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Investigating Students' Satisfaction with eLearning Courses: The Effect of Learning Environment and Social Presence

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Student demand and budget shortages have influenced the need for land–grant institutions to offer online courses. Research has identified that online courses broaden the reach of land–grant institutions to students who may not have access to campus. Literature indicated student satisfaction in online courses should be routinely assessed in order to potentially improve online course delivery. This study was framed with the motivational needs theory and social presence theory. The purpose of this study was to measure students' perceptions of the learning environment, social presence, and satisfaction in online courses. An electronic survey was implemented using the Tailored Design Method to collect the data. Learning environment was correlated with social presence, and learning environment and social presence were significant effects on students' satisfaction $p < .05$. Learning environment and social presence accounted for 26% of the variance in students' satisfaction with eLearning courses. Including social media tools in eLearning courses, may assist students enhance their social presence in the respective course. Designing types of assignments that involve collaboration among students, and instituting authentic learning experiences that align with student interests, will improve students' social presence, the learning environment and student satisfaction in eLearning courses.

Keywords: eLearning courses, student satisfaction, social presence, learning environment

Introduction

With declining budgets for higher education, many institutions are challenged to broaden access for educational opportunities (Schott, Chernish, Dooley, & Lindner, 2003). The delivery of distance courses has exploded over the past 10 years and produced an increasing competition among universities to expand the marketplace (Ruhe & Zumbo, 2009). More than two–thirds of colleges and universities provide a diverse group of online courses and curricula (Osika, Johnson, & Buteau, 2009).

The needs of students and institutions that distance courses address has been identified in the literature. According to Beyth–Marom, Chajut, Roccas, and Sagiv (2003), learning is a perpetual process, and students are demanding flexible learning environments that include instruction anytime, anyplace, at their convenience. Burgess and Russell (2003) indicated very little research has been conducted on the effectiveness of distance–learning methods despite their extensive use. More research is needed to measure the effectiveness of distance–learning programs and to enhance student satisfaction (Halter, Kleiner, & Hess, 2006; Salas et al., 2002).

Roberts and Dyer (2005) indicated data suggests distance–learning courses are omnipresent in some agricultural education departments. Yet, in a study regarding self–perceived knowledge and relevance of teaching competencies, Stedman, Roberts, Harder, Myers, and Thoron (2011) found College of Agricultural and Life Sciences faculty were least knowledgeable about the fundamentals of distance education. The demand for agricultural

faculty to provide courses online underscores the need to evaluate student satisfaction in distance–learning courses (Murphy, 2000).

Online courses are an avenue to broaden the reach of institutions to non–traditional students, and students who cannot get to campus. Online learning programs offer accessible education for a global community of leaners with shared interests (McDonald, 2002). Regardless of the advantages of online learning opportunities for students and institutions, the need to evaluate the delivery still exists. The United States Department of Education's Office of Innovation and Improvement (2008) suggested that online learning programs should be held accountable for results in order to assist students, teachers, and administrators in determining program achievement. Dooley, Lindner, and Dooley (2005) indicated distance–learning programs should be routinely evaluated due to the diversity of courses and degree programs. Instructors of online courses should implement evaluation approaches to ensure students are able to participate in collaborative learning environments (Lockee, Moore, & Burton, 2002; Sims, Dobbs, & Hand, 2002). The satisfaction of distance students in Colleges of Agriculture and Life Sciences should be routinely examined (Kelsey, Lindner, & Dooley, 2002; Murphrey & Dooley, 2000; Roberts, Irani, Lundy, & Telg, 2004).

Hermans, Haytko, and Mott–Stenerson (2009) reported measuring student satisfaction in eLearning courses is a significant aspect of successfully promoting higher education. Buzzetto–More (2008) found students were most satisfied with the ability to check their grades online that eLearning courses provided. Students' satisfaction is an indicator of retention and dropout rates in eLearning courses (Levy, 2007). Roach and Lemasters (2006) indicated studies are needed to ensure eLearning courses are meeting students' satisfaction and needs. Smart and Cappel (2006) recommended that researchers identify variables that affect student satisfaction in eLearning courses.

Priority 4 of the *National Research Agenda* for the American Association for Agricultural Education (Doerfert, 2011) stated research is needed to "deepen our understanding of effective teaching and learning processes in agricultural education environments" (p. 9). While agricultural education literature includes numerous studies related to distance education, agricultural education academics have conducted little research concerning graduate students' satisfaction with eLearning courses. This study sought to address recommendations from the *National Research Agenda* and literature to develop a comprehension of variables that may explain effective teaching and learning techniques in agricultural education eLearning graduate courses.

Theoretical Framework

The theoretical framework for this study encompassed motivation needs theory and social presence theory. McClelland's (1987) motivational needs theory identified needs that are created by one's experiences throughout life. These needs typically fall into three main areas including, achievement, power, and affiliation. The needs shape an individual's behaviors and motives (McClelland, 1987). For example, an individual seeking achievement will chart a path to fulfill this need. Someone with a need for power will work to gain power. In satisfying the need for affiliation, an individual will seek to create satisfactory relationships between the individual and others.

When striving to meet the need for achievement, individuals seek success in their endeavors. The individual needs to be sufficiently challenged but at the same time does not seek tasks that could enhance the chance for failure. An individual with a high need for achievement will seek progressive improvement in a particular task. This individual does not perform tasks simply to perform tasks and will be mobile to find tasks that meet the need (McClelland, 1987).

An individual seeking to fulfill a need for power wants to direct others to accomplish goals. These goals may be those of the individual or organization associated with the individual. An individual with a high need for power will seek to exert influence and search for positions that will allow it to be obtained. This individual will may look to project the appearance of power, as well as pursuing power as a goal (McClelland, 1987).

The need for affiliation is met when an individual feels acceptance and establishes mutually beneficial relationships with others. These individuals will seek accord when

working with other individuals and within groups. People have a need to be with other people and in an individual relationship with a high need for affiliation, this desire is even stronger. Mutual reciprocity is highly sought after in relationships by an individual with this need (McClelland, 1987).

One of the first theories related to communications media was the social presence theory. Short, Williams, and Christie (1976) identified social presence as the level of salience of one person's communication with other individuals and consequential salience of the interpersonal relationships. Tu and McIssac (2002) defined social presence as the extent of the attitude of community learners experience in an online learning environment. The difference in social presence from instructor to student is a factor that shapes the level of interaction between the two (Walther, 1992).

Tu and McIssac (2002) found the three dimensions of social presence in distance–learning environments are interactivity, social context, and online communication. Interactivity includes distance learners' communication styles and engaged activities in the course (Tu & McIssac, 2002). Tu (2001) indicated social context encompasses privacy, task orientation, social relationships, and social processes. Interactive communication tools such as discussion boards and are examples of online communication tools (Tu, 2001). Online communication can improve social presence through developing a sense of identity and intimacy among participants (Walther, 1992). Research suggests online instructors work to improve social presence in courses. Tu and McIssac found that social presence has a positive relationship on learning outcomes in online instruction.

The absence of facial expressions, non–verbal communication, and physical presence in online courses diminishes students' social presence (Tu & McIssac, 2002). Tu (2001) found that clear objectives and guidelines for interaction signify educator friendliness and may offset the lack of students' non–verbal communications. Tu and McIssac said educators teaching online courses should facilitate student communication in order to deal with the prospective lack of social presence in the online learning environment.

Oliver (1999) defined student satisfaction as the total individual subjective evaluation and experience of a service, and the gap between what was expected and what was received from the service provider. The complexity of a student's learning experience dictates the need for researchers to develop an understanding of the factors that affect student satisfaction in courses (Jurkowitsch, Vignali, & Kaufman, 2006). Wiers–Jenssen, Stensaker, and Grogaard (2002) said that education is not solely about acquiring knowledge and skills but also about individual advancement through personal growth and social development. Research is needed to identify factors that influence student satisfaction in order for institutions to learn how to better serve their clientele (Appleton–Knapp & Krentler, 2006). Kara and DeShields (2004) indicated that evaluating the expectations and needs of students will improve student satisfaction.

Purpose and Objectives

The purpose of this study was to assess graduate students' perceptions of the learning environment, social presence, and satisfaction with agricultural education eLearning courses at Texas A&M University. More specifically, this study sought to:

1. Examine the relationship between students' learning environment and social presence; and
2. Understand the effects of demographic characteristics, learning environment, and social presence on student satisfaction with eLearning courses.

Methodology

Quantitative research served as the methodology in assisting the researchers in ascertaining the solution to the research questions. Fraenkel, Wallen, and Hyun (2012) indicated that quantitative research examines cause and effect, is developed prior to the study, utilizes deductive reasoning to examine theories, employs standardized measurements, and analyzes numerical data. The researchers utilized an *ex post facto* design to investigate cause and effect relationships. *Ex post facto* designs compare groups with contrasting

independent variables to determine their effect on the dependent variable (Fraenkel, Wallen, & Hyun, 2012). The independent variables in this study were gender, race, age, residence, social presence, and learning environment. Graduate student satisfaction was the dependent variable in this study.

The population in this study consisted of graduate students enrolled in agricultural education eLearning courses at Texas A&M University. This was a census study because the entire population (N = 164) was surveyed. Incorporating a census allowed the researchers to remove possible errors associated with sampling and to generalize the findings to the target population (Fraenkel et al., 2012).

The researchers utilized three existing surveys and demographic questions to build a 48– item instrument to address the objectives of this study. The Distance Education Learning Environment Survey, the Social Presence Scale, and a Satisfaction Scale for students in distance courses were used to ascertain graduate student's satisfaction in distance courses. Walker and Fraser (2005) developed the Distance Education Learning Environment Survey, and reported a reliability coefficient of .86. Short et al. (1976) developed the Social Presence Scale and Satisfaction Scale. The reported Cronbach's Alpha of the Social Presence Scale was .88, and the Cronbach's Alpha of the Satisfaction Scale was .87 (Cobb, 2009). Content and face validity of the combined instrument were addressed by a team of distance–learning researchers at Texas A&M University. The reliability of the combined instrument in this study was calculated *ex post facto* α = .88 resulting in a high degree of internal consistency (Cronbach, 1951).

Previous researchers utilized the Distance Education Learning Environment Survey to assess graduate students' perceptions of the learning environment in distance courses (Cuthrell & Lyon, 2007; Walker & Fraser, 2005). The constructs in the Distance Education Learning Environment Survey were instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy (Fraser, 2002). The Distance Education Learning Environment Survey contained thirty–four items for participants to evaluate the distance–learning environment. The anchors in the instrument were: 5 = *always*, 4 = *often*, 3 = *sometimes*, 2 = *seldom*, 1 = *never*. The internal consistency of the Distance Education Learning Environment Survey was calculated *ex post facto* α = .84 for this study.

The Social Presence Scale contained 14 items for participants to measure the instructor's immediacy. The anchors in the Social Presence Scale were: 5 = *strongly agree*, 4 = *agree*, 3 = *uncertain*, 2 = *disagree*, and 1 = *strongly disagree*. Anchors for the Satisfaction Scale were: 5 = *strongly agree*, 4 = *agree*, 3 = *neither agree nor disagree*, 2 = *disagree*, 1 = *strongly disagree*. The Social Presence Scale and the Satisfaction Scale have been used in studies with undergraduate and graduate students enrolled in online courses (Cobb, 2009; Richardson & Swan, 2003). The internal consistency of the Social Presence Scale was calculated *ex post facto* α = .94, and the internal consistency of the satisfaction scale was α =.89.

Survey research utilizes questionnaires to collect data from the population. Fraenkel et al. (2012) suggested survey research allows researchers to summarize the findings of characteristics with different groups in order to evaluate respondents' beliefs and attitudes. A web–based questionnaire was administered utilizing Qualtrics. The researchers used the Tailored Design Method for developing and distributing an electronic survey (Dillman, Smyth, & Christian, 2009). Participants received an email notification of the study. Two days later participants received an email that included a link to the questionnaire in Qualtrics. Non–respondents received two separate email notices, each one week apart. One hundred sixty–four participants (N = 164) received the questionnaire, and 118 participants responded resulting in a 71.9% response rate (n = 118) in the study. Nine questionnaires were eliminated from the study due to incomplete information reducing the number of usable responses to (n =109). Early and late respondents were examined to assess non–response error and no significant differences existed between the two groups. Therefore, the results can be generalized to the target population (Lindner, Murphy, & Briers, 2001).

Descriptive statistics were utilized to analyze the level of students' learning environment, social presence, and satisfaction in eLearning courses. The first objective was

analyzed through the implementation of correlation coefficients. Agresti and Finlay (2009) indicated correlation coefficients are calculated to represent the correlation of two variables. Correlations signify whether the association between variables is positive or negative. Pearson *r* reveals the strength and direction of the association between the two variables (Agresti & Finlay, 2009).

According to Davis (1971), there are principles for expressing measures of the degree of association among variables: (1) When X and Y are independent they should equal .00, (2) A maximum of +1.00 exists for the strongest possible positive association, (3) X and Y should have a maximum of -1.00 for the strongest possible negative correlation, and (4) an intrinsic meaning should be present in the values. A value of r = .70 or higher indicates a very strong association, .50 to .69 signifies a substantial positive association, .30 to .49 is a moderate positive association, .10 to .29 suggests a low positive association, .01 to .09 implies a negligible positive association, .00 means no association exists, -.01 to -.09 indicates a negligible negative association, -.10 to -.29 denotes a low negative association, -.30 to -.49 represents a moderate negative association, -.50 to -.69 suggests a substantial negative association, and -.70 or lower indicates a very strong negative association (Davis, 1971).

Multiple regression analysis was used to address the second objective. Fraenkel et al. (2012) indicated multiple regression assists researchers in determining a correlation among a criterion variable and two or more independent variables. Cohen, Cohen, West, and Aiken (2002) reported that multiple regression is a tool for researchers to examine the relation of multiple independent variables to the dependent variable. Multiple regression analysis has the abilities to allow for statistical hypothesis testing, estimation, confidence interval construction, and power analysis (Cohen et al., 2002). Mendenhall, Beaver, and Beaver (2008) indicated multiple regression analysis may be utilized to ascertain the model's goodness of fit, the strength of the relationship between y and other predictor variables, and the quality of the estimates and predictions. A multiple regression model coefficient is illustrated as: $Y = a + b_1X_1 + b_2X_2 + b_3X_3$. By using more than one independent variable, researchers are able to give richer explanations for variation with the dependent variable and increase the accuracy of their predictions (Mendenhall et al., 2008).

Most of the participants were female (n = 73, 66.97%), white (n = 97, 88.99%), between 25 to 34 years old (n = 69, 63.30%), and lived in the Bryan/College Station area (n = 61, 55.96%). Because the study was conducted as an evaluation of student satisfaction at a single institution's graduate eLearning program, findings were limited in scope and therefore not generalizable. However, the results do explain the satisfaction of graduate students in eLearning courses.

Findings

Descriptive statistics were utilized to measure respondents' scores among learning environment, social presence, and student satisfaction before the research objectives of this study were implemented. Learning environment was based on six constructs: instructor support, student interaction and collaboration, student autonomy, authentic learning, personal relevance, and active learning. Instructor support (M = 4.28, SD = .63), student interaction and collaboration (M = 4.16, SD = .97), and student autonomy (M = 4.01, SD = .79) received the highest scores for learning environment. Active learning (M = 2.92, SD = .53) earned the lowest score from participants (see Table 1).

Table 1
Descriptive Statistics for Students' Learning Environment in eLearning Courses (N = 109)

Constructs	*N*	*M*	*SD*
Instructor Support	109	4.28	.63
Student Interaction and Collaboration	109	4.16	.97
Student Autonomy	109	4.01	.79
Authentic Learning	109	3.86	.90
Personal Relevance	109	3.43	.63
Active Learning	109	2.92	.53

Scale: 5 = *always*, 4 = *often*, 3 = *sometimes*, 2 = *seldom*, 1 = *never*.

Social presence was one construct composed of fourteen items (see Table 2). The items that received the highest scores were "instructor facilitated discussion in the course" (*M* = 4.44, *SD* = .75), "I felt comfortable interacting with other participants in the online course" (*M* = 4.37, *SD* = .82), "I felt comfortable participating in the course discussions" (*M* = 4.23, *SD* = .79), "I felt comfortable conversing through this text–based medium" (*M* = 4.19, *SD* = .92), "computer–mediated communication is an excellent medium for social interaction" (*M* = 4.14, *SD* = .95), and "the instructor created a feeling of an online community" (*M* = 4.04, *SD* = .76) earned the highest score of the items in the Social Presence Scale. The item that received the lowest score was "messages in the online course were impersonal" (*M* = 2.51, *SD* = .91).

Table 2
Descriptive Statistics for Students' Social Presence in eLearning Courses (N = 109)

Items	*N*	*M*	*SD*
The instructor facilitated discussions in the course.	109	4.44	.75
I felt comfortable interacting with other participants in the online course.	109	4.37	.82
I felt comfortable participating in the course discussions.	109	4.23	.79
I felt comfortable conversing through this text–based medium.	109	4.19	.92
Computer–mediated communication is an excellent medium for social interaction.	109	4.14	.95
The instructor created a feeling of an online community.	109	4.04	.88
I was able to form distinct individual impressions of some course participants even though we communicated only via a text–based medium.	109	3.96	.76
The introductions enabled me to form a sense of online community.	109	3.91	.62
Discussions using the medium of computer–mediated communication tend to be more impersonal than face–to–face discussions.	109	3.89	.73
I felt my point of view was acknowledged by other participants in the course	109	3.68	.74
I felt comfortable introducing myself in the online course.	109	3.63	.70
Computer–mediated communication is more impersonal than video teleconference discussions.	109	3.41	.59
Computer–mediated communication is more impersonal than audio teleconference discussions.	109	3.36	.67
Messages in the online course were impersonal.	109	2.51	.91

Scale: 5 = *strongly agree*, 4 = *agree*, 3 = *uncertain*, 2 = *disagree*, and 1 = *strongly disagree*.

Students' satisfaction in eLearning courses as reported in Table 3. The items that earned the highest scores were "I am satisfied with this program" (M = 4.54, SD = .58), "distance education is worth my time" (M = 4.23, SD = .62), and "I enjoy studying by distance" (M = 4.09, SD = .66). The item that earned the lowest score was "I prefer distance education" (M = 3.18, SD = .79).

Table 3
Descriptive Statistics for Students' Satisfaction in eLearning Courses (N = 109)

Items	*N*	*M*	*SD*
I am satisfied with this program.	109	4.54	.58
Distance education is worth my time.	109	4.23	.62
I enjoy studying by distance.	109	4.09	.66
Distance education is stimulating.	109	3.67	.73
Distance education is exciting.	109	3.56	.84
I look forward to learning by distance.	109	3.42	.75
I prefer distance education.	109	3.18	.79

Scale: 5 = *strongly agree*, 4 = *agree*, 3 = *neither agree or disagree*, 2 = *disagree*, 1 = *strongly disagree*

Examining the relationship between students' learning environment and social presence was the first objective of the study. The constructs with the highest level of correlation to social presence score are "student interaction and collaboration" (r = .68), "student autonomy" (r = .56) and "instructor support" (r = .52) (see Table 4). Each of the three highest correlations has a magnitude of Substantial ($.50 \geq r \geq .69$). The constructs with the lowest correlation to social presence score are "authentic learning" (r = .28) and "active learning" (r = .23). Although the lowest correlated constructs have a significance level < .05, the magnitude of the correlation is Low ($.10 \geq r \geq .29$).

Table 4
The Relationship between Learning Environment and Social Presence (N = 109)

	Social Presence		
Learning Environment Constructs	*N*	*r*	*p*
Student Interaction and Collaboration	109	.68	.00*
Student Autonomy	109	.56	.00*
Instructor Support	109	.52	.00*
Personal Relevance	109	.47	.02*
Authentic Learning	109	.28	.04*
Active Learning	109	.23	.04*

Note. Magnitude: $.01 \geq r \geq .09$ = Negligible, $.10 \geq r \geq .29$ = Low, $.30 \geq r \geq .49$ = Moderate, $.50 \geq r \geq .69$ = Substantial, $r \geq .70$ = Very Strong.
*$p < .05$.

The second objective of the study was to understand the effects of demographic characteristics, learning environment, and social presence on student satisfaction with eLearning courses. Multiple regression was used to assess the net effect of each measure of learning environment and social presence on student satisfaction. The multiple regression model was significant and indicated a good fit, with F = 4.57, $p < .05$. Participant demographics were not significant on students' satisfaction in eLearning courses.

Social presence and the learning environment constructs, student interaction and collaboration, instructor support, student autonomy, and authentic learning were significant on student satisfaction with eLearning courses $p < .05$ (see Table 5). As

social presence increased one unit, student satisfaction increased .22. As student interaction and collaboration increased one unit, student satisfaction increased .16. As instructor support increased one unit, student satisfaction increased .12. As student autonomy increased one unit, student satisfaction increased .09. As authentic learning increased one unit, student satisfaction increased .07. The multiple regression model for this study was illustrated as: student satisfaction = .18 + .22 social presence + .16 student interaction and collaboration + .12 instructor support + .09 student autonomy + .07 authentic learning. Overall, the model accounted for a (26%) variance in graduate students' satisfaction in eLearning courses.

Table 5
Summary of Multiple Regression Analysis of Social Presence and Learning Environment Constructs on Students' Satisfaction with eLearning courses (N = 109)

	B	*SE B*	*p*
Intercept	.18	.24	
Social Presence	.22	.01	.00
Student Interaction and Collaboration	.16	.00	.00
Student Autonomy	.09	.02	.00
Authentic Learning	.07	.04	.01
Instructor Support	.12	.05	.03

Note. $R^2 = .31$; *Adjusted* $R^2 = .26$.

Conclusions

The study was implemented as an assessment of Texas A&M University's graduate student satisfaction in agricultural education eLearning courses, and therefore, results from this study are not generalizable to all graduate students in agricultural education departments nationwide. However, the findings do provide factors that affect the variance of graduate student satisfaction in eLearning courses. Based on the results of this study, it can be seen that the primary deficiencies in delivering eLearning education at the graduate level fall within the interpersonal and social contexts. Those students who reported a high level of satisfaction with the coursework generally reported that eLearning education was not their preferred method of delivery. According to the data, there is strong evidence suggesting that this is due to the impersonal nature of the curriculum. In contrast to the reported deficiencies in active learning and personal relevance, the high degree of autonomy and interaction among students was considered to be a strong positive component of eLearning by respondents. Autonomy and interaction among students can be capitalized upon by the instructor to provide a richer and more robust educational experience.

Implications

Findings from this study broaden the knowledge base of McClelland's (1987) motivational needs theory and Tu and McIssac's (2002) social presence theory. Learning environment constructs related to the motivational needs theory and the social presence construct were significantly correlated $p < .05$. The results of this study indicated the combined theories of McClelland's motivational needs and Tu and McIssac's (2002) social presence accounted for the variance in students' satisfaction in eLearning courses.

Results from the study built upon the three needs identified by McClelland (1987), achievement, affiliation, and power. Achievement was met through the need of instructor support. Students' with a need for achievement will strive for individual success and eLearning instructors should assist students in attaining that success. A student will strive for progressive improvement in a particular task in order to meet their need for achievement (McClelland, 1987). According to McClelland, eLearning instructors should routinely mentor, guide, and challenge students' with responsibilities that will improve their prospects for academic success.

The second motivational need McClelland (1987) identified was power. The need for

power addressed student autonomy in eLearning courses in this study. The scores for student autonomy indicated students need to maintain a certain amount of power in an eLearning course. Students with a need for power may search for situations in an eLearning course that enable the student to assert specific objectives. The objectives may have been defined by the student or an organization the student represents (McClelland, 1987).

Affiliation paralleled students' interaction and collaboration with one another and the instructor of the eLearning course. Students seeking affiliation will develop relationships among other students and the instructor (McClelland, 1987). The need for affiliation is met when an individual feels accepted and establishes a mutual positive relationship with peers and a mentor. Affiliated students will accept compromises or find common ground when working with peers on course projects and assignments (McClelland, 1987).

The results from this study were congruent with Tu and McIssac's (2002) social presence theory. Social presence had the largest effect on students' satisfaction with eLearning courses. Tu and McIssac said interactivity, social context and online communication were a part of social presence. Students preferred to participate in active learning opportunities versus lecture based instruction with online formats (Tu & McIssac, 2002). The results from this study aligned with Walther's (1992) research in that students' preferred establishing a sense of identity. The interactivity dimension revealed students' preferred interaction and collaboration and instructor support (Tu & McIssac, 2002). Results indicated students preferred to develop relationships with other students and maintain their individual identity in online courses simultaneously.

Recommendations

Results from this study expand our understanding of effective teaching and learning processes in agricultural education eLearning environments (Doerfert, 2011). The recommendations for practice are for educators of eLearning courses to enhance students' social presence and the learning environment per the respective course. With the current frontiers of technology allowing for the implementation of visual and text based delivery, it is likely that an evolution of instruction techniques to meet these needs is necessary to overcome the student apprehension. This is further reinforced by the data in that computer mediated communication received lower ratings than interpersonal interaction. Online instructors should provide explicit objectives and detailed approaches for student to student and student to instructor interaction (Tu, 2001). Many of these problems can be resolved through increased collaboration and interaction among students. By adapting the instructional methods to incorporate visual and interpersonal communication via webinar's or other interactive media, as well as increasing the degree of interaction among the students, these difficulties could be mitigated and thus improve upon the overall eLearning education experience.

As each eLearning student is faced with different needs and constraints, it is necessary to view each interactive environment individually, especially given the lack of social interaction. The ability of students to meld ideas into cohesive concepts can be leveraged by a higher degree of directed learning from the instructor and a greater collaboration among students. By building upon these key concepts, and incorporating the new technological methods of delivery, the curriculum can be revised to encompass most aspects of the traditional classroom environment to deliver a high quality, satisfactory educational experience for eLearning students. Including Facebook, Twitter, or other forms of social media in eLearning courses, may assist students in increasing their social presence in the respective course. When online instructors enhance students' social presence in courses, a positive relationship among learning outcomes are produced (Tu & McIssac, 2002).

Developing and supporting faculty is crucial to the success of institutions as learning organizations. One approach to improve faculty development may be to include professional development sessions at a faculty lounge or implement "brown–bag" lunch seminars to routinely exchange ideas and share experiences. Ideas, experiences, and best pedagogical teaching practices for the enhancement of eLearning courses would be beneficial for faculty development and student learning experiences and satisfaction in eLearning

courses as a whole. Instructors should reconsider and restructure course delivery to improve social presence and the learning environment in order to enhance eLearning student's satisfaction. Designing types of assignments that involve collaboration among students, and instituting authentic learning experiences that align with graduate student interests, will improve social presence, the learning environment and student satisfaction in the eLearning course.

Levy (2007) said students' satisfaction is an indicator of retention and dropout rates in eLearning courses. Future research is needed regarding the tools that may increase students' social presence in eLearning courses. Researchers should examine the use of social media tools as potential avenues to improve students' social presence in eLearning courses. Other institutions offering agricultural education eLearning courses should continue to examine and assess student satisfaction. Schott et al. (2003) indicated higher education budget deficiencies have challenged institutions to increase student availability regarding coursework. Agricultural education researchers should implement longitudinal studies to assist eLearning instructors, within the profession, address students' satisfaction and needs (Roach & Lemasters, 2006). Agricultural education eLearning instructors should evaluate courses to ensure that students are able to participate in collaborative learning environments (Sims et al., 2002), and share the results with the broader academic community in order to improve student learning and advance the profession (Smart & Cappel, 2006).

References

Agresti, A., & Finlay, B. (2009). *Statistical methods for the social sciences* (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Appleton–Knapp, S. L., & Krentler, K. A. (2006). Measuring student expectations and their effects on satisfaction: The importance of managing student expectations. *Journal of Marketing Education, 28*(3), 254–264. doi: 10.1177/0273475306293359

Beyth–Marom, R., Chajut, E., Roccas, S., & Sagiv, L. (2003). Internet–assisted versus traditional distance learning environments: Factors affecting students' preferences. *Computer and Education, 41*, 65–76. doi: 10.1016/S0360–1315(03)00026–5

Black, T. R. (2001). *Understanding social science research* (2nd ed.). Thousand Oaks, CA: SAGE Publications.

Burgess, J. R. D., & Russell, J. E. A. (2003). The effectiveness of distance learning initiatives in organizations. *Journal of Vocational Behavior, 63*(2), 289–303.

Buzzetto–More, N. A. (2008). Student perceptions of various e–Learning components. *Interdisciplinary Journal of e–Learning and Learning Objects, 4*, 113–134.

Cobb, S. C. (2009). Social presence and online learning: A current view from a research perspective. *Journal of Interactive Online Learning, 8*(3), 241–254.

Cohen, J., Cohen, P., West, S. G., & Aiken, L.S. (2002). *Analysis of behavioral sciences* (3rd ed.). New York, NY: Routledge Academic.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297–334. doi: 10.1007/BF02310555

Cuthrell, K., & Lyon, A. (2007). Instructional strategies: What do online students prefer? *Journal of Online Learning and Teaching, 3*(4). Retrieved from http://jolt.merlot.org/vol3no4/cuthrell.htm

Davis, J. (1971). *Elementary survey analysis*. Englewood Cliffs, NJ: Prentice Hall.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail and mixed–mode surveys: The Tailored Design Method* (3rd ed.). New York, NY: John Wiley & Sons.

Doerfert, D. L. (Ed.) (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011–2015*. Lubbock, TX: Texas Tech University, Department of Agricultural Education and Communications.

Dooley, K. E., Lindner, J. R., & Dooley, L. M. (2005). *Advanced methods in distance education: Applications and practices for educators, administrators and learners*. Hershey, PA: Information Science Publishing.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York, NY: McGraw–Hill.

Fraser, B. J. (2002). Learning environments research: Yesterday, today and tomorrow. In S. C. Goh & M. S. Khine (Eds.), *Studies in educational learning environments: An international perspectiv*e (pp. 1–25). River Edge, NJ: World Scientific.

Halter, M. J., Kleiner, C., & Hess, R. (2006). The experience of nursing students in an online doctoral program in nursing: A phenomenological study. *International Journal of Nursing Studies, 43*, 99–105. doi: 10.1016/j.ijnurstu.2005.03.001

Hermans, C. M., Haytko, D. L., & Mott–Stenerson, B. (2009). Student satisfaction in Web enhanced learning environments. *Journal of Instructional Pedagogies, 1*, 1–19. Retrieved from http://aabri.com/manuscripts/09147.pdf

Jurkowitsch, S., Vignali, C., & Kaufman, H. (2006). A student satisfaction model for Austrian higher education providers considering aspects of marketing communications. *Innovative Marketing, 2*(3), 9–23.

Kara, A., & DeShields, O. (2004). Business student satisfaction, intentions, and retention in higher education: An empirical investigation. *Marketing Educator Quarterly, 3*(1), 1–25.

Kelsey, K. D., Lindner, J. R., & Dooley, K. E. (2002). Agricultural education at a distance: Let's hear from the students. *Journal of Agricultural Education, 43*(4), 24–32. doi: 10.5032/jae.2002.04024

Levy, Y. (2007). Comparing dropouts and persistence in e–learning courses. *Computers and Education, 48*, 185–204. doi:10.1016/j.compedu.2004.12.004

Lindner, J. L., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education, 42*(4), 43–53. doi: 10.5032/jae.2001.04043

Lockee, B., Moore, M., & Burton, J. (2002). Measuring success: Evaluation strategies for distance education. *Educause Quarterly, 1*, 20–26.

McClelland, D. (1987). *Human motivation*. Cambridge, NY: Cambridge University Press.

McDonald, J. M. (2002). Is "as good as face–to–face" as good as it gets? *Special Issue on Nursing, 6*(2), 10–23.

Mendenhall, W., Beaver, R. J., & Beaver, B. M. (2008). *Introduction to Probability and Statistics* (13th ed.) Pacific Grove, CA: Duxbury Press.

Murphrey, T. P., & Dooley, K. E. (2000). Perceived strengths, weaknesses, opportunities, and threats impacting the diffusion of distance education technologies in a College of Agriculture and Life Sciences. *Journal of Agricultural Education, 41*(4), 39–50. doi: 10.5032/jae.2000.04039

Murphy, T. H. (2000). An evaluation of a distance education course design for general soils. *Journal of Agricultural Education, 41*(3), 103–113. doi: 10.5023/jae.2000.03103

Oliver, R. L. (1999). "Whence consumer loyalty?" *Journal of Marketing, 63*, 33–44.

Osika, E. R., Johnson, R. Y., & Buteau, R. (2009). Factors influencing faculty use of technology in online instruction: A case study. *Online Journal of Distance Learning Administration, 12*(1). Retrieved from, http://www.westga.edu/~distance/ojdla/spring121/osika121.html

Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchorous Learning Networks, 7*(1), 68–88.

Roach, V., & Lemasters, L. (2006). Satisfaction with online learning: A comparative descriptive study. *Journal of Interactive Online Learning, 5*(3), 317–332.

Roberts, T. G., & Dyer, J. E. (2005). A summary of distance education in university agricultural education departments. *Journal of Agricultural Education, 46*(2), 70–82. doi: 10.5032/jae.2005.02070

Roberts, T. G., Irani, T., Lundy, L. K., & Telg, R. (2004). Practices in student evaluation of distance education courses among land grant institutions. *Journal of Agricultural Education, 45*(3), 1–10. doi: 10.5032/jae.2004.03001

Ruhe, V., & Zumbo, B. D. (2009). *Evaluation in distance education and e–Learning*. New York, NY: Guilford Press.

Salas, E., Kosarzycki, M., Burke, C. S., Fiore, S., & Stone, D. L. (2002). Emerging themes in distance learning research and practice: Some food for thought. *International Journal of Management Reviews, 4*(2), 135–153.

Schott, M., Chernish, W., Dooley, K. E., & Lindner, J. R. (2003). Innovations in distance learning program development and delivery. *Online Journal of Distance Learning Administration, 6*(2). Retrieved from, http://www.westga.edu/~distance/ojdla/summer62/schott62.html

Short, J. A., Williams, E., & Christie, B. (1976). *The social psychology or telecommunications*. London, England; Wiley.

Sims, R., Dobbs, G., & Hand, T. (2002). Enhancing quality in online learning: Scaffolding planning and design through proactive planning. *Distance Education, 23*(2), 135–148. doi: 10.1080/0158791022000009169

Smart, K. L., & Cappel, J. J. (2006). Students' perceptions of online learning: A comparative study. *Journal of Information Technology Education, 5*, 201–219.

Stedman, N. L. P., Roberts, T. G., Harder, A., Myers, B. E., & Thoron, A. (2011). The relationship between experience and self–perceptions of knowledge and relevance of teaching competencies

of faculty in a College of Agricultural and Life Sciences. *Journal of Agricultural Education, 52*(1), 50–60. doi: 10.5032/jae.2011.01050

Tu, C. H., & McIssac, M. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education, 16*(3), 131–150.

Tu, C. H. (2001). How Chinese perceive social presence: An examination of an online learning environment. *Education Media International, 38*(1), 45–60. doi: 10.1080/09523980010021235

United States Department of Education. (2008). *Evaluating online learning challenges and strategies for success: Innovations in education* (No. ED–01–CO–0012). Washington, DC: Office of Innovation and Improvement.

Walker, S. L., & Fraser, B. J. (2005). Development and validation of an instrument for assessing distance education learning environments in higher education: The Distance Education Learning Environments Survey (DELES). *Learning Environments Research, 8*, 289–308.

Walther, J. B. (1992). Interpersonal effects in computer–mediated interaction: A relational perspective. *Communication Research, 19*(1), 52–90. doi: 10.1177/009365092019001003

Wiers–Jenssen, J., Stensaker, B., & Grogaard, J. B. (2002). Student satisfaction: Towards an empirical deconstruction of the concept. *Quality in Higher Education, 8*(2), 183–195. doi: 10.1080/1353832022000004377

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