Perceptions of Interactions in Online Courses

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Abstract

This study examined the use of synchronous video chat, Elluminate Live™ in online graduate courses. Four types of instructor interaction with students in online courses were compared. The methods included interaction with the instructor only asynchronously, instructor asynchronously plus a reader, instructor asynchronously plus synchronously through Elluminate Live™, and Instructor asynchronously, reader, and Elluminate Live™. One hundred fifty-one graduate students who took online courses in Educational Administration during the spring of 2009 were invited to participate in a twenty-one item online survey developed by the researchers regarding interaction in online courses. Graduate students in online courses in this study perceive the learner-to-content interaction, learner-to-learner interaction, learner-to-instructor interaction in the courses they take positively. When examining learner-to-content interaction this study found that females perceive the interaction significantly more favorably than their male colleagues. Interaction with the instructor was the one area in this study that received a lower level of agreement compared to responses to other survey items. Graduate students in online courses perceive the use of Elluminate Live more positively than that of a reader and the instructor synchronously.

Keywords: Instructor Feedback in Online courses; Synchronous Video Chat

Introduction

Institutions of higher education have witnessed a proliferation of online courses in the past several decades (Allen & Seaman, 2004; DeLoach & Greenlaw, 2007; Miller & Webster, 1997). The National Center for Education Statistics (NCES, 2007) reported that during the 2006-07 academic year, 66% of two year and four year Title IV degree granting postsecondary institutions reported offering online, hybrid/blended, or other distance education. Sixty-one percent of two-year and four-year institutions reported offering online courses, 35% reported hybrid/blended, and 26% reported other types of distance courses. Distance education courses account for an estimated 12.2 million enrollments with 77% in online courses and 12% in hybrid/blended courses. There were 11,200 college level programs designed to be completed totally at a distance, 66% as degree programs and 34% as certificate programs. Seventy-five percent of all courses were delivered through asynchronous Internet-based technologies (NCES, 2007).

Online Learners

The most common factors for growth in distance education cited by universities related to meeting student demand for flexible schedules, providing access to college for students who would otherwise not have access, making more courses available, and seeking to increase student enrollment. The typical

student in online courses is white and male. Less than 10% percent of the online learners are from a minority group (Bocchi, 2004). Students taking online classes have varied learning styles, are highly motivated, and want the convenience provided by online courses (Graff, 2003).

Online students come with varying degrees of experience using technology. The greater the learners' prior experience with technology, the more satisfied and comfortable the learners are with online courses. An inverse relationship exists between the learners' Internet experience and the learners' Internet anxiety reported (Johnson & Johnson, 2006; Sharpe & Greg, 2005). Joiner, et al. (2005) reported that "comfort with technology was related to satisfaction with online course experience which was related to perceived quality; motivation to learn more about technology was also related to satisfaction of online learning experience" (p. 371).

Interaction in Online Courses

Purposeful design and delivery of classes becomes essential with the increase in distance education coursework (Levine, 2007). The field of distance education has carefully examined practices to identify effective strategies for the design and delivery of distance education courses (DeLouch & Greenlaw, 2007; El Mansour & Mupinga, 2007; Graham, Cagiltay, Lim, Craner, & Duffy, 2001; Holmberg,1989,1995; Keegan, 1988; Levine, 2007; Moore, 1993).

Building on the idea of a systems approach to effective distance education, Moore (1993) highlighted the importance of interaction in online classes. Moore (1993) identified three types of interaction inherent in effective online courses: (a) learner-to-content interaction, (b) learner-to-instructor interaction, and (c) learner-to-learner interaction. Moore (1993) explained that without learner-content interaction, little or no learning will occur. While this idea is critical to all instruction, the importance organizing the course so that student engagement with the content of the course is achieved and continued must not be taken lightly. Additionally, Moore suggested that designers of online courses carefully identify instructional goals related to the instructor's own interaction with the student in order to initiate and maintain student interest and engagement in the online course: "The frequency and intensity of the teacher's influence on learners when there is learner-teacher interaction is much greater than when there is only learner-content interaction" (Moore, 1993, p. 23). Moore (1993) discussed the use of a wide range of venues (video, audio) to successfully build and maintain a relationship between the student and the instructor. Finally, Moore (1993) emphasized the importance of supporting interaction among the students themselves in order to increase student skills in group interaction and communication, requisite skills in a global society.

Recognizing the value of online discussion, Levine (2007) suggested several strategies for effective online interaction in distance education courses: online instructors should (a) create a positive and supportive learning environment, (b) outline clear expectations for conduct and activity within the course, (c) provide appropriate support from the instructor, (d) view students and instructors as "co-investigators" (p. 70), (e) implement activities which focus on higher order thinking, (f) establish multiple opportunities for participation and acknowledgement of individual students, (g) contact students who have disappeared from the discussion, and (h) pose discussion questions which promote professional reflection and application to real world situations.

An overarching strategy for effective online interaction is meaningful discussion. DeLoach and Greenlaw (2007) advised that instructors in online courses "facilitate, but not lead" (p. 420) the discussion as a means to promoting effective interaction. Fischer (2003) likewise recommended that the instructor be a facilitator not a controller. Specifically, DeLoach and Greenlaw (2007) emphasized clear goals for the discussion groups; appropriate, individualized levels of intervention by the instructor; and the assignment of grades that are tied to both quantity and quality of student discussion.

Martyn (2005) examined the need to purposely create an environment which supports collaboration among all students as well as the between students and the instructor. In other words, the social aspects of learning should be deliberately planned and analyzed for students to be successful in an online environment. Martyn (2005) called for more research to identify specific instructional strategies which promote interaction and higher order thinking skills.

Graham, Cagiltay, Lim, Craner & Duffy's (2001) principles for online instruction include two that are specific to online interaction: (a) that the instructor encourages student-faculty contact and (b) the instructor gives prompt feedback on both a personal and educational level. While any and all of these

instructional strategies merit further study, the role that feedback plays in learning and the best strategies for providing feedback in online courses is worthy of closer examination.

Feedback in Online Courses

Feedback is critical to learning. Shute (2008) reviewed the research on the way formative feedback can modify and improve learning. According to Shute (2008) formative feedback should be nonevaluative, supportive, timely, and specific. Findings from both traditional classrooms and technology-assisted instruction are similar, "The main goal of formative feedback – whether delivered by a teacher or computer, in the classroom or elsewhere – is to enhance learning, performance, or both" (p.168).

The effective use of feedback plays a significant role in the perceived value of online discussion. Tallent-Runnels et al. (2006) reviewed findings from 40 quantitative and 20 qualitative studies about teaching online courses. The general findings on course design include recommendations to create a learning community with small groups. Specifically, findings regarding feedback conclude that teacher-student participation promoted learning and supported the importance of instructor presence through scaffolds and prompt feedback (Tallent-Runnels et al.,2006). Learning must be questioned and synthesized into new learning, to construct new knowledge. Feedback in the student-learner roles stimulates this knowledge construction through interaction, scaffolds, and organizing ideas. DeLoach and Greenlaw (2007) recommended that instructors should only intervene when discussion begins to lag and that the feedback should scaffold learning to support the students by indentifying gaps in discussion. Blignaut and Trollip (2003) supported the studies presented by Tallent-Runnels et al., and reiterated the importance of the instructors' presence. Students' perceptions and interactions were increased by the instructor's prompt feedback, participation, and application of collaborative learning strategies (McIssac, Blocher, Mahes, & Vrasidas,1999).

Need for Further Research

Online discussion is viewed as both a positive and negative learning experience by instructors and students (El Mansour & Bassou, 2007; Simonson, Smaldino, Albright, & Zvak, 2000; Wang & Newlin, 2002). The type of discussion makes a difference. Johnson & Johnson (2006) found that college students (70%) preferred face-to-face classes to asynchronous while 60% preferred face-to-face to synchronous online discussion and that 40% of college students preferred synchronous to asynchronous chats. Simonson et al. (2000) listed the delayed feedback in asynchronous discussion as a limitation of online courses. El Mansour and Bassou (2007) researched both online and hybrid courses. Interviewed students identified feeling "lost in cyberspace" with no feedback from body language and that "the teachers did not get to know the students personally" (p.13) during online discussion. Wang and Newlin (2002) identified that asynchronous online discussion is slow, limits the type of communication, and removes any feelings of connection.

The introduction of new technology may assist in ameliorating the negative aspects of asynchronous discussion. One such technology is Elluminate Live, a type of virtual classroom collaboration software which permits real-time interaction and familiar class environment features such as verbal interaction, instructor presence, and synchronicity. Tremblay (2006) explained that collaboration software, "offers instructors the opportunity to address the class as a group, respond quickly to questions, provide feedback to students in groups or individually, to call on, query, and poll"(p.2). Keegan (2000) explained that best practices can include the positive attributes of both face–to- face learning and online learning using such applications as Elluminate Live ™. Johnson and Howell (2005) indicated that when students are required to use a variety of technology, students reported positive attitude changes toward technology and used more optional online materials. The findings of Johnson and Howell's (2005) study encourage the use of classroom collaboration software.

Tallent-Rummerls et al. (2006) reported that research about online instruction in general lacks quantitative studies with certain aspects of online instruction receiving little attention. Tallent-Rummerls et al. (2006) recommended that "future research needs to examine the kinds of instructor and student roles in online discussion that enhance class discussion and encourage critical thinking and construction of knowledge" (p.117). Furthermore, "another strand of research that would most likely bear fruit is improved design and management of online discussion" (p. 118).

The purpose of this study was to examine interaction in online graduate courses at three levels: (a) learner-content interaction, (b) learner-learner interaction, and (c) learner-instructor interaction. Interaction was analyzed by the characteristics of the number of online courses taken, educational level, gender, and instructor feedback method. The following research questions guided this study: (1) What are the perceptions of graduate students regarding learner-content interaction, learner-learner interaction, and learner-instructor interaction in online courses? (2) What are the differences in graduate students' perceptions of interaction in online courses based on gender, educational level, the number of online courses taken, and instructor feedback method? (3) What is the relationship of graduate students' perceptions of learner-content interaction, learner-learner interaction, learner-instructor interaction and overall interaction in online courses? (4) To what extent do gender, educational level, number of online courses taken, and the instructor's feedback method predict graduate students' perceptions of interaction in online courses?

Methodology

The researchers, as faculty members in Educational Administration, have each engaged in online instruction of graduate students for over five years. Each of the researchers utilizes the same course management system and have implemented the same design and procedures for the learner-to-content and the learner-to-learner interaction in the online courses. Learner–to-learner interaction is organized through content modules. Each week the instructors post an overview or directions with a reading assignment for the content module, content notes and /or PowerPoints, and any other supporting materials are posted in the "Content" section of the course management system. Learner-to-learner interaction is setup by each of the instructors through the discussion board. The instructors post discussion prompts for each content module. Students are expected to respond to the instructors' prompt and to at least two peers in the course for each of the instructors' post. Students are graded on the quantity and quality of the posts in the discussion board.

Four methods of learner-to-instructor interaction were part of this study. One method was that the instructor utilized the discussion board, gradebook, dropbox and e-mail features of the course management system to provide feedback and interact with students. A second method involved the instructor utilizing the same course management system tools for feedback; however, a reader was utilized in the discussion board. The reader was an adjunct faculty member who read all of the graduate students' postings in the discussion board and replied to students, as well as posted scores in the gradebook for the discussion board. A reader was employed to provide prompt and meaningful instructor interaction due to the large number of students enrolled in the online courses. Another method involved the instructor utilizing all of the tools in the course management system and video chat sessions through Elluminate Live™. The final method the instructor employed all of the tools in the course management system, a reader, and Elluminate Live.

One hundred fifty-one graduate students who took online courses in Educational Administration during the spring of 2009 were invited to participate in a 21 item online survey developed by the researchers regarding interaction in online courses. The survey instrument was developed based on the types of interaction defined by Moore (1993) in online courses. The five part electronic survey was conducted via Survey Monkey™. Part I of the survey asked respondents to consider the interactions with the content of the course. Respondents reported perceptions of interaction with other students in Part II of the survey. In Part III of the survey participants responded to items related to interaction with the instructor. Respondents' perceptions of overall interaction in the course were queried in Part IV. Respondents provided information about their gender, educational level, number of online courses they had taken, and course enrollment in Part V of the survey.

Findings

Ninety-nine of the 151 graduate students who were invited to participate completed the online survey (66% response rate). The majority of the respondents was female (56%), the range of age was 21-57 years, with 64% being age 33 years or older, and most students (82%) had taken more than three online courses. Seventy percent of the graduate students already held a master's degree or beyond. Twenty-six (27%) of the respondents had interaction with the instructor that involved only the instructor and the course management system tools. Twenty-three (24%) of the respondents were involved with instructor interaction that included the instructor using the course management system tools and a reader. Twenty-

four (25%) of the respondents' interaction with the instructor involved the course management system tools and Elluminate Live ™. Twenty-three (24%) of the respondents interacted with the instructor via the course management system tools, Elluminate Live, and a reader.

Perceptions regarding interaction were divided into four areas leaner-content interaction, learner-learner interaction, learner-instructor interaction and overall interaction. The respondents perceive that interaction was positive. Graduate students agreed most strongly that the "content supported their learning" (*M* = 4.60). The participants did not perceive "the amount of instructor interaction" (*M* = 4.21), as positively as all other items. The means and standard deviations for the perceptions of the respondents regarding interaction in online courses are presented in Table 1.

Table 1. Perceptions of Interaction in Online Courses

Indicator	**Mean**	**SD**
Content Presented is Appropriate	4.48	0.522
Content Presented is Timely	4.48	0.629
Content Presented Supported Learning	4.60	0.552
Content Material Access without Technical Problems	4.58	0.536
Amount of Student Interaction was Appropriate	4.29	0.760
Student Interaction was Timely	4.55	0.627
Student Interaction Supported Learning	4.40	0.684
Student Interaction Methods Accessed without Technical Problems	4.58	0.671
Amount of Instructor Interaction was Appropriate	4.21	0.760
Instructor Interaction was Timely	4.29	0.836
Instructor Interaction Supported Learning	4.42	0.744
Instructor Interaction Methods Accessed without Technical Problems	4.53	0.675
Overall Interaction	4.46	0.679

Note: *n* = 99

Composite mean scores for learner-to-content interaction, learner-to-learner interaction, and learner-to-instructor interaction were calculated. One-way analyses of variance were conducted to determine if significant differences existed among perceptions of the respondents based on the number of online courses that were taken. There were no significant differences found in the perceptions of the graduate students based on the number of online courses taken.

One-way analyses of variance (ANOVA) were conducted to compare graduate students' perceptions regarding learner-to-content interaction, learner-to-learner interaction, learner-to-instructor interaction and overall interaction based on the instructors' method of feedback. There were no significant differences among the four methods of instructor feedback regarding learner-to-content interaction, learner-to-learner interaction, and overall interaction. A significant difference was found in respondents' perceptions of learner-to-instructor interaction (F=3.638, p=.05). A Tukey's Post Hoc Test revealed that a significant difference exists between the feedback method of the Instructor/ Elluminate (M=4.62) and the Instructor/

Reader (M=4.06). Table 2 presents the differences in graduate students' perceptions based on instructor feedback method.

Table 2. Differences in Perceptions of Interaction Based on Instructor Feedback Method

Interaction Level	Instructor (*n*=26) *Mean*	Instructor/ Reader (*n*=23) *Mean*	Instructor/ Elluminate (*n*=23) *Mean*	Reader/ Elluminate (*n*=24) *Mean*	*F*	*p*
Learner to Content	4.58	4.46	4..62	4.45	1.056	0.372
Learner to Learner	4.51	4.42	4.62	4.27	1.750	0.162
Learner to Instructor	4.45	4.06	4.62	4.25	3.638	0.016*
Overall	4.50	4.39	4.68	4.23	1.766	0.159

**p* <.05 *Note. df*=95

A *t* test of independent samples was conducted to determine if significant differences existed between the perceptions of graduate students by gender and educational level. No significant differences were found for educational level regarding interaction with content, interaction with peers, interaction with the instructor and overall interaction. Furthermore, no significant differences were found regarding the respondents' perceptions of interaction with peers, interaction with the instructor, and overall interaction based on gender. However, a significant difference was found between graduate students' perceptions of interaction with content based on gender (*t*=-2.805, *p=.006)*. Females (*M*= 4.63) perceived interaction with content significantly more positively than males (*M*=4.63). Table 3 presents the differences in perceptions regarding perceptions of interaction with content based on gender.

Table 3. Differences by Gender for Interaction with Content

	M	*t*	*p*
Male	4.40	-0.2805	0.006*
Female	4.63		

n=97 **p* <.05

The relationship between the perceptions of graduate students' regarding interaction with content, interaction with peers, interaction with the instructor, and overall interaction was analyzed by conducting a Pearson Product Moment Correlation. A strong positive relationship was found between content interaction and peer interaction (*r* =.600), content interaction and instructor interaction (*r*=.621), content interaction and overall interaction (*r* =.547). A strong positive relationship also was found between peer interaction and instructor interaction (*r* =.650) and peer interaction and overall interaction (*r*=.634). Finally, a strong positive relationship was found between instructor interaction and overall interaction (*r*=.669). The relationship between content interaction, peer interaction, instructor interaction, and overall interaction is presented in Table 4.

Multiple linear regressions were calculated to determine if the characteristics of gender, educational level, number of online courses taken, and the instructor feedback method significantly predict the perceptions of graduate students regarding interaction. The regression model found that gender, educational level,

number of online courses taken, and the instructor feedback method are not significant predictors of the online students' perceptions of interaction.

Table 4. Relationship between Interaction with Content, Interaction with Peers, Interaction with the Instructor and Overall Interaction

	Content Interaction	Peer Interaction	Instructor Interaction	Overall Interaction
Content Interaction	- - - - -	0.600**	0.621**	0.547**
Peer Interaction	- - - - - -	- - - - - -	0.650**	0.634**
Instructor Interaction	- - - - - -	- - - - - -	- - - - - -	0.669**

*Note: **p< .0.01*

Discussion

Graduate students in online courses in this study perceive the learner-to-content interaction, learner-to-learner interaction, and learner-to-instructor interaction in the courses they take positively. When examining learner-to-content interaction this study found that females perceive the interaction significantly more favorably than their male colleagues. Perhaps this can best be explained by a difference in learning styles or in the different professional experiences of the female learners.

Graduate students viewed learner-to-learner interaction as supportive of their learning. There were no significant differences found regarding leaner-to-learner interaction in regards to gender, educational level, number of online courses that were taken, and the methods of feedback with the instructor. DeLouch and Greenlaw (2007), Fischer (2003), and Martyn (2005) all speak to the instructor as the facilitator in discussion boards for online courses. The instructors in this study facilitated learner-to-learner interaction through online discussion board. Each instructor monitored the discussion board interaction by reading the posts of the students, providing periodic feedback as needed, and grading the quality and quantity of the discussion.

Interaction with the instructor was the one area in this study that received a lower level of agreement compared to responses to other survey items. This study examined four different methods of instructor interaction with students in online discussion. Graduate students in this study perceived the instructor interaction most positively when the instructor employed the methods of feedback and interaction of the discussion board, gradebook, dropbox, and e-mail features of the course management system and utilized Elluminate Live. Students perceived the feedback method of using a reader as the least positive. This could be due to the fact that the students were not informed of the reader before the course began. The participants had expectations that the interactions would only be with the instructor and other students.

The preference of Elluminate Live may be indicative of the comfort level of the graduate students in this study with technology. Eighty-four percent of the students who participated in the study had taken three or more online classes. The notion that as the comfort level students with technology increases the satisfaction the students have with the online course increases is supported by Johnson and Johnson (2006) and Sharpe and Greg (2005). The preference for instructor interaction via Elluminate Live™ found in this study is further explained by Tremblay (2006) and Keegan (2000) who suggested that combining the best practices of face-to-face instruction with online learning, the verbal interaction, quick response to questions, and immediate feedback to students both individually and in groups creates an optimal learning environment.

Effective interaction is critical to online learning. This study provides evidence that a combination of synchronous and asynchronous interaction increases the learners' satisfaction with the learning environment. However, further study needs to investigate why the learners' did not see the concept of a

co-instructor or reader in comparable positive manner. Further, investigation needs to be conducted on the numbers of students enrolled in the course as it relates interaction and instructor feedback method. The number of enrollments in the courses in this study ranged from 17-41.

Online learning is a growing delivery method that is here to stay. The need to provide effective instruction to the learner is critical. The interaction of the learner with the content, other students and the instructor provides the pedagogical foundation for learning to take place. This study adds to the body of research in the field of online instruction, and also addresses gaps in online instruction research as reported by Tallent-Rummerls et al.(2006) The study provides quantitative data, explores the recommended research strand of investigation of online discussion, and examines the potential of classroom collaboration software to provide immediate feedback while diminishing the stated drawbacks of asynchronous discussion.

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