Impact of Communication Apprehension and Communication Skills Training on Interaction in a Distance Education Course

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Abstract

The importance of providing students with skills necessary for success in distance education classrooms is uncontested; however, few universities have done so. This case study sought to answer two questions: (a) What was the impact of communication apprehension (CA) on distance education students who experience the trait; and (b) What was the impact of a skills training session on interaction in a distance education course? Findings indicate that communication apprehensive students could not be motivated to interact regardless of interventions; however, non-CA students did benefit from the skills training session. An outline for a recommended skills training session based on recommendations from the literature and this study is included along with implications for educational practice.

Interpersonal interaction in the learning context has been touted as the *Holy Grail* of effective education. Scholars (Bandura, 1977; Dewey, 1938; Holmberg, 1983) have demonstrated the importance of interaction theoretically and empirically in that learning is positively correlated to interaction. Nevertheless, there are a number of learners who choose not

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to interact overtly with peers and instructors. These learners experience a trait-based condition known as communication apprehension (CA) (McCroskey, 1982). There is a strong negative correlation between CA and learning outcomes in the traditional classroom at all grade levels (Aitken & Neer, 1992; Allen & Bourhis, 1996; Bourhis & Allen, 1992); however, the research surrounding CA in the distance education context is limited.

Distance education brings with it unique circumstances that limit both the assets and liabilities of interpersonal interaction. Distance students can learn alone in correspondence-type courses or within groups, using interactive compressed video (ICV) technology. ICV technology permits synchronous two-way audio and video transmission, allowing distance educators to incorporate fully interactive design techniques into the teaching and learning environment. Using ICV technology, distance education courses can resemble traditional campus-based courses.

Researchers (Bauer & Rezabek, 1992; Boverie, Murreil, Lowe, Zittle, Zittle, & Gunawardena, 1997; Sholdt, Zhang & Fulford, 1995; West & Pearson, 1994) have hypothesized that fully interactive classrooms will lead to an increase in learning outcomes in terms of quantity and quality of questions asked and answered. As interactive technology is infused in the traditional classroom environment, students' skills in using the technology must be upgraded for effective communication to occur (Hillman, Willis & Gunawardena, 1994).

Distance educators have recommended communication skills training for distance education students in order to provide them with necessary communication tools for success in technology-rich learning environments as participating in technology-laden classrooms can be intimidating for students and serve to inhibit interaction (Davie, 1989; Gibson, 1998; Hillman, Willis, & Gunawardena, 1994; Nahl, 1993). In one study, the process of going on-camera inhibited 33% of the students in an ICV classroom (Nahl, 1993). Students' concerns diminished by one-half toward the end of the semester due to a natural desensitization toward the technology. Nevertheless, students who participated in the study spent the majority of their learning time in a state of anxiety related to using the technology.

Hopf and Ayres (1992) recommended that students should be supported in learning cognitive, affective, and technological skills necessary for interacting with others through communication technologies. As few universities have provided skills training to distance students, there is a lack of empirical data regarding the effectiveness of such efforts.

Context of the Case

This study was situated within an animal genetics course offered by Cornell University (CU) to five remote sites in the Northeast during fall semester, 1998. The course was designed to expose students to the animal genetics industry by means of presenting current research being conducted in the field. Eleven guest speakers from across the United States and Canada presented the seminars as guest speakers. The speakers were flown to CU and presented the seminar live to the CU cohort. The other five remote sites received the lecture via ICV technology. Each of the five remote sites employed a local site facilitator (all of whom were animal science professors) who served as instructor of record. The site facilitators were primarily responsible for managing communications between sites.

Seventy-three students (14 men and 59 women) participated in the study. The average age of the group was 21.7 years, and the average number of years in college was 3.6. None of the students had participated in a distance education course prior to this one, thus their experience with the technology was new.

The students had the opportunity to participate in five types of interaction essential for optimal learning (Moore, 1989; Hillman, Willis, & Gunawardena, 1994). They were: (a) face-to-face interactions between students and site facilitators at each campus, (b) ten minutes at the end of each lecture for a live question and answer session, (c) E-mail, (d) a discussion board, and (e) luncheons with guest speakers (provided at the CU only). All the students who participated in this study also had access to an extensive Internet web site.

The researcher presented a skills training session to the CU site and one remote site early in the semester. The focus of the skills training session was to teach students and instructors how to interact more effectively within a distance education course (see Appendix for outline of skills training session). The other four remote sites did not receive any training.

Methods

This case study was guided by two research questions.

RQ 1: What was the impact of communication apprehension on distance education students who experience the trait, and

RQ 2: What was the impact of a skills training session on interaction in a distance education course?

Data were collected using Likert-type surveys, interviews, and participant observations at all six sites (Merriam, 1998; Stake, 1995; Yin, 1984). Site facilitators were interviewed for methodological triangulation concerning the CA trait among their students and the interaction variable. Interviews were audiotaped, transcribed, and coded following Miles and Huberman's (1994) suggestions for qualitative data analysis. Videotaped recordings of all lectures were analyzed for quantity of interactions among participants.

To determine the presence of communication apprehension among the population, two survey questionnaires were administered to students at all six sites during the first two weeks of the course. The Personal Report of Communication Apprehension (PRCA-24), which consisted of 24 Likert-type questions, was selected because it was the most widely used measure of CA and because its reliability and construct, predictive, and content validity were well established (alpha reliability = 0.97) (McCroskey, 1978; McCroskey, Beatty, Kearney, & Plax, 1985).

The Willingness to Communicate scale (WTC) was also administered to students at all six sites as a multiple-method technique for determining students' willingness to communicate (the antithesis of CA). The WTC scale is a 20-item, probability-estimate scale with an estimated reliability of 0.92 (McCroskey, 1992).

The skills training session was offered face-to-face by the researcher at two of the six participating campuses. After the pre-enrollment period was over, students at Cornell University were randomly separated into two groups where one-half of these students were invited to participate in the skills training session. Nine out of ten students at the chosen remote site attended the skills training session.

The impact of the skills training session on student interac-

tion was assessed in two ways. Participants filled out a Likert-type survey developed for this study immediately after the session. Students were also queried during the face-to-face interviews as to the overall impact of the skills training session at the end of the semester.

Findings

Impact of Communication Apprehension on Distance Education Students

Seven students self-identified as having the CA trait using the PRCA-24 and the WTC scale (9.5% of the population). The students who scored high for CA on the PRCA-24 and low on the WTC (r = -0.630) behaved and responded in ways that were consistent with the literature for CA individuals (McCroskey, 1977).

During face-to-face interviews, the CA students reported that being communication apprehensive was a barrier to interactions, not only in this course but also in all their courses. On no occasion was being CA considered a benefit in the classroom. All seven students had an acute awareness of their CA trait and the negative role that it played in their learning endeavors throughout their lives in terms of speaking inside and outside of class with instructors and peers. Direct quotations of the seven CA student interviews are included to support these findings:

> Interviewer: As far as communication apprehension is concerned, is this getting in the way of your learning?
>
> Student 71: In a lot of lecture classes I will have a question about a part of it and I could ask it right then and get it cleared up, but instead I don't. That is a big problem.
>
> Student 2: Yeah it's a barrier in my learning but I have found other ways to deal with it so I don't treat this class any different than any other class.

CA students had developed coping mechanisms for getting their academic needs met without having to interact personally with other students or instructors. In order to avoid oral communication with peers and instructors, the CA students consulted textbooks, utilized the library, and searched the Internet to find answers to their questions.

Five of the seven CA students reported that being in a distance-learning course that required students to present themselves on camera for asking questions inhibited them from doing so. The CA students adopted a voyeuristic posture in the class by preferring to watch and listen to others interact:

> Interviewer: Do you ask questions during the live broadcast?
>
> Student 38: No! No way! First of all I don't want my face on the huge screen, and I don't ask questions. I don't ask questions (in classes) that aren't distance learning either. I'm just not comfortable with that.

CA students reported that they were as interested and motivated by the course content as non-CA students; however they expressed no desire to actively participate in the interactive features of the course (student photo gallery, post-lecture question and answer session, discussion board, and E-mail). They expressed a need to *get in* and *get out* of the learning environment as quickly and efficiently as possible without undue interaction with others. CA students enjoyed being present in the classroom, but clearly they did not want to participate orally. They were dissatisfied if there were no questions asked during the question and answer session but would not ask questions themselves. They wanted to be part of the learning environment but not co-creators of it:

> Interviewer: What learning resources have you used for this class?
>
> Student 2: I've been on the web. I've looked at the discussion board. I did put a question up there because I didn't want to say it in class. I haven't responded to anything (on the discussion board) though.

Peers and site facilitators at all six sites reported during the interviews that CA students were invisible to them. In fact one student interviewed did not remember that a CA classmate was in the class with her when there were only five students in her section. When questioned about her peer, she began to remember her, but she could not remember her name. Both students attended class regularly. When asking a site facilitator about his cohort, he remarked that he did not think that any of his students were CA. After continued probing on the topic, he recalled a student who did not say much. The student's pres-

ence was not deeply imprinted on his memory when recalling his cohort. He was not sure why this was and, when discussing this student, he had little idea of her personhood; whereas, he spoke confidently about his other four students.

CA students reported that they enjoyed vicarious interactions by listening to the speakers and learning from them; however, actual interaction was limited. When asked during the interviews what CA students liked most about the course, many cited the variety of speakers and the content that was covered.

Impact of the Communication Skills Training Sessions on Participants' Survey Results

Immediately following both skills training sessions, participants were given a Likert-type survey evaluation. The evaluation addressed certain aspects of the session including perceptions of anticipated interaction during the course. One-third of the CU students who participated in the skills training session said that they had positively changed the way they felt about interacting in class as a result of the session, and one-third predicted that they would increase the amount of interaction that they would engage in during class. Fifty percent were neutral and 14% disagreed with the statement.

Sixty percent of the CU students reported having anxiety about being seen on camera and 51% reported having anxiety about speaking to others through the ICV system. Only 18% reported that the session helped them to overcome their anxiety about being seen on camera, and 22% reported that the session helped them overcome their anxiety about speaking to others through the ICV system.

The majority of reported criticisms from CU student evaluations were that participants did not have the opportunity to actually practice using the ICV technology. The CU students stated they would have liked to experience interacting with the ICV technology. By the time the skills training session was delivered at CU, students had participated in two seminars that were linked with remote sites. The researcher assumed that the CU students would have absorbed the milieu of the ICV technology by that time; therefore, practice with the technology was not simulated during the session as was done for the remote site students.

The skills training session delivered to the remote site students was more effective in terms of changing their attitudes and reducing their anxiety than the session delivered to the CU students. Sixty-four percent of remote site students reported having anxiety about being seen on camera and about speaking to others through the ICV system. Thirty-six percent of the remote site students reported that the session helped them to overcome their anxiety about being seen on camera, and 73% percent of the remote site students reported that the session helped them to overcome their anxiety about speaking to others through the ICV system. Twenty-seven percent of remote site students said they had changed the way they felt about interacting in class as a result of the skills training, 18% predicted they would change the way they interacted in class, 64% were neutral, and 9% disagreed with the statement.

Interview Results

Nine of the 22 students who participated in the CU skills training session were interviewed at the end of the semester regarding the impact of the skills training session. Of the nine, three students experienced the CA trait. All of the remote site students who participated in the skills training were interviewed and one experienced the CA trait.

None of the students who participated in the study had taken a distance education course in the past; thus the format and delivery of the course was new to them. Students who participated in the interviews reported that the overall impact of the training session was to expose them to the technology and to reduce anxiety surrounding its use. As a result of the skills training session, students were ready to focus on the content of the course and not the technology that surrounded them. The ICV system that sat in the classroom was demystified, thus creating a seamless transition between speaker and student.

However, all participants who took the skills training session were asked during the interviews if the material covered in the training session increased their desire to interact with instructors and other students. In terms of increased interaction, interviewees reported that the training session had a marginally positive effect on non-CA students and no effect on CA students. The skills training session did serve to heighten all

students' awareness of the importance of asking questions and engaging the lecturer in meaningful dialogue; however, the students reported that they remained consistent with previously established behaviors during this course.

The four CA students who participated in the training session and interviews at both CU and the remote site reported that they did benefit from the training session in the same way that non-CA students did. They enjoyed learning about the technological aspects of the classroom and reported that knowledge of the capabilities and limitations of the technology eased their anxieties surrounding participation in the course. However, participating in the training session did not change their desire to interact with others.

The training session provided to the CU students and one remote site at the beginning of the semester was valuable in terms of increasing student satisfaction with the course, although it did not change their perceptions regarding the amount of interactions that they engaged in over the semester. Initially, student perceptions of anticipated interactions as a result of the training sessions were high at both CU and the remote site. As the semester progressed, the students who participated in the skills training session settled into a routine and their reported actual interaction was not affected by the training session, especially among the four CA students. The following quotes serve to illustrate this point:

> Interviewer: Did material covered in the workshop increase your desire to interact with the instructors or other students?
>
> Student 38: No, I don't think anything could increase my desire to interact (CA).
>
> Student 27: No, only because I don't like asking questions (CA).
>
> Student 81: I don't think it really made that much of a difference one way or the other.
>
> Student 9: I remember thinking that because of the workshop, I was going to interact more in the class; but I never actually did. I did remember thinking that after hearing all that, I should interact more and communicate more in the class, but I haven't.

Implications

While this study did advance skills training literature by demonstrating the impact of a skills training session, there is substantial work to be done in terms of understanding what specific factors are most effective in increasing interaction in a distance education classroom. The skills training sessions delivered to students at CU and the remote site were found to be effective in increasing overall student satisfaction with the course (Kelsey, 2000), but not the level of interaction between students and instructors. Further research should focus on skills training attributes to determine the relationship between the level and quality of interaction in a distance education course.

Key constructs that surfaced in this study for explaining the relationship between interaction and CA students were *vicarious interaction* (Fulford & Zhang, 1993; Zhang & Fulford, 1994) and *anticipated interaction* (Yarkin-Lenin, 1983). For both CA and non-CA students, direct participation in the question and answer session and the discussion board was not necessary for learning, nor was it as satisfying as watching and listening to others participate.

When students report that learning vicariously and through anticipated interactions satisfied them, then educators must ponder who will ask questions during the question and answer session as well as post questions on the discussion board. This study has demonstrated that CA students will not participate orally in the learning environment regardless of interventions. Future research on interaction and skills training should focus on the factors that motivate and stimulate non-CA students (85% of the population) to openly participate in the learning environment.

Discussion and Recommendations

The purpose of this study was twofold: first, to determine the impact of communication apprehension on students who participate in distance education courses and, second, to determine the impact of a skills training session on interaction within a distance education course. The results of this study confirmed that CA is a trait-based personality characteristic that inhibits individuals from speaking to others in a variety of contexts (Allen & Bourhis, 1996; Bourhis & Allen, 1992). CA

students preferred to participate vicariously and often became invisible to their classmates and site facilitators by adopting a voyeuristic posture in the course. CA students at all sites reported that no amount of skills training would increase their level of oral interaction. The CA trait was more effective in suppressing oral communication than the skills training was in encouraging it. Even when CA students reported knowing that they should participate more in class and that they knew how to communicate through the ICV system, they failed to do so.

In short, the concepts of CA and oral interaction are oxymoronic. Communication apprehensive students preferred not to interact verbally with their public and populated learning environments. Interactions must occur among the communication apprehensive but not in ways that educators typically define or measure them. CA students expressed no desire for change in themselves or the learning environment, having adopted coping mechanisms for succeeding as learners. CA students interviewed for this study were academically successful, having obtained upper-class status at prestigious universities in the Northeast. Learning occurs for CA students in the hidden recesses of an internal dialogue, in the quiet and private spaces of their world, in textbooks and libraries, over E-mail and by reading discussion boards. It is the output of the spoken word that brings all CA students to a halt, not the input. Given these findings, should instructors change their attitude or behavior toward CA students? Research on vicarious interaction says *no* by reminding educators to engage students in meaningful dialogue; however, not each and every student necessarily needs to be engaged as psychological interactivity is predominantly vicarious in nature (Zhang & Fulford, 1994).

Providing skills training to all students involved in a distance-learning course at both the local and remote sites at the beginning of the semester is strongly advised. The overall impact of the skills training session reported in this study served to demystify the classroom at CU and the remote site by educating participants on technological features of the ICV system, thus moving students toward a state of readiness for learning course content. Anxiety was reduced when students knew what to expect from the technology in terms of its capabilities and limitations. Knowledge of the inner workings of the ICV classroom gave students confidence in operating

necessary controls for communication and served to increase student satisfaction with the course. The results from this study suggest that the impact of the training session for increasing interaction may have been obscured by participants' unwillingness to communicate. In fact, the intrinsic value of the skills training session was reportedly high for students even though it failed to motivate them to interact overtly.

The training session could be offered during the first 30 minutes of the first class session from the local site using ICV technology as the mode of delivery. The training would allow students at all sites to practice using the technology in a realistic setting before the delivery of content. There was little need for the researcher to travel to the remote site to deliver the skills training face-to-face. For participants, the most memorable components of the training session were practicing using the ICV technology and seeing themselves on TV. A revised outline for the skills training session based on findings from the present study is included in the Appendix.

Key Words

Communication apprehension, interaction, communication skills training

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Appendix

Outline of Recommended Skills Training Session: Revised

Use the first class meeting to conduct a 30-minute climate-setting session with all students present and connected through the ICV system.

Welcome and Introductions –

Introduce local and remote site facilitators to the group.

Have each site facilitator introduce his/her cohort to the group.

Ask students to conceptualize the course as an interconnected learning community that welcomes interaction among and between sites.

Student Expectations –

Discuss content and interaction expectations with students.

Explain how final grades will be determined.

Students must be asked and expected to participate during class discussion.

Students are expected to access asynchronous learning resources independently (Web site, readings, discussion board, and E-mail).

Speaking Protocol –

Explain the speaking protocol to students (10-minute question and answer session at the end of the lecture).

The student must get the attention of the moderator and let him/her know that there is a question or comment so s/he will turn off the mute button.

The student must speak clearly, project his/her voice and be visible to the camera while asking questions.

Practice with the Interactive Compressed Video (ICV) Technology–

Invite experts from the Office of Distance Learning to deliver this portion of the skills training session.

Explain and demonstrate ICV operations to students.

Practice interacting with other sites via ICV and seeing self on TV.

Practice using the camera and pressing the microphone button.

Explain time delays and that voices may be choppy and delayed; however, it is important to keep speaking in a clear, steady stream. Pausing amplifies the problem.

The mute button should be "on" when no one from the site is speaking and should be "off" when students want to speak to the group.

Wrap-up and Discussion –

Address remaining questions and concerns of students and site facilitators.

Paper and pencil evaluation of session for improvement.