

STUDENT-TO-STUDENT INTERACTION

Humanizing the Online Classroom

Using Technology and Group Assignments

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The purpose of this study was to examine student-to-student interactions in an asynchronous online undergraduate course in higher education. Respondents ($N = 228$) were students enrolled in an undergraduate course taught by one of the authors. Regression analyses were conducted to measure students' (a) perceived ability to learn, (b) feeling of a community within the asynchronous course, and (c) ability to communicate. Results reveal that the use of VoiceThread technology within group assignments significantly influences students' ability to learn, their feeling of a community, and their ability to communicate. The technology provides students with a more humanizing method of interaction.

INTRODUCTION

The higher education landscape is changing significantly and at a very fast pace. An increasing number of public institutions are adding online synchronous and asynchronous courses to respond to student demand (Allen & Seaman, 2016; Boling, Hough, Krinsky, Saleem, & Stevens, 2012; Croxton, 2014). The changes are a result of (a) students with hectic work and life commitments and (b) advanced learning and technology systems (Bridgstock, 2016). The popularity in online courses contin-

ues to grow annually, although the face-to-face course enrollment dominates traditional institutions (Croxton, 2014). It is estimated that over one fourth all higher education students have taken at least one online course (Allen & Seaman, 2016).

A solid foundation of research reveals that online education requires a different teaching pedagogy from that of face-to-face education (e.g., Fetherston, 2001; Hardy & Bower, 2004; Shelton, Hung, & Lowenthal, 2017). As early as 1989, it was documented that, for learning to occur in online course delivery,

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interaction must be present (Garrison & Cleveland-Innes, 2016; Moore, 1989; Rhode, 2007). Course interactions can be formal (i.e., built into assignments) or informal (e.g., use discussion board to ask questions) (Rhode, 2007). Formal interaction is traditionally categorized in three different modes: (a) student-content, (b) student-student, and (c) student-instructor (Moore, 1989). For the purposes of this research, the authors focus on student-to-student interactions in an asynchronous undergraduate course in higher education.

Technological advances offer instructors an increasing number of methods with which to incorporate student-to-student interactions into an asynchronous course (e.g., Garrison & Anderson, 2003; Panettieri, 2013). Before incorporating technology, a best practice is to match up the course objectives and students' needs (Panettieri, 2013).

Careful planning, implementation and follow-through are required by instructors of asynchronous courses (Boling et al., 2012). Successful student-student interaction does not happen automatically. If any step of the process is ignored, asynchronous learners can feel disconnected from the learning institution, other learners within the course, and the instructor. The asynchronous course becomes more of a robotic set of instructions than a dynamic learning environment.

Unlike face-to-face courses that are able to operate successfully at times using organized student-student interactions, asynchronous courses require structured and systematic interactions for learning to occur (e.g., Garrison & Cleveland-Innis, 2005). Students often require explicit guidance of when and how interactions are to occur. Expectations need to be specific and detailed in order to maximize satisfaction with the learning experience. The justification for structure, guidance, and explanation is because not all students are prepared for an asynchronous learning environment (e.g., Angeli, Valanides, & Bonk 2003; Lui, Gomez, & Yen, 2009). They literally do not know what to expect, nor are they able to

physically view the instructor and classmates for comparative purposes.

Based on these findings, the researchers asked the following research question: "Are the structured and systematic group assignments significant predictors to students' ability to learn?"

Social Presence

Students' ability to learn is dependent in part on a concept called "social presence." Social presence theory suggests that "social presence is the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship" (Yamada, 2009, p. 822). Social presence can exist between student-student interactions. The importance of incorporating activities throughout any courses, regardless of the delivery (i.e., face-to-face, online) is that social presence is known to actively promote students' learning (e.g., Yamada, 2009). Research reveals that incorporating activities that stimulate social presence into asynchronous courses is even more important than face-to-face instruction due to the isolated nature of online instruction (Richardson, Maeda, Lv, & Caskurlu, 2017; Zhan & Mei, 2013). This focus is based on the fact that asynchronous online learners have a higher tendency to feel isolated from the classmates and a higher class dropout rate. Dropout rates in asynchronous courses are often attributed to forgetting about the course and not completing assignments. Once students realize the number of assignments missed, it is easy to feel isolated from the class, lose confidence in the ability to complete the course, and be discouraged in participating in future assignments (Zhan & Mei, 2013). The percentages of students who fail to complete online courses vary depending on the study. Attrition rates vary from 10% to 50% (e.g., Jun, 2005; Rochester & Pradel, 2008).

Research shows that the learning environment plays an important role in a course attrition rate, particularly that of online courses. Regardless of the type of instruction (face to

face or online) social interaction is an essential part for learning to occur (e.g., Uijl, Filius, & Cate, 2017). Specifically, students thrive in the course when a cohesive online community is built (e.g., Boling et al., 2012). Students who feel committed and connected are more likely to complete the course. Those who experience technology problems, lack interaction with the instructor and other students, and feel isolated from the class are more likely to drop the course (e.g., Liu et al., 2009; Rochester & Pradel, 2008; Willging & Johnson, 2004).

Building upon prior research (e.g., Boling et al., 2012), the researchers propose that as students in asynchronous courses interact with other students, their social presence, and satisfaction with the course will increase. This satisfaction will also encourage students to complete the course, thereby reducing the overall dropout rate of asynchronous courses. The second research question is posed based on this literature: "Is the incorporation of student-to-student group assignments a significant predictor the student's ability to obtain a feeling of community within an asynchronous online course?"

VoiceThread

Technology, particularly social media, is being used to connect people worldwide. While some social media (e.g., Facebook) was originally developed as a method of connecting friends, various forms of interactive technology is changing the way educators reach and teach students (Seo, 2016). Interactive technology (e.g., discussion boards, wikis, VoiceThread) are successful learning tools because they encourage collaboration, dialogue, and creativity (Panettieri, 2013).

Perhaps one of the most useful concepts of interactive technology in higher education is the promotion of online conversations and group activities (Casquero, Ovelar, Romo, Beneito, & Alberdi, 2016). These are not always the easiest tasks nor the most readily accepted activities among students. It is important for the instructor to understand that

not all online students expect to be engaged in student-student interactions (e.g., Garrison & Cleveland-Innes, 2005). Online conversations and group assignments in an asynchronous course should implement order cognitive skills (e.g., Gillespie, 1998).

We live in a society where college students are "connected" to their smartphones. Millennials are more comfortable texting friends than calling them. An asynchronous course, if not designed thoughtfully, promotes isolation. This isolation however, does a disservice to students as when they are ready to graduate and enter the workforce. Communication, both oral and written, are needed to be effective and desired by employers (Bridgstock, 2016). The ability to think critically is also an important and transferable skill that is highly valued by employers regardless of the field (Bridgstock, 2016). Throughout higher education, critical thinking skills are incorporated into assignments.

The isolated learning nature of asynchronous online learning places a higher importance on social presence. Students who obtain a sense of social presence are more willing to ask one another questions, share information and assist others with assignments. Social presence encourages an active student-student learning environment.

The combination of using VoiceThread technology and group assignments is one method of establishing a strong social presence; the interactive, cloud-based, multimedia slideshow tool is designed to stimulate student-learning engagement. The user (i.e., student, instructor) communicates across the web, present documents (e.g., PowerPoint files) and demonstrate learning outcomes via the VoiceThread tool. VoiceThread operates by a student recording the assignment. Students are able to record their assignment using a smartphone or tablet device (Koricich, 2013). The web camera records the student's response to a video. VoiceThread operates by a student recording a response to the assignment using a smartphone, laptop, desktop or tablet device. Once the student finishes the recording, Voice-

Thread produces a direct link to the video, which can be shared publicly with the class (Panettieri, 2013).

During the first week of the semester, many longtime instructors of asynchronous courses are faced with a flurry of questions regarding the location of materials, how to use the learning management system, and course expectations. The information is available on the learning management system, but for first-time online learners, the process may seem daunting. The benefit of using VoiceThread in the group assignments is the ease of use. VoiceThread is extremely user-friendly and requires very little technology information (Koricich, 2013).

VoiceThread can be used for a wide variety of purposes. In an online course, VoiceThread is an excellent tool for getting students to know one another as a community. Viewing one another's video helps the learners and instructor better understand the student beyond a name and student number. Recognition of a face and hearing the student's story helps build friendships among group members. VoiceThread provides the opportunity for everyone's voice to be heard. It promotes engagement among group members (Koricich, 2013). Weekly discussions, group assignments and study sessions for exams are enhanced using VoiceThread. VoiceThread meets the needs of different learning styles while building global communities. They are able to say "this is who I am." A humanistic blending of teaching, technology and online learning is presented. It also can lead to students thinking more critically, interacting on a higher level and being more reflective in their assignments (Panettieri, 2013). Building upon the VoiceThread literature, the authors pose the third research question: "Is the ability to communicate with group members a significant predictor of satisfaction with the asynchronous course?"

METHODS

Respondents ($N = 228$) for this study consisted of students enrolled in an undergraduate course taught by one of the authors. Five extra

credit points were provided for completing the survey. The total number of possible points for the course was in excess of 890. It is not believed that the five extra credit points significantly biased students' comments responses to the survey.

Respondents consisted of 25 men (11.20%) and 198 women (88.8%). Their ages ranged from 18 to 26 and older. Five participants did not reveal their ages. As is to be expected in an undergraduate course, the majority of students enrolled in the asynchronous course were between the ages of 18 and 21 ($N = 158$; 71.20%). The remaining participants were 22 and older ($N = 64$; 28.80%). This study supports research that many online learners elect this form of education as a result of being time deficit and/or work as well as go to school (e.g., Bridgstock, 2016). The majority of the respondents lived within the campus area ($N = 220$; 96.50%). In other words, these students readily had the ability to attend the face-to-face section of this course but chose the online version for personal reasons. Less than four percent of the respondents ($N = 8$; 3.50%) resided outside the university community and were enrolled in the course from outside the state.

It is interesting to note the number of online courses taken at this university. The majority of respondents ($N = 118$; 52.90%) have taken more than two online courses at this institution. Over one fourth ($N = 57$; 25.60%) were taking their first online course. The remainder of the respondents ($N = 48$; 21.5%) were enrolled in their second online course. Five respondents did not indicate their location. Table 1 highlights the demographic information of the sample.

One of the authors of this study is an instructor at a Carnegie I institution teaching asynchronous online courses at the undergraduate and graduate levels. Students at this Carnegie I institution enroll in online courses for a wide variety of reasons. Students from this study revealed that asynchronous courses offer them increased flexibility to work part time, advance his/her graduation date by taking online courses during the summer, and/or tak-

TABLE 1
Participant Profile

	<i>Attribute</i>	<i>N</i>	<i>Valid Percent</i>
Gender	Male	25	11.20
	Female	198	88.80
	Total	228	100
Age	18–19	33	14.90
	20–21	125	56.30
	22–23	15	20.70
	24–25	10	4.60
	26 and older	8	3.60
	Total	222	100
Area living	Campus area	220	96.50
	Within the state	7	3.10
	Out of state	1	.40
	Total	228	100
Number of online courses taken at this institution	First course	57	25.60
	This is the second course	48	21.50
	More than two online courses	118	52.90
	Total	223	100

ing a course overload without scheduling difficulties. These are all excellent reasons for taking online courses. Not once, however, did the students state the reason for enrolling in an online course is based on (a) positive social interaction, (b) that they were comfortable in the course format, or (c) because they excel in asynchronous online courses.

While the student evaluation and feedback were always positive, the instructor wanted to verify that the group assignments were promoting learning, social presence, and student satisfaction. Collaboration with an instructional designer resulted in the infusion of VoiceThread into group assignments. VoiceThread technology is incorporated directly into the learning management system. As such, each student enrolled in the asynchronous course has access to the technology. Students use their smartphone to record the assignment. The researchers in this study selected the use of VoiceThread for the asynchronous courses

because (a) the technology matched up with the course learning objectives, (b) it met with the needs of the learners and (c) the technology enables learners to work at their own pace.

Students were randomly placed into groups of three students per group. Each group was required to develop (1) a list of rules on the primary method of communication (e.g., use of text messaging), (2) guidelines on how the group would function (e.g., elect a leader for each week or the entire semester), and (3) expectations (e.g., assignments by 11:59 P.M.). Throughout the semester, the instructor would be an arbitrator on any group issues; however, group members were able to interact using any form of technology that best suit their needs as long as the final assignment was completed using the course guidelines and VoiceThread.

Over the course of the semester, the groups completed seven assignments. The completion process was the same for each assignment.

Each group had a list of five to nine subtopics. Within each group, the members were required to allocate a topic to each group member. For example, if a group was comprised of three group members, three topics would be allocated. Each member would then research the topic. VoiceThread technology would then be used to record a video thread and share the information among the group members. After the initial thread was created, group members collaborated until the assignment was completed. Once group members agreed upon the conclusion of the assignment, the leader uploaded the VoiceThread link to Blackboard for grading purposes.

Survey Instrument

An online survey was used to collect data using the Qualtrics system. To help students feel comfortable that responses were confidential to the instructor, (a) no identifiable data regarding each student was collected and (b) the data base was not accessed by the author/instructor until after the course ended. Quantitative data were collected on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*) to test Research Question 1 (RQ1): “The statements measured include: (a) my level of learning in this course is of the highest quality,” (b) students’ level of a feeling of a community within your group.

Quantitative data regarding students’ satisfaction with course attributes were collected on a 5-point Likert scale (1 = *very dissatisfied*; 5 = *very satisfied*) to test Research Question 2 (RQ2): “Is the incorporation of student-to-student group assignments a significant predictor the student’s ability to obtain a feeling of community within an asynchronous online course?” Statements measured included: (a) satisfaction of a feeling of community within your group”; (b) introductions enabled me to form a sense of online community; (c) I am able to form distinct individual impressions of some students in the course; and (d) I feel that my point of view is acknowledged by other students in this course.

A 5-point Likert-type scale was used to measure students’ attitudes regarding group assignments (1 = *strongly disagree*; 5 = *strongly agree*). RQ2: Students’ ability to obtain a feeling of community within an asynchronous course was measured on a 5-point Likert-type scale (1 = *strongly disagree*; 5 = *strongly agree*). Students’ satisfaction with their ability to communicate with other students was measured on a 5-point Likert-type scale was used to measure students’ attitudes regarding group assignments (1 = *very dissatisfied*; 5 = *very satisfied*). Students’ level of satisfaction with the technology as a significant predictor of learning in an asynchronous course was measured on a 5-point Likert-type scale (1 = *very dissatisfied*; 5 = *very satisfied*). Qualitative statements were also collected.

RESULTS

Data from Qualtrics were downloaded and imported into SPSS for analyses. Stepwise regression analysis was conducted to test RQ1.

RQ1: Are the structured and systematic group assignments significant predictors to their ability to learn?

The dependent variable consisted of “my level of learning in this course is of the highest quality.” The predictor variable consisted of students’ level “feeling of a community within your group.” Results of the analysis revealed that students’ feeling of a community with his/her group was a significant predictor ($R^2 = .34$; $F = 111.96$; $p < .000$) of their perception of learning in the course to be of the highest quality. Support for RQ1 is provided.

Stepwise regression analysis was conducted to test RQ2.

RQ2: Is the incorporation of student-to-student group assignments a significant predictor the student’s ability to obtain a feeling of community within an asynchronous online course?

TABLE 2
RQ1 Results

	<i>Model</i>	<i>R</i>	<i>R</i> ²	<i>Sum of Squares</i>	<i>Mean Square</i>	<i>Df</i>	<i>F</i>
1	Regression	.58	.34	97.65	97.65	1	111.96***
	Residual			189.25	.87	216	
	Total			286.91		217	

Note: $p \leq .000$.

TABLE 3
RQ2 Results

	<i>Model</i>	<i>R</i>	<i>R</i> ²	<i>Sum of Squares</i>	<i>Mean Square</i>		
1	Regression	.70	.49	148.64	148.65	1	207.13***
	Residual			155.00	.71	216	
	Total			303.65		217	
2	Regression	.73	.53	162.70	81.35	2	124.09***
	Residual			140.94	.65	215	
	Total			303.65		217	
2	Regression	.73	.54	165.45	55.15	3	85.39***
	Residual			138.20	.64	214	
	Total			303.65		217	

Note: $p \leq .000$.

The dependent variable consisted of “satisfaction of a feeling of community within your group.” Significant predictors included (a) introductions enabled me to form a sense of online community ($R^2 = .49$; $F = 207.13$; $p < .000$); (b) I am able to form distinct individual impressions of some students in the course ($R^2 = .53$; $F = 124.09$; $p < .000$); and (c) I feel that my point of view is acknowledged by other students in this course ($R^2 = .54$; $F = 85.39$; $p < .000$). Support for RQ2 is provided.

Stepwise regression analysis was conducted to test RQ3.

RQ3: Is the ability to communicate with group members a significant predictor of satisfaction with the asynchronous course?

The dependent variable consisted of “students’ overall satisfaction with the course.” Significant predictors of satisfaction included:

(a) I am comfortable interacting with other participants in this course ($R^2 = .32$; $F = 103.06$; $p < .000$); (b) I am comfortable conversing through this medium ($R^2 = .34$; $F = 7.81$; $p < .000$). Students enrolled in an online course built connections between other students as well as with the instructor through the use of VoiceThread. The technology empowered students with the ability to form a sense of online community and form distinct individual impressions of some students in the course.

DISCUSSION

The results of this study are rewarding and encouraging. At the beginning of each semester, asynchronous students, particularly those who are new to this type of learning, typically fight back when they learn group assignments are required. Students try to negotiate to

TABLE 4
RQ3 Results

	<i>Model</i>	<i>R</i>	<i>R²</i>	<i>Sum of Squares</i>	<i>Mean Square</i>	<i>Df</i>	<i>F</i>
1	Regression	.56	.32	83.11	83.11	1	103.06***
	Residual			174.17	.80	216	
	Total			257.28		217	
2	Regression	.58	.34	89.21	44.60	2	7.81***
	Residual			168.07	.78	215	
	Total			257.28		217	

Note: $p \leq .000$.

(a) work alone because “he/she works two jobs, is a responsible individual and/or has time constraints;” or (b) include friends or students he/she already knows in his/her group. After a discussion of why group assignments are included in the course and groups are randomly assigned, students eventually come to the realization that the group assignments are final and made for a specific learning reason as opposed to being mean spirited.

The results of this study are extremely positive because the group assignments were indeed a significant predictor of students’ ability to learn. The group assignments were specifically designed around the course learning objectives and to meet the students’ needs (Panettieri, 2013). Three weeks prior to the beginning of the semester, the instructor examined the assignments and significantly changed the assignments so that critical thinking requirements were involved in each activity. This planning was proven to be an essential component of students’ group learning (Boling et al., 2012). The directions of the group assignment were further refined so that the student-student interactions were supported by the technology, ease of use and structured and systemic method throughout the entire semester (Garrison & Anderson, 2003; Panettieri, 2013).

Finally, results of RQ1 are encouraging because the technology available to asynchronous online learning is constantly changing. It

is possible to incorporate a wide variety of technology into the online classroom to make students excited and connected. This research question however, provides the valuable tools of (a) structure and (b) systematic. Without these two components, technology will only be an expensive tool.

RQ2 focuses on the ability to build a community. Group assignments have traditionally been incorporated into face-to-face course syllabi because (a) employers want proof that the student is able to work well with others, (b) group assignments is a team building activity, and (c) interacting with others is a documented learning technique. Group assignments in asynchronous online courses can meet the same learning objectives as that of a face-to-face course. The goal however, is often to build a community. All too often asynchronous online learners are able, if not carefully planned into the course syllabus, to hide behind a computer screen. The use of group assignments and VoiceThread technology literally forced students to reveal themselves visually and orally to their group members. In addition to sharing group assignment information, the VoiceThread technology often revealed the students (a) personality and (b) dorm/apartment setting. Group members gained a sense of who each member was, his/her interests and a feeling of community (i.e., I belong). Members shared opinions regarding

the assignment and negotiated roles within each assignment.

RQ3 focuses on student satisfaction with the asynchronous course. Results of the analysis revealed two significant predictors of students' satisfaction with this asynchronous course. These include (a) I am comfortable interacting with other participants in this course; (b) I am comfortable conversing through this medium. The use of VoiceThread in group participation assignments changed students' and the instructor's (i.e., one of the authors) understanding that there is truly a new era of online. Asynchronous learning does not mean the interaction lacks humanistic contact. In fact, the use of VoiceThread in group assignments results in bringing students and the instructor together similar to that of a face-to-face instructional method.

CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

This study examined one component of the student learning interactions. This learning interaction is perhaps one of the easiest for an instructor to overlook and/or minimize its importance. Successfully incorporating a method whereby online learners are able to interact with one another has the potential to significantly increase student satisfaction.

The use of VoiceThread technology in group assignments enabled students to meet one another, see their faces and, in many cases, view their living environments. The technology provides students with a more humanizing method of interaction. In addition, students are required to use verbal communication skills necessary in the work force. They were required to think quickly, respond, and speak in a professional manner. VoiceThread simulated a face-to-face learning environment.

This study was conducted at a large university located in the Southeastern portion of the United States. The specific university is proponent of quality online education. If the online course being offered is equivalent to a face-to-

face course offered on the campus, the learning objectives must be identical. The learning interactions (e.g., student-to-instructor interaction) may differ from the face-to-face course offering. That is, assignments, point distribution and required reading are not necessarily required to be identical to the face-to-face version of the specific course. Differences between learning interactions may occur due to the nature of the course and/or the specific instructor teaching the course.

The online courses examined in this study are available to students throughout the university. One of the courses is also offered in a face-to-face version. The other course is only offered in an online format. It would be interesting to examine if students "compared notes" with their friends regarding the level of satisfaction with student-to-student interaction in the face-to-face version of the course. A recommendation is to compare student satisfaction with student-student interaction in the face-to-face version with student satisfaction with student-student interaction the online version of the same course offering.

This study examines one component of the student learning interactions: student-student. There are two additional student learning interactions that are not included in the examination (student-content and student-instructor). The researchers also recommend that the study be expanded to include the examination of student satisfaction with the three methods of interaction (student-to-student, student-to-content, and student-to-instructor). Students' connection with others throughout the course, learning experiences, and ultimate satisfaction with the course is the result of the combination of interactions. It is important to clearly understand the methods of maximizing each interaction.

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