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Verbal Immediacy and Audio/Video Technology Use in Online Course Delivery: What Do University Agricultural Education Students Think?

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As demand for online course delivery increases, it is imperative that those courses be delivered in an effective and efficient manner. While technologies are offering increasingly new and innovative tools to deliver courses, it is not known which of these tools are perceived as useful and beneficial by university agricultural education students. This study sought to measure the impact of using an audio/video communication tool (Jing™) within the online classroom environment in an effort to document the tool's value to students. This multi–state quasi–experimental study was conducted at land–grant universities in Arizona, Montana, and Texas. The instrument contained Likert–type scale questions with specific focus on the use of an audio/video technology (i.e., Jing™) as an instructional tool and the relation of verbal communication to online learning. A total of 168 instruments were completed by participants. Thirty–one individuals completed all three rounds of the study. Findings revealed that gender and classification can impact perception of technology use in online courses. Participants reported strong preference for audio, feedback and immediacy; communication and interaction; and social presence. Implications exist in regard to the delivery of online courses.

Keywords: communication tool; online classroom; online learning; verbal immediacy; audio/video technology

Introduction

As demand for online course delivery increases, it is imperative that those courses be delivered in an effective and efficient manner. Osika, Johnson, and Buteau (2009) reported over two–thirds of colleges and universities are now offering a variety of online courses and programs. Kotrlik and Redmann (2009) stated "research is needed to determine how technology can be used to improve learning and the learning environment, especially from the learner's perspective" (p. 72). Rhoades, Irani, Telg, and Myers (2008) reported a majority of college of agriculture students own computers and are users of audio/video technology, indicating these types of technology could be a "viable teaching tool" (p. 114). The study reported here sought to measure the impact of using an audio/video communication tool (Jing™) within the context of the online classroom in an effort to document the tool's value to students. Jing™ is a "free software that adds visuals to your online conversations" (TechSmith Corporation, 2009, para. 1). Jing™ allows one to capture images or video quickly to easily share with others by uploading the images or video onto a server. This technology is not a course delivery tool (i.e., WebCT™, Blackboard™, Angel™) or an online conferencing program (i.e., Centra™, Wimba™) but rather a tool that allows asynchronous,

verbal, and visual communication by allowing recordings and images to be uploaded to a server for viewing/listening by others.

Theoretical Framework

The theoretical framework for this study was based upon verbal immediacy and online course delivery. Ni and Aust (2008) defined teacher verbal immediacy as "teachers' verbal communication behaviors that reduce psychological distance in the interaction between teacher and student" (p. 480). Ni and Aust gave Andersen (1979) credit for initially connecting immediacy with instructional communication. Communication immediacy involves both verbal (e.g., humor) and non–verbal (e.g., smiling) behaviors. As shared by Ni and Aust (2008), online environments can lend themselves to verbal behaviors. While the study of verbal immediacy is new in online environments, the concept has been examined in face–to–face settings extensively. Gorham (1988) identified verbal teacher immediacy behaviors that can influence student learning. Of those behaviors identified, humor, individual conversations with students, feedback, teacher invitations to meet with students, and praise were indicated as important. Ni and Aust (2008) examined online classes and found that a "sense of classroom community" (p. 490) predicted "learner satisfaction and perceived learning" (p. 490). They also found that teacher verbal immediacy increased student participation in online discussion boards. Arbaugh (2001) examined verbal immediacy behaviors and their effect on student satisfaction and learning in online courses. Results revealed immediacy behaviors predicted student learning and also positively impacted course satisfaction.

Woods and Baker (2004) shared a conceptual model of interaction and immediacy in the setting of online learning. They stated, "Research demonstrates that the integration of verbal and non–verbal immediacy communication behaviors lets instructors move from mere interaction to authentic intimacy and interpersonal closeness" (p. 2). The authors shared that failure to encourage motivation, engagement, and a positive social dynamic can result in isolation and attrition in the distance education setting. Documentation of learner needs in the literature emphasized the importance of the study of new and emerging technologies as teaching tools. Murphy (1999) summarized attributes in Bloom's Theory of School Learning that contribute to learning and emphasized the importance of the use of cues, positive reinforcement, corrective feedback, and student participation in learning. Prawat and Floden (1994) indicated dialogue was important to facilitate learning, while Pellegrino (2006) argued for the need to document student advancement over time instead of merely taking "snapshots" of progress. Technology has the potential to enhance the learning environment and meet the need for dialog and feedback immediacy. A study conducted by Baker (2004) indicated "the instructor significantly influences the learning process, even in the online classroom" (p. 10). This study documented the benefit of "prosocial communication patterns in online instruction" (p. 12) and called for the use of media rich tools to encourage instructor immediacy.

There are both benefits and challenges to teaching online, and research must be conducted to determine which communication technologies are "perceived as entertainment tools versus information tools in students' minds" (Rhoades, Friedel, & Irani, 2008, p. 37). Among the challenges of online teaching are difficulties in engaging in spontaneous verbal communication and providing meaningful feedback in context, especially as online courses provide "little opportunity to actually get to know the students on a personal basis" (Bigelow, 2009, p. 7). Moore (1997) summarized the "theory of transactional distance" in distance education as a pedagogical concept that included not only geographic distance but also the student–teacher relationship and self–directedness of the students. He shared that the separation of students and teachers allowed misunderstandings. VanDerZanden and Woline (2008) indicated students rated the use of audio high in the delivery of an online horticulture course. "It is important to provide the right type of information sources to gratify our students' need for information" (Rhoades, E., et al., 2008, p. 34). Diebel and Gow (2009) reiterated the importance of providing clear directions for students in regard to "class logistics" when offering online courses, and provided the example of offering "preview materials" (p. 13). Additionally, students indicating more

experience with technology have reported more positive attitudes about and greater satisfaction with the technology (Arbaugh, 2001; Stein, Wanstreet, Calvin, Overtoom & Wheaton, 2005).

Studies related to gender have revealed important finding worthy of consideration. Gender studies between male and female online learners show that female students are more likely than males to communicate in the online learning environment, especially during in–class discussions (Arbaugh, 2001; Blum, 1999; Woods & Baker, 2004). Grabill et al. (2005) studied college students and how they perceived different behaviors (such as studying) as masculine or feminine. The researchers found that males and females both reported that "females were more likely to perform better academically and to study more in general" (p. 19). In a study by Venkatesh and Morris (2000), men and women were nearly diametrically opposite in their perceptions and acceptance of technology, illustrating how gender can play a role in perception, acceptance, and use of technology. For example, men "consider perceived usefulness to a greater extent than women" (p. 128), "perceived ease of use was more salient to women compared with men" (p. 128), and men perceived technology as easier to use as time went on, compared to women perceiving it as harder to use with the passage of time. Further, Magotra (1996) looked at gender differences specifically in distance education and reported that females and males again rank topics differently, such as females valuing relationships and individualization more than males in a distance learning environment. Thus, it is important to consider the impact that gender can have in online course delivery.

Although there are many factors that affect the integration of technologies into courses, online instruction is becoming a necessity in higher education institutions, and to meet student needs educators must learn to embrace the opportunities new technologies offer. The National Research Agenda for Agricultural Education and Communications calls for research that can "improve the success of students enrolled in agricultural and life sciences academic and technical programs" (Osborne, 2007, p. 5). This study sought to address this need.

Purpose and Objectives

The purpose of this study was to add to the body of knowledge regarding strategies for online course delivery by documenting the role of verbal communication and immediacy as they relate to the use of an audio/video communication tool and student satisfaction in an online environment. In order to address this purpose, the objectives that guided the study were (a) to describe student use of Internet–based technologies, (b) to describe student reaction to the use of the audio/video communication tool (Jing™), (c) to identify student perceptions of online course attributes, and (d) to determine whether the use of the audio/video communication tool (Jing™) impacts students' perceptions of online course attributes.

Methods and Procedures

Population and Sample

This quasi–experimental study utilized a nonequivalent group design and was conducted at land–grant universities in Arizona, Montana, and Texas. The target population was students enrolled in agricultural education programs at land grant universities. The accessible population and the sample for this study consisted of 202 students (undergraduate and graduate) enrolled in four separate agricultural education courses taught at participating universities. All four of the courses were taught partially (i.e., at least half of the class materials and sessions were delivered online) or completely online during Fall 2009. Each group of students represented a non–equivalent group and was exposed to the use of the audio/video communication tool (Jing™) during the delivery of each course representing the treatment.

Procedures

Data were collected using a researcher–developed modified Likert–type scale instrument. Content validity was established by a panel of university agricultural education faculty. Each panel member reviewed the instrument for correct criteria to accurately measure elements of communication, verbal immediacy, online course experience, and technology integration. The data collection instrument was pilot tested by 21 agricultural

education students to establish face validity; the instrument was deemed acceptable.

Instrument

The instrument contained questions with specific focus on the use of Jing™ as an instructional tool and the relation of verbal communication to online learning. Questions were derived from literature and focused on technology integration and audio/visual communication in online settings. Thirty–two statements were created to ascertain student perceptions of online course attributes. These statements focused on four distinct concepts: preference for audio (8 statements), preference for feedback and immediacy (6 statements), preference for communication and interaction (12 statements), and preference for social presence (4 statements). Prior to data analysis but after data collection, six negative statements were reverse coded to match other statements. Sample statements for the "Preference for Audio" concept included: *I prefer to listen to lectures rather than read my textbook*; *It is easier for me to 'say something out loud' rather than write it all down*. Sample statements for the "Preference for Feedback and Immediacy" concept included: *It is important for me to receive timely feedback on my assignments; Online courses don't allow the same type of reinforcement as in my regular face–to–face courses.* Sample statements for the "Preference for Communication and Interaction" concept included: *Interaction with my classmates and my instructor is important to me*; *Audio is a critical part of my communication in an online course*. Sample statements for the "Preference for Social Presence" concept included: *Hearing my instructor gives me a feeling of closeness; Getting to know my instructor is important to me.*

The instrument was administered three times during the semester in order to measure change in students' perceptions over time and the interaction effect of such variables as gender, group, and classification on the change in perceptions. The Round 1 instrument contained questions on background/demographics, technology awareness, and perceptions of online courses. The Round 2 instrument contained questions regarding student reaction to the use of Jing™ and perceptions of online courses. The Round 3 instrument contained questions regarding student reaction to the use of Jing™, the effectiveness of using Jing™, and perceptions of online courses. Each instrument contained the same 32 modified Likert–type scale questions focused on perceptions of online courses.

Data were collected during Fall 2009 using a survey tool (Survey Monkey™) and a modified Dillman's (2000) tailored design method. A pre–instrument e–mail was sent to 202 students on the first day of courses during the Fall 2009 semester informing students of (a) their selection for the study, (b) intent of the study, (c) overview of the research process, and (d) notification of the forthcoming request for participation in the research. Participants were asked to complete three separate online instruments throughout the semester at specified times (i.e., the beginning, middle, and end of the semester). The opening page of each of the three instruments detailed the purpose of the study, instructions on instrument completion, and information about voluntary informed consent. Participants indicated consent by clicking on the web–link to enter the data collection instrument. An incentive (i.e., a chance to win a gift card) was used; therefore, student names were collected for participation in the drawing and to ensure appropriate participation. Once students' names were verified, identifying information was appropriately coded and replaced in the data set to ensure confidentiality. Institutional Review Board approval was received at all three institutions to conduct the study. As a limitation of the study, it is recognized that it is not possible to separate Jing™ influence on perception from mere online influence or the influence of other technologies that students may have encountered during the semester.

A total of 168 instruments were completed by participants. Data analyses were accomplished with SPSS 17.0. The Round 1 instrument was sent during the first week of classes and yielded 63 responses (31.2% response rate); the Round 2 instrument was sent in the middle of the semester and yielded 56 responses (27.7% response rate); and the Round 3 instrument was sent during the last week of classes and yielded 49 responses (24.3% response rate) (Table 1).

Table 1
Response Rate by Round

	Round 1*	Round 2	Round 3	Total Number of Unique Respondents	Total Number of Instruments Completed
Responded to 1, 2, & 3	31	31	31	31	93
Responded to 1 & 2 only	10	10	—	10	20
Responded to 2 & 3 only	—	5	5	5	10
Responded to 1 & 3 only	6	—	6	6	12
Responded to 1 only	16	—	—	16	16
Responded to 2 only	—	10	—	10	10
Responded to 3 only	—	—	7	7	7
Total Number of Respondents	63	56	49	85	
Total of Instruments Completed					168

*Only Round in which demographic data were collected.

Numeric responses to statements for each concept were summed and then averaged to determine an overall perception score for each concept under investigation. Cronbach's alpha coefficient (1951) was used to determine scale reliabilities for each concept. Reliability coefficients for each concept in Round 1 were Preference for Audio (0.78); Preference for Feedback and Immediacy (.77); Preference for Communication and Interaction (.86); and Preference for Social Presence (.84). Each round of the online instrument remained open for one week and two email reminders were sent to non–respondents. Thirty–one individuals completed all three rounds of the study. Goldhor (1974) found non–respondents are similar to late respondents; therefore, paired samples *t*–tests were conducted based on Lindner, Murphy, and Briers' (2001) recommendations for establishing that "nonresponse is not a threat to external validity" (p. 51). Late respondents were categorized as those responding after the second e–mail request to participate. Paired samples *t*–tests indicated no statistically significant differences in summated concept scores between early and late responders for each of the three rounds. Effects of differential mortality were examined using the repeated measures function of the Statistical Package for the Social Sciences (SPSS); respondents with no response mortality were compared with those with mortality. Changes in students' perceptions were determined using matched instruments pre–instruction, mid–instruction, and post–instruction. To determine the effect of the treatment (i.e., use of Jing™) on the subject factors of interest (i.e., students over time), the more powerful GLM Repeated Measures analysis was deemed appropriate. In the Repeated Measures design, subjects serve as their own controls and "all sources of variability between subjects are excluded from the experimental error. Only variation within subjects enters the experimental error…" (Neter, Kutner, Nachtsheim, & Wasserman, 1996, p. 1165). The analyses utilized the unique level of change in each student's response for analyses instead of only aggregate group level change, therefore reducing bias due to differences in individual students pre–existing knowledge, attitudes, and comfort levels, increasing the power of the test. The Completion Response Rate (CRR) (i.e., those students who completed all three instruments versus those who completed only one or two of the instruments) was analyzed to determine if CRR affected the rate of change in students' perceptions.

Between subjects analyses for Rounds 1, 2, and 3; Rounds 1 and 2; Rounds 1 and 3; and Rounds 2 and 3 of Concepts 1, 2, 3, and 4 (i.e., 1 – Preference for Audio, 2 – Preference for Feedback and Immediacy, 3 – Preference for Communication and Interaction, and 4 – Preference for Social Presence) indicated no

statistically significant ($\alpha > 0.05$) difference in participants mean perceptions due to CRR for any combination of round and concept. Within subjects analyses by CRR for Rounds 1, 2, and 3; Rounds 1 and 2; Rounds 1 and 3; and Rounds 2 and 3 of Concepts 1, 2, 3, and 4 indicated no statistically significant ($\alpha > 0.05$) difference in participants mean perceptions due to CRR for any combination of round and concept. Within subjects analyses did indicate a statistically significant ($\alpha < 0.05$) interaction between CRR and round for "Preference for Communication and Interaction" between Rounds 1 and 2 and for "Preference for Social Presence" between Rounds 2 and 3. Analyses indicated change in participants' perceptions of "Preference for Communication and Interaction" between Rounds 1 and 2 and "Preference for Social Presence" between Rounds 2 and 3 were affected by whether participants completed all three rounds of the instrument. No other statistically significant ($\alpha > 0.05$) interaction between CRR and round was indicated by concept or round. No significant differences were indicated between groups by round, indicating the responding sample was representative of the population and use of inferential statistics was appropriate (Table 2).

Table 2
Repeated Measures ANOVA for Rounds by Completion Response Rate (CRR)

Source	*df*	*F*	η^2	*p*
Concept 3, Rounds 1 & 2 Only (*N = 11*)				
	Between Subjects			
CRR	1	.065	.002	.80
Error(CRR)	40	(32.95)		
	Within Subjects			
Rounds	1	.71	..02	.41
Rounds* CRR	1	4.99*	.11	.03
Error(CRR)	40	(184.24)		
Concept 4, Rounds 2 & 3 Only (*N = 5*)				
	Between Subjects			
CRR	1	.003	.000	.96
Error(CRR)	34	(185.47)		
	Within Subjects			
Interests	1	5.15*	.13	.03*
Rounds* CRR	1	4.04	.11	.05
Error(CRR)	34	(40.96)		

Note. Values enclosed in parentheses represent mean square errors. Matched data were not obtained from all participants. *$p < .05$.

Descriptive statistics were used to describe the population and determine participant mean perceptions for each round. One way analysis of variance (ANOVA) was performed with an a priori alpha level of 0.05 to determine if significant differences existed within concepts in each round based on gender, age, degree classification, comfort with computers, number of online courses taken, computer use, and course enrollment.

Findings

In order to develop effective strategies for online course delivery, it is critical to understand students' demographics and how they use Internet–based technologies. In addition, it is helpful to understand students' perceptions of technologies that instructors select to use in the delivery of courses.

Demographics of the Sample

Demographics were collected during Round 1 of the study and did not include students who

selected to participate in only Rounds 2 or 3 of the study. Of the 63 participants, 30% were male and 70% were female. Forty–one percent of the participants were 18–20 years of age, 44% were 21–30 years of age and the remaining 14% were over the age of 31. More undergraduate (65%) than graduate (35%) students participated in the study. Twenty–eight percent of participants reported the course currently enrolled in was their first online course, while the remaining 72% of participants had previously taken online courses. No participants reported being a non–user of computer technology. In fact, 90% of participants reported being at least an "intermediate" user, and 95% reported being comfortable with computer technology (Table 3).

Table 3
Demographics (*N* = 63)

Variable	Category/Value	*f*	Percent
Age	18–20	26	41.3
	21–30	28	44.4
	31–40	7	11.1
	41 or over	2	3.2
Gender	Female	44	69.8
	Male	19	30.2
Classification	Undergraduate	41	65.1
	Graduate	22	34.9
Online Courses Completed	First Online Course	18	28.6
	1–3	27	42.9
	4–5	7	11.1
	5 or more	11	17.5
Computer Technology Use	Intermediate	43	68.3
	Advanced	14	22.2
	Novice	6	9.5
	Non–User	—	—
Comfort with Computer Technology	Comfortable	37	58.7
	Very Comfortable	23	36.5
	Not Comfortable	3	4.8

Note. Only participants who completed Round 1 of the study provided demographic responses.

Student Use of Internet–based Technologies

A majority of participants reported high use of the Internet (95%) and Email (96%), while a much lower percentage reported the use of blogs (36%) or Twitter™ (15%). Social Networks and YouTube™ use were reported by 89% of participants (Table 4).

Table 4
Participants' Reporting of Internet–based Technology Use (N = 63)

	No		Yes – Some		Yes – A Lot	
Technology	*f*	Percent	*f*	Percent	*f*	Percent
E–mail	—	—	2	3.2	61	96.8
Internet Access (in the broad sense)	—	—	3	4.8	60	95.2
Social Networks (e.g., Facebook™)	7	11.1	18	28.6	38	60.3
Blogs	40	63.5	19	30.2	4	6.3
Twitter™	53	84.1	6	9.5	4	6.3
YouTube	6	9.5	44	69.8	13	20.6

Student Reaction to the Use of the Audio/Video Communication Tool (i.e., Jing™)

Most (98.4%) respondents in Round 1 indicated they had not used Jing™ prior to the courses under study. In Round 2, participants were asked about the difficulty of using Jing™. More than half of the respondents (55.4%) found the technology easy to use, but 39.3 % had not used it themselves. In Round 2, 76.8% of respondents expressed a preference for submitting written assignments while 21.4% expressed a preference for submitting audio assignments. When asked the location from which students completed the majority of their assignments requiring the use of Jing™, the majority of participants (85.7%) reported "home" or "other" as their location of completion while only 8.9% reported using a computer lab on campus. During Rounds 2 and 3 of the study, few (7.1%; 8.2%, respectively) of the students reported using Jing™ beyond the scope of the courses that were using the technology. However, 79.6% of the respondents indicated in Round 3 that other courses would benefit from using the technology.

In Round 3, 75.5% of participants indicated Jing™ was very easy to learn, while 14.3% reported they had not used the technology. Only 10.2% of participants reported any level of difficulty in using Jing™. Participants were asked to report the effectiveness of using Jing™ for announcements, discussion board postings, presentations, and student assignments. See Table 5 for percentages. Announcements were perceived to have been the most effective with more than two–thirds of the respondents indicating that announcements were effective or very effective.

Table 5
Effectiveness of the Audio/Video Communication Tool (i.e., Jing™) Use (N = 49)

	Very Effective (VE)		Effective (E)		Not Effective (NE)		Distracting (D)		Not Observed (NO)	
Tool	*f*	*Percent*	*f*	*Percent*	*f*	*Percent*	*f*	*Percent*	*f*	*Percent*
Announcements	24	49	13	26.5	5	10.2	—	—	7	14.3
Discussion Board	10	20.4	14	28.6	9	18.4	1	2	15	30.6
Presentations	11	22.4	11	22.4	5	10.2	3	6.1	19	38.8
Assignments	12	24.5	22	44.9	3	6.1	1	2	11	22.4

Student Perceptions and Preferences of Online Course Attributes

Participants responded to 32 modified Likert–type scale statements related to online course attributes and student preferences that were focused on the preference for audio, preference for feedback and immediacy, preference for communication and interaction, and preference for social presence. Participants' levels of agreement for the individual statements comprising each concept were summed to determine participants' preferences. In all three rounds, participants held positive perceptions of (a) audio, (b) feedback and immediacy, (c) communication and interaction, and (d) social presence (Table 6).

Table 6
Descriptive Statistics by Concept of Participants' Preferences for Online Course Attributes

	Round 1 (*n* = 63)		Round 2 (*n* = 56)		Round 3 (*n* = 49)	
Concept	*M*	*SD*	*M*	*SD*	*M*	*SD*
Preference for Audio	2.81	.48	2.87	.39	2.82	.32
Feedback and Immediacy	2.94	.47	2.89	.41	2.89	.36
Communication and Interaction	2.88	.41	2.89	.35	2.86	.32
Social Presence	2.90	.58	2.90	.51	2.97	.46

Note. Strongly Disagree = 1.00 – 1.50; Disagree = 1.51 – 2.50; Agree = 2.51 – 3.50; Strongly Agree =

3.51 – 4.00.

Repeated measures analysis indicated no significant difference between rounds for any of the four concepts. Further analysis of each concept using one way analysis of variance (ANOVA) based on demographic variables indicated a statistically significant difference ($\alpha < 0.05$) by gender existed in Rounds 2 and 3 for the concept *Feedback and Immediacy;* female respondents held significantly ($\alpha < 0.05$) higher agreement levels. Cohen's *d* (Cohen, 1977) indicated a large effect size in Round 3 (1.17), and medium effect sizes in Rounds 1 and 2 (0.45 and 0.71, respectively). No statistically significant differences ($\alpha > 0.05$) were indicated for the four concepts in Rounds 1, 2, or 3 based on age, course enrollment, or number of online courses taken (Table 7).

Table 7
Comparisons of "Feedback and Immediacy" Concept by Gender over Three Rounds

Round	Gender	*n*	*M*	*SD*	*d*[a]
Round 1	Male	19	2.79	.49	.45
	Female	44	3.01	.46	
Round 2	Male	11	2.64	.48	.71
	Female	31	2.98	.41	
Round 3	Male	10	2.65	.29	1.17
	Female	27	2.99	.34	

[a]Cohen's measure of effect size (.20 = small, .50 = medium, .80 = large).

Comparisons of undergraduate and graduate student responses indicated undergraduate participants were higher in agreement for the concept of *Preference for Feedback and Immediacy* than graduate participants in all three rounds with the difference accentuated as the courses progressed. Cohen's *d* (Cohen, 1977) indicated a large effect size in Round 3 (1.00) and only small effect sizes in Rounds 1 and 2 (0.22 and 0.20, respectively) (Table 8).

Table 8
Comparison of "Feedback and Immediacy" Concept by Classification over Three Rounds

Round	Classification	*n*	*M*	*SD*	*d*[a]
Round 1	Undergraduate	41	2.98	.45	.22
	Graduate	22	2.88	.51	
Round 2	Undergraduate	27	2.92	.44	.20
	Graduate	15	2.83	.47	
Round 3	Undergraduate	21	3.02	.28	1.00
	Graduate	16	2.74	.39	

[a]Cohen's measure of effect size (.20 = small, .50 = medium, .80 = large).

Analysis of Variance (ANOVA) indicated a statistically significant difference ($\alpha < .05$) between mean scores of participants by level of computer experience for the concepts *Preference of Audio* and *Preference for Social Presence* in Round 3. Bonferroni post–hoc analysis of the two concepts in Round 3 indicated a statistically significant difference ($\alpha < .05$) between the means of advanced and intermediate level of computer technology use. No statistically significant differences ($\alpha > .05$) between computer user experience levels were indicated in the concepts by round (Tables 9 and 10).

Table 9
Comparison of "Preference for Audio" Concept by Computer Use

Round	Computer Use	*n*	*M*	*SD*	η^2
Round 1	Novice	6	2.77	.51	.03
	Intermediate	43	2.86	.49	
	Advanced	14	2.67	.43	
Round 2	Novice	5	3.08	.26	.14
	Intermediate	28	2.90	.37	
	Advanced	9	2.61	.37	
Round 3	Novice	5	2.83	.19	.32
	Intermediate	25	2.92	.32	
	Advanced	7	2.41	.25	

Table 10
Comparison of "Preference for Social Presence" Concept by Computer Use by Level of Participants

Round	Computer Use	*n*	*M*	*SD*	η^2
Round 1	Novice	6	2.88	.41	.03
	Intermediate	43	2.97	.58	
	Advanced	14	2.71	.60	
Round 2	Novice	5	3.10	.29	.04
	Intermediate	28	2.91	.49	
	Advanced	9	2.75	.60	
Round 3	Novice	5	3.00	.31	.19
	Intermediate	25	3.06	.45	
	Advanced	7	2.54	.44	

Conclusions, Implications, and Recommendations

Based on the finding that 28% of the participants were enrolled in their first online course, it can be concluded that even though the delivery of online courses is increasing, there are still students that are new to online course delivery. Educators must take this into consideration as they design online courses and not assume all students are familiar with how to navigate and use online course management systems. The inclusion of verbal immediacy behaviors, such as individual conversations, praise, and humor, can help to enhance students' first time experience with online classes, while also creating a supportive classroom environment critical for student success (Gorham, 1988; Ni, & Aust, 2008).

The majority of participants reported high use and high comfort level with computers, indicating students do possess the abilities to engage in online courses. These findings can help alleviate faculty concerns about whether students have the abilities needed to use technologies (Osika et al., 2009) and reinforce the importance of providing a detailed syllabus and explicitly clear directions on class logistics (Diebel & Gow, 2009).

Blogs and Twitter™ were only used by 6.3% of participants suggesting neither of these technologies to be in high use by agricultural education students participating in this study. Although this finding cannot be generalized to all students, it does provide useful information for instructors when choosing appropriate technologies for online courses. The high percentage of participants reporting frequent use of social networks (e.g., Facebook™) may offer more valuable opportunities to connect and engage students in an online environment.

While most (98.4%) students indicated they had not used Jing™ prior to the courses under study, a large percentage (75.5%) of these students reported that Jing™ was easy to use by the end of the semester. Thus, one can conclude that Jing™ is a technology that can be mastered by students. However, because Jing™ was used

by both students and instructors in different ways it is important to approach this conclusion with caution. While a majority of students were required to use Jing™ to record images or video themselves, there were some who used Jing™ for viewing only. Given that many students (76.8%) expressed preference for written assignments, a question arises as to whether this is related to a learning style preference or merely a lack of familiarity with Jing™ to submit an audio assignment. Additional research should be conducted that addresses preferences based on familiarity.

No significant differences were found between rounds based on age, course enrollment, or the number of online courses completed. Thus, exposure to the technology Jing™ did not appear to change students' perceptions of online course attributes significantly over the course of the semester in the broad sense. However, comparisons of participant responses by gender and classification revealed significant changes in perceptions for the concepts *Preference for Audio and Preference for Feedback and Immediacy* in Rounds 2 and 3. This suggests that exposure to technology can positively impact participants' perceptions based on gender and classification and indicates avenues for study as to why females indicated increased preference for feedback compared to males and why undergraduates indicated greater preferences for feedback and immediacy than did graduate students. This finding lends further support to previous studies (Arbaugh, 2001; Blum, 1999; Woods & Baker, 2004) that indicated females are more likely to communicate than males. Further research on the effects of these variables on students' perceptions can provide valuable recommendations for instructors when developing online courses for specific audiences.

Advanced computer users reported lower *Preference for Audio* and *Preference for Social Presence* in Round 3. This indicates students with extensive computer experience may have decreased need for audio and social engagement in online courses. Based on these findings, the question arises as to how instruction targeted for advanced users can be modified while still maintaining the learning integrity of the online instruction for all learning styles. Because online courses commonly have students with diverse computer backgrounds, educators must continue to incorporate a variety of teaching and learning methods. Having a mixture of audio, visual, and written communication instruction can help to reach all types and backgrounds of students. Learning styles must not be overlooked in online instruction. Attention to this factor could improve the overall quality of instruction and learner satisfaction.

Based on these conclusions, implications exist for delivery of online courses. Participants in the study reported strong preference for audio, feedback and immediacy, communication and interaction, and social presence as provided by or as related to the use of the audio/video communication tool (i.e., Jing™). What does this mean for instructors? Preferences did not deviate over the course of the semester; rather, they remained high throughout. Thus, it is recommended that instructors consider the use of the technology Jing™ in online or hybrid course delivery. Jing™ can be used in various ways to meet the needs of online students and create a more socially connected environment. Uses of Jing™ could include online discussion, grading of assignments, recording journal entries, documentation of reflections, providing peer feedback, and presentations. Integrating various audio/visual communication tools into online courses can help to decrease transactional distance, improve verbal communication skills, create a more social learning environment, and incorporate new approaches to teaching agriculture.

The goal of this study was to determine the role of verbal communication and immediacy as they relate to student satisfaction in an online environment and to determine if the use of an audio/video communication tool (Jing™) would change student's perceptions. Overall, students reported the inclusion of Jing™ into the course as a positive experience that allowed them to enhance their social presence, interact with fellow students and instructors, and receive constructive feedback. These findings lend support to the benefits of the inclusion of new technologies into online courses to enhance student learning and satisfaction. Although teaching online presents challenges to traditional teaching methods, instructors must apply pedagogical knowledge to new settings to meet the needs of students.

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