online course were approached with naïve ambition. The literature demonstrates that students by and large do what we inspect (i.e., what counts toward course credit) versus what we expect (e.g., for learning sake per se) (e.g., see Maki and Maki, 2000). Careful thought was therefore given to how to reward students so as to emphasize the use of particular learning tools. However, limited experience (i.e., none) and time constraints resulted in a very rudimentary structure for student-instructor communication and online delivery of assignments and performance measures (e.g., exams). The announcement feature in Blackboard® and email messages were frequently used by the instructor and the coordinating support individual to communicate with students. On-campus online students could and did regularly stop by to ask questions of the instructor or to submit and pick up graded assignments and exams. Of the five on-campus students, only one regularly submitted assignments and exams by email; the remainder most often submitted such in-person. Off-campus students used fax and email. Telephone correspondence was noted as an available option but was rarely used by students.

There was no initial face-to-face meeting for students in the online course. This was primarily because student sign-up was staggered throughout the initial two weeks of the semester. Most course orientation was accomplished by the instructor during individual office visits by on-campus students, while the course coordinator handled registration and the orientation for off-campus students.

The online course schedule was prominently presented in the syllabus to cover a seven-week course. The length of the course was chosen to accommodate a one-week delay in beginning the course, as details of the registration process and access to course materials for individual students were reconciled, but to end prior to spring break as initially scheduled.

A final face-to-face meeting of the on-campus online students was necessary for "Ready Set Sell" night. This activity is designed to allow students to demonstrate their mastery of course content by making a formal sales presentation to a professional salesperson. They do so together because it allows students to learn from one another. Off campus students were asked to make their sales presentations to a local sales professional who would evaluate them using a provided rubric.

Course Enrollment

Thirty students completed the traditional classroom section (classroom) and five completed the online section (online). Nine students were originally enrolled in the online section, five by regular registration and four by audit. All off-campus students who enrolled in the course cited information provided from the media as their source of knowledge about the class. The instructor and the course coordinator received a high volume of correspondence from throughout the Midwest, including email and phone calls, from an initial press release. However, ultimately only the four individual off-campus students enrolled. Each was from rural North Dakota. Off-campus students enrolled by audit because none of them was taking the course towards a degree and the audit option was substantially less expensive. Although not required for students auditing the course, the agreed-upon expectation of the instructor and the students was that students would complete course assignments, projects, and exams. However, of those enrolled in the online section by audit, no students completed the course. One individual nearly completed the course. Two began the course but completed less than two-thirds of the requirements and one withdrew because they left the employer who encouraged and paid for their participation.

Course Evaluation

Information was collected from students in an anonymous survey instrument administered at the end of the course. Information collected included student demographics, their motivation for enrollment and satisfaction with the course, and their participation in course activities. Parametric t-tests were used to compare mean numeric responses between the classroom and online students. Students were asked to indicate those factors (noted on the survey instrument) that motivated or otherwise

influenced their decision to enroll in the course and indicate the importance of each. Factors included: the course fit a category of electives for their academic program, they had an interest in the subject, time of course offering or the instructor was important, and that the course had been recommended. In addition, online students were asked to indicate those factors which influenced their selection of the online section and to indicate the importance of each.

Students were asked about their satisfaction with the course, the instructor, and fairness of evaluation. Rubrics to measure student satisfaction were based heavily on existing instruments used by the Department of Agribusiness and Applied Economics at NDSU and the sourcebook Peer Review of Teaching (Van Note Chism, 1999). Open-ended questions requested students' suggestions for improvement in course delivery, how often and when meetings should be held (online students), homework and activities, exams, and communication. Online students were also asked about the effectiveness of the course and their level of comfort and experience with the Internet. They were queried about the level of enjoyment and learning they associate with the online course and whether they would take another course online.

Students were asked about their level of participation in class activities including attending (or listening to online) lectures and reading the textbook. Online students were asked on what they relied to complete their exams, which were open-note, open-book. All students were asked to rate course components by degree of usefulness to their overall level of learning in the course.

Student performance was measured including overall class grade and percentages obtained on the individual components comprising such. Students were also asked to self-assess their understanding of course content and the amount they learned about agri-sales from the class. To allow student responses from the anonymous survey instrument to be compared with student performance, each student was asked to assign themselves a four digit number. The number was written by the student on the first page of the survey and on a separate page which also included their name. Students were informed that their identity would be known only by a member of the support staff (and not by the instructor), and that this information would be used only to allow information about their course performance to be included in the analysis.

Results

Respondent Characteristics

Five of the online students completing the survey were on-campus students and one was the auditing off-campus student who nearly completed the course. The off-campus student was enrolled only in this course, worked a full time job, and was 60 years old. All of the remaining online students were majors in the Department of Agribusiness and Applied Economics as compared to 53 % of classroom students. (One reviewer noted that this could potentially cause a bias in the results obtained.) The remaining classroom students represented majors from a variety of departments within the College of Agriculture, Food Systems, and Natural Resources. All online students were seniors as compared to 73 % of classroom students. [All but one of the remaining classroom students were juniors.] All online students were male as compared to 77 % of classroom students. Average age and grade point average did not differ between on-campus online and classroom students. All online on-campus students were 22 years old, and the age range of classroom students was 20 to 24.

Online students worked more hours per week outside of school (24.7 versus 14, P = .034) and were enrolled in more credits (17 versus 14, P = .043) than their classroom counterparts. Five of the six online students worked at least 20 hours per week as compared to 36 % of classroom students (one online student did not work at all).

Motivation for Course Selection

The course is not required for any academic major or minor. Students considered at least moderately important all factors presented as potentially influencing their decision to enroll. An interest in the subject matter was assigned the highest importance rating. Average level of assigned importance was not significantly different between the sections for any of the factors except time of course offering. That noted by online students was 5.6 (where 1 = not important and 6 = very important) versus 4.2 for classroom students (P = .004). In a question posed only to online students, they identified as very important in influencing their selection of the online section the fit of the course to their schedule, expected time investment, and flexibility. Online students found moderately important that they prefer learning independently but were not motivated by the idea they would learn more online.

Satisfaction with Course

Student satisfaction with the course and the instructor, and the fairness of evaluation were measured and compared between the classroom and online sections. Classroom students were more satisfied with the instruction in the course, although there was no difference in mean perception of the performance of the instructor as a teacher, whether she cared about students or her level of interaction and communication with students. In general, there was no difference in how students in the two sections perceived the course or their change in interest in the subject during the course. This compares to Maki et al. (2000) who reported that students were generally satisfied with an online introductory psychology course but gave it an overall lower ranking than the lecture course.

In response to an open-ended question, students from both the classroom and online sections agreed that the homework assignments were somewhat repetitive. And, although the online students were satisfied with the number of assignments, the classroom students in general thought there were too many. The number of assignments for each was the same. Difference in perception may have come from the number of times an individual student had to submit homework assignments or from differences in how the role of the assignments in the class was perceived. In the classroom section, assignments were generally due individually (e.g., one per day) while, because of the shorter class length and to facilitate submission, online students tended to submit multiple assignments at the same time (e.g., several were due and submitted together each week).

Online students were also asked to indicate their level of agreement with statements about the effectiveness of the online course and their level of comfort and experience with the Internet. The average student was neutral on whether distance learning was an effective format for the class. Students tended to agree that the course made good use of technology and that Blackboard® was an effective tool for accessing PowerPoint® slides, homework assignments, exams, and announcements. However, average level of agreement that Blackboard® was effective for accessing presentations with audio was lower and responses ranged from strongly agree to strongly disagree. Online students again in general agreed that the instructor was considerate of online learners and that there was an appropriate level of studentinstructor interaction, although in reality such was minimal (e.g., in general, online students had few queries and none actively sought additional information about any particular component of the course). This is consistent with Maki et al. (2000) who reported their online students found communication with the instructor to be better than did those in the lecture course. Finally, students reported being comfortable with this online course but did not in general believe they learned better independently than in the classroom.

Activities

Students were asked about their level of participation in class activities. Classroom students attended a far greater percentage of lectures on average (94 %) than students listened completely (20 %) or partially (16 %) to online lectures. There was a wide range in percentage of online lectures listened to at least in part (3 to 83). Only the off-campus online student reported listening to more than half the lectures. Reasons noted by online students for not listening to more online lectures included that it was unnecessary to listen to excel in the course and lack of access to a computer with the appropriate software and/or speakers (noted by three students each). Online students relied more heavily on the PowerPoint® slides (without the audio presentation).

Students were asked to rate course components and activities according to their usefulness to overall learning in the course (Table 1). Classroom students assigned a moderately favorable level of usefulness to the instructor and the speakers, while online students found the instructor less useful and the online lectures for the most part not to be useful. Online students relied more on the textbook, although neither section found it particularly useful. It was surprising that online students did not find the textbook useful because they did not otherwise appear to have much exposure to course content (i.e., they did not listen to the online lectures). When asked why they did not read more of the textbook, the most common answer among both sections was that it was unnecessary to do so (noted by 80 % of online students).

The online students found slightly more useful spending the day with a salesperson and rated their salesperson as more appropriate for the task than classroom students although the differences were not statistically significant. The slight difference may have been because the salesperson provided information to online students their counterparts received from lectures and, particularly, guest speaker presentations. Classroom students found more useful the "Ready Set Sell" activity wherein they were required to demonstrate their abilities in the sales process.

Online students were asked what they relied upon when taking open-note/open-book exams. They were asked to assign a percentage to each available resource. Because students reported that their textbook was not particularly useful, it was surprising that the percentage this resource was relied upon for the average student was 39. Perhaps

Table 1. Perceived Usefulness of Course Components[z]

Component	Percentage		Significance of Difference[y]
	Classroom	Online	
Instructor	4.8	4.2	.209
Speakers	4.8	-----	-----
Online lectures	-----	2.3	-----
PowerPoint® slides	4.6	4.5	.890
Textbook	2.0	3.2	.029
Day with a salesperson	4.7	5.0	.452
Rating of salesperson (1 = not appropriate, 6 = very appropriate)	5.0	5.5	.231
Ready Set Sell homework assignments	4.3	4.0	.465
Ready Set Sell activity	5.0	4.2	.133

z. Likert scale response where 1 = not useful and 6 = very useful, unless otherwise noted.
y. No differences were significant using t-test.

the complaint of one student that the textbook was not useful because it had a poor index helps explain this result (i.e., although they did not read the textbook, they may have used it to look up responses for the exam). Half of the six students indicated they relied on the textbook for 60 to 90 % of their work on the exam. The other three students relied heavily on the PowerPoint® slides, one almost entirely and one entirely. No student relied more than 15 % on the online presentations with audio, and the average for such among all students was only 6 %. This was less than that assigned to the instructor (7 %), and, as the instructor, I know assistance on exams came from my responses to only a very infrequent question.

Course Performance and Perceived Learning

There was no difference in the overall performance of classroom versus online students (Table 2). This is consistent with Duvall and Schwartz (2000) and Batte et al. (2003). However, in the current study we also compared grades on individual activities, which did differ between the groups. Online students received higher grades on individual homework assignments and exams. [Again, exams for online students were open note/open book and taken by students at their own pace.] For both online and classroom students, a good example of a completed version of each homework assignment was provided in the course packet. Online students tended to follow more carefully the example and homework instructions than their counterparts (i.e., they did better on their homework assignments). However, they did not demonstrate as much ability to apply course concepts to a practical setting. They did not perform as well in their selling exercise or do as well on papers evaluating this exercise or their experience with a professional salesperson. There was no difference in students' self-reported understanding of course content between the sections or their level of agreement that the course built an understanding of concepts and principles. And, although classroom students perceived they had learned more in the class, the difference was not statistically significant.

Table 2. Course Performance[z]

Activity	Percentage Classroom	Percentage Online	Significance of Difference[y]
COURSE PERFORMANCE			
Ready Set Sell activity	90.3	84.2	.011
Ready Set Sell paper	88.0	81.6	.077
Ready Set Sell total (including homework)	90.9	97.0	.026
Day with a Salesperson paper	84.4	77.9	.175
Average exam	84.1	90.3	.078
Grade (overall percentage)	89.3	88.8	.830

z. Likert scale response where 1 = not much, very poor, and 6 = a great deal, very good.
y. No differences were significant using t-test.

Discussion

To date, online instruction has largely been adopted on the faith that it is preferred by some learners and maintains the quality of instruction offered in on-campus courses. Research to support or refute these hypotheses and that which seeks to explain in depth what influences learner preference, satisfaction, and success with the relative learning styles is limited. The purpose of this paper was to provide information about an initial offering of an online course and student perceptions of the components of and their performance in this course as compared with their classroom taught counterparts. Primary conclusions from this initial effort focus on marketing of an initial course offering, student motivation, satisfaction, and performance, and course activities.

Marketing an Online Course

The online course received substantial press attention, and there were tens of inquiries about the course from individuals and firms from throughout the Midwest. In spite of such, only nine students enrolled. Each was from in-state. At the time of initial queries from a wider audience as a result of the press release, we were not well-prepared to explain the procedures associated with enrolling non-NDSU students in the course (we did not fully understand them ourselves) nor were we well-prepared to accommodate special situations (e.g., multiple off-site learners from a single firm). The lesson here is to anticipate and be prepared to answer any possible inquires about the course and the course enrollment and participation processes.

Motivation

Further emphasizing the seemingly ineffective marketing to our target audience, including those who might learn better using this alternative instructional method, was that online students appeared to be motivated by the convenience of the course rather than by what they expected to learn. While interest in the subject was the most important factor in selecting the agri-sales course, online students identified the online section as their only option (as opposed to, e.g., that they preferred or expected to learn more online).

Student Satisfaction and Performance

Online students were less satisfied with instruction in, and the quality of, the course, and did not find it as intellectually stimulating. This concurs with the results of Maki and Maki (2003) who interestingly also concluded that web-based students learned more as measured by an increase in performance on difficult content questions. However, the literature in general is not

conclusive. Maki et al. (2000) also emphasize that even measuring performance does not measure "learning" and that students more satisfied with the course are not necessarily those who learned the most. The general satisfaction with the role of the instructor was a bit surprising given the lack of instructor interaction with online students but is again supported by the literature. Clearly the communication expectations of online students are different than those of their classroom counterparts, and apparently less than what we expected. Future assessments will include eliciting the form and extent of communication online students expect and desire.

While students neither agreed nor disagreed that online learning was effective for this course, they expressed a likelihood of taking another online course. Again, their motivation appeared to be to complete the course in a manner that best fit their schedule and the availability of their time. Their responses throughout the survey do not support and in part refute the hypothesis that the learning styles of those enrolling in an online course are more conducive to independent learning. In fact, although the online students performed better on exams, they were not as proficient as their classroom counterparts in applying course material to practical settings or interpreting practical settings using course terminology and concepts. This was particularly true with regards to the section on communication, about which there was no information in the textbook. In other words, the online students could effectively complete the work but they did not seem to understand and be able to apply course concepts as well as their counterparts.

Course Activities

Online lectures clearly did not replace classroom time although it is not clear whether students did not listen to the online lectures because they did not find them useful or visa versa. Development of the online presentations was by far the most involved part of converting the course for an online offering. Clearly this effort was either not warranted or additional efforts need to be applied to either increase the ease by which students can access the lectures or their motivation to do so. The average student in each section did not read much of the textbook. The textbook was chosen to support and enhance classroom and online lectures. If it is to be useful, an alternative method of motivating students to read will need to be identified and adopted. Maki and Maki (2001) conclude that activities for online learners need to be accompanied by contingencies that will motivate students to engage in them. After our experience, we concur.

Finally, online students found their day with a salesperson slightly more useful than classroom students found this activity. This may be because classroom students were exposed to a variety of salespersons as guest speakers and received additional information from the instructor during lectures. It may, therefore, improve the online course to have students spend more time with a larger number of professionals (e.g., by spending more than one day with a salesperson, having them watch videotaped presentations by sales professionals). Another possibility is to have online students exert more effort in reflecting on their time with their salesperson within the context of course content (e.g., write a longer, more reflective paper than their classroom counterparts).

Final Comments from the Instructor

A reviewer noted that this report was incomplete without comment regarding instructor resource investment associated with course development and implementation and instructor satisfaction with the result. Developing the course involved a considerable time investment by the instructor, the vast majority of which consisted of completing essential tasks (e.g., recording audio for PowerPoint® slides) rather than learning about the development process. That is, to re-create the course precisely as it now exists would take nearly as much of the instructor's time as did the initial creation. This is because the instructor was aided in developing the course by a distance learning specialist and was aided in implementing the course by a student administration specialist. Both were already skilled in their respective areas of expertise. Working with the technician to develop the course and an administrator who handled registration and communication tasks and responded to technical questions, allowed the instructor to remain solely a subject-matter expert. The disadvantage associated with relying on these individuals so as to forgo the learning curve is that future offerings of this course, and future development and offerings of other online courses, will again rely on their expertise. Much of the literature argues that distance education is low cost, but some (e.g., Wilson, 1998) alternatively conclude that it takes more money to develop and to operate distance education courses. For this course, we made a substantial investment in developing the course but the resources required to implement it simultaneously with the lecture section were not substantial. They were in fact much less than had been expected. Online students in general required less time per student than those in the classroom section.

Finally, although a fair question, it is too early in the process of learning how to successfully offer agri-sales online to determine whether we are satisfied with our initial results. The course was not successful in that students self-reportedly did not engage themselves in discovering much beyond that necessary to complete the assignments and exams. It is not clear whether this is a reflection of the course being online or that we simply need to better motivate them to become more exposed to available resources. In this regard, we are not satisfied. Alternatively, students' expectations appear to have

been met. In this regard, some degree of satisfaction arises from the satisfaction of our student learners.

Summary

An existing agricultural sales class was revised for an online environment. Motivations, satisfaction, and performance of online learners was assessed and compared to that of students concurrently taking the course in the classroom. Classroom students were more satisfied with the instruction in the course, although there was no difference otherwise in perception of the instructor or her performance or the course. Although online students in general did not listen to audio-enhanced PowerPoint® lectures, there was no resulting difference from their classroom counterparts in overall performance. However, grades on individual activities did differ between the groups. Online students did better on homework assignments and exams but were less able to apply course concepts to a practical setting. Results do not support and in part refute the hypothesis that the learning styles of those enrolling in an online course are more conducive to independent learning.

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