Predictive Effects of Social Presence on Student Engagement in the Online Component of Blended Distance Learning Programs at Makerere University, Uganda

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Abstract

This study investigated the predictive effects of social presence on student engagement in the online component of blended distance learning programs at Makerere University, Uganda. Specifically, the study examined the extent to which affective expression, open communication, and group cohesion produced gains in student engagement in blended distance learning programs. The study was guided by the Community of Inquiry (CoI) model and employed a quantitative methodology using correlational and cross-sectional research design. The study targeted 2931 students enrolled in blended distance learning programs at Makerere University. Data were collected from 283 distance-learning students from the College of Education and External Studies (CEES) and College of Health Sciences (CHS) of Makerere University using a self-administered questionnaire. The students were selected through stratified proportionate sampling. The data were analyzed using both descriptive statistics and regression analysis. The results showed that all three elements of social presence namely; affective expression ($\beta = .236$, $p = .000 < 0.05$), open communication ($\beta = .336$, $p = .000 < 0.05$), and group cohesion ($\beta = .297$, $p = .000 < .05$) had a positive and significant influence on student engagement in the online component of blended distance learning programs. The study concluded that social presence plays a vital role in predicting gains in student engagement in blended distance learning programs. Hence, instructors and managers of blending distance learning programs at Makerere University should consider ways to foster social presence components namely affective expression, open communication, and social cohesion when designing online and blended distance learning courses to maximize gains of student engagement to leverage requisite educational outcomes.

Keywords: Social presence, Student Engagement, Online learning, Distance education

INTRODUCTION

With increase in diffusion and use of web-based technologies and services, online distance learning has become a commonly accepted medium for delivering instruction supplementing traditional ways of teaching in higher education across the global academic community (Pellas, 2014). In this concession, distance education is largely facilitated through blended learning models via Internet, and no longer limited to classroom walls (Biel & Brame, 2016). It is characterized by the physical separation of both the teacher and the learner, and instruction is through a variety of media both print and electronic to the learner who may either have missed the opportunity earlier in life

or have been denied the face-to-face formal education due to socio-economic, career, family and other circumstances (Ajadi et al., 2008). Overall enrollment in online courses grew at an approximate rate of tenfold that of traditional classroom-based instruction in higher education (Shea & Bidjerano, 2009). In the United States of America, 31.6% (6.4 million) of all students in colleges and universities were doing at least one online course in the of Fall 2016 (Seaman et al., 2018). Online learning involves the use of technology as the mediator of the learning process delivered by the Internet (Siemens et al., 2015). However, most institutions use it alongside face-to-face classroom instruction for a blended learning mode.

With increased adoption of the online learning delivery in distance education, the engagement of students is of utmost importance (Meyer, 2014). Astin (1984) conceptualized student engagement as "the quantity and quality of physical and psychological energy that students invest in the college experience" (p. 297). This relates to the extent of a student's active involvement, the degree of attention, interest, and passion that learners show when they take part in the learning process (Reeve, 2012; Trowler, 2010). Although no single definition of student engagement has been agreed upon, there is agreement that the definition and scope of student engagement studied in different fields for the last three decades varies according to the study subject and background (Xu et al., 2020).

Student engagement is a multilevel, multidimensional, and malleable concept (Wang & Degol, 2014). As a multi-dimensional concept, student engagement consists of three dimensions of behavioral, emotional, and cognitive (Fredricks et al., 2004). Behavioral engagement relates to students' behaviors e.g. participation and time spent on the task (Natriello, 1984). The emotional domain relates to students' feelings of belonging, attachment, and enjoyment (Finn, 1989), while the cognitive domain encompasses the investment of students in the learning process, and the use of more deep learning strategies to persevere while facing the learning challenges (Appleton et al., 2008; Fredricks et al., 2004). As a multi-level phenomenon, students can be engaged at three hierarchical levels, namely, at the school level, classroom or subject domain level, and in specific classroom learning activities (Skinner & Pitzer, 2012). Being malleable means that it is dynamic and shaped by the context (Wang & Holcombe, 2010). Fredricks et al. (2004) posit that students do not remain engaged or disengaged; instead, students' engagement fluctuates across and within lessons. This fluctuation can be due to family, school, and peer influences (Ali & Hassan, 2018). When students have positive learning experiences, supportive relationships with adults and peers, and reaffirmations of their developmental needs in learning contexts, they are more likely to remain actively engaged in school (Wang & Eccles, 2013).

Student engagement is strongly and positively correlated with academic achievement (Lei et al., 2018), student grades and persistence (Kuh et al., 2007). Generally, student engagement has quite ubiquitously fused into higher education, to enhance all students' abilities to learn how to learn or to become lifelong learners in a knowledge-based society (Parsons & Taylor, 2011). And as competition within the online higher education market increases (Schindler et al., 2015), and the fact that student engagement can act as a proxy for educational quality (Kuh 2009), more attention has been drawn to it in blended distance education. Makerere University for example adopted online learning and uses the Makerere University E-learning (MUELE) platform to deliver blended distance learning programs. Makerere University introduced the Open Distance and e-Learning (ODeL) policy to mainstream ODeL into academic programs of the University (Rwendeire, 2017). ICT integration is also embedded in the University's strategic plan for 2020 to 2030. Attaining meaningful

educational outcomes in blended learning requires continuous engagement of learners in the learning process through regular interaction with peers, facilitators, and content. However, despite an array of researchers suggesting that student engagement in blended distance learning programs is linked with several positive outcomes, the predictors of student engagement in this type of program have yet to be systematically studied. This study hence sought to investigate the relationship between social presence and student engagement in the online component of blended distance learning programs at Makerere University.

Theoretical Framework

The study was underpinned by the Community of Inquiry (CoI) model (Figure 1). CoI is a social constructivist model developed by Garrison et al. (2000) to understand engagement in online learning experiences. At the center of CoI is an assumption that learning occurs in a community of inquiry as a result of the interaction between three essential elements/presences namely; social, teaching and cognitive presence (Garrison et al., 2003). Social presence refers to the ability of participants to project themselves socially and emotionally as 'real people' (i.e., their full personality), through the medium of communication being used (Garrison et al., 2000). The three dimensions social presence are open communication, group cohesion, and affective expression. Teaching presence is the design, facilitation, and direction of cognitive and social processes to realize personally meaningful and educationally worthwhile learning outcomes (Garrison et al., 2000). While cognitive presence is the extent to which learners can construct and confirm meaning through reflection and communicative action (Garrison et al., 2000). The three elements in this model are mutually constitutive and reinforcing within online learning experiences. Therefore, based on the model, this study aimed at investigating the predictive effects of social presence on student engagement in the online component of blended distance learning programs at Makerere University.

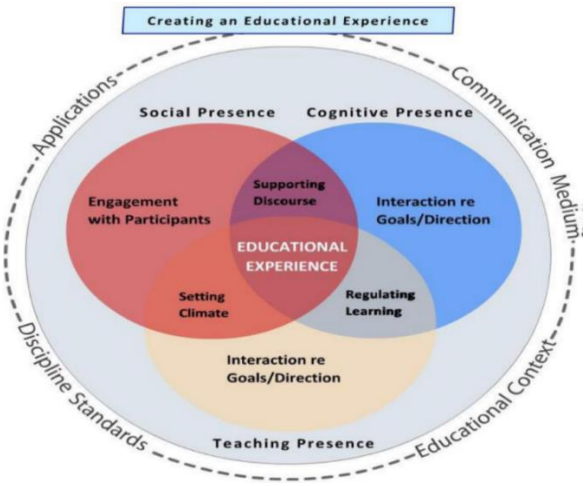

Figure 1: The Community of Inquiry Model

Note. This model shows the interrelationship between social, teaching, and cognitive presence, and adopted from Garrison et al. (2000).

Social Presence and Student Engagement in Blended Distance Education

Social presence depicts the sense of awareness and engagement that one person feels when communicating via technology with another person(s) (Holmes, 2020). Social presence supports cognitive presence and is a mediator between teaching presence and

cognitive presence (Garrison et al. (2000). Compared to teaching and cognitive presence, social presence is said to have a strong connection with learning outcomes (Noteboom & Claywell, 2010). Enhancing social presence in blended learning requires the use of both asynchronous tools (e.g. use of emails, discussion boards, and written assignments) and synchronous tools (e.g. chats, web conferences, shared interactive workspaces, live stream lectures, and 3D virtual learning environments) (Cobb, 2011). Several studies (e.g. Aguiar, 2017; Doo & Bonk, 2020; Grieve et al., 2016; Vohra, 2016) have found a positive and significant relationship between social presence and student engagement. Molinillo et al. (2018) found that social presence highly and positively influenced students' emotional engagement. In particular, social presence points to the three critical dimensions namely: open communication, group cohesion, and affective expression.

Affective expression concerns students' sense of knowing each other, interacting socially, and belonging to the course (Heilporn & Lakhal, 2019). According to Swan (2003), affective expression is manifested through "the use of paralanguage, expressions of emotion, statements of values, humor and self-disclosure" (p.140). Imlawi et al. (2015) found the use of humor by instructors in communicating with their learners highly impacting their engagement levels. In their study, students were found to engage more with posts containing self-disclosure and humor than they did with those posts that did not. Humor serves as a friendly invitation to start a conversation, decreases social distance, can express goodwill, and is often an important factor in group cohesion (Wu, 2017). Similarly, Erdoğdu and Çakıroğlu (2021) found diversity of humorous elements in the online course important in creating a significant difference and improved behavioral engagement for course materials, discussions, and assignments, but not contributing to behavioral engagement for quizzes. Dixson et al. (2017) found nonverbal immediacy behaviors such as emoticons/figurative language, color, cohesion, visual imagery, and audio in course design; response latency, length, time of day, and message frequency in forums; type and promptness of feedback via grading and email to significantly influence student engagement levels at a regional Midwestern comprehensive university.

Open communication is the mutual and respectful exchange of information (Garrison et al., 2000), including students' purposeful and trustful interactions with other students and course discussions in the online environment (Heilporn and Lakhal (2019). Interactions motivate and stimulate learners (Keengwe et al., 2013). There are three distinctive types of interactions in blended learning namely: student-to-student, student-to-instructor, and student-to-content interactions (Moore, 1989). Park and Kim (2020) discovered that the use of interactive communication tools in online learning was a precursor to strong student-instructor interactions which greatly enhanced student engagement and satisfaction in online classes. This is in tandem with Anderson (2016) who found increased use of communication tools such as course announcements, course notes, blogs, discussion forums, and virtual meetings to significantly impact student engagement. On their part, Martin and Rimm-Kaufman (2015) found high-quality teacher-student interactions enhancing students' self-efficacy and contributing to their engagement. Relatedly, Dixson (2010) found a correlation between student-to-student and student-to-instructor communications with engagement of online students. Collins et al. (2019), also observed that a significant level of student engagement is dependent upon the number and length of discussion posts. Majority of students tend to intensively engage in online classes when they frequently interact with peers aided by technology (Bryan et al., 2018). Bolliger and Martin (2018) found that student interactions provide opportunities for peer learning through the exchange of resources, discussion, sharing of experiences, and ideas. On

the contrary, a study by Wu (2016) did not find social interactions to be significant in predicting engagement.

Group cohesion refers to "the students' sense of collaboration within a learning community, where they can acknowledge different perspectives" (Heilporn & Lakhal, 2019, p.4). Indicators include the presence of behavioral engagement, emotional support, social respect, social identity, and social sharing., achieved through conversational strategies like humorous banter, teasing, and joking to encourage collaboration, help, and support among students (Eggins & Slade, 1997). Group cohesion is focused collaborative communication that builds and maintains a sense of group commitment (Garrison et al., 2000). Dixson (2010) and King (2014) found cooperation and collaboration between students and instructors related to increased student engagement levels in online courses. Students who engage in collaborative learning groups report higher engagement (Chen et al., 2010; Kupczynski et al., 2012; Louwrens & Hartnett, 2015). Collaborative learning involves undertaking tasks in small and manageable groups (Price & Tovar, 2014). This kind of collaboration helps students establish a community of online learners, which can foster deeper learning (Shackelford & Maxwell, 2012). These studies however point out critical contextual and methodological gaps that the current study intended to fill.

Hypotheses

Based on the review of the literature three hypotheses were generated:

H1: Affective expression significantly predicts student engagement in the online component of blended distance learning programs at Makerere University.

H2: Open communication significantly predicts student engagement in the online component of blended distance learning programs at Makerere University.

H3: Group cohesion significantly predicts student engagement in the online component of blended distance learning programs at Makerere University.

METHODOLOGY

The study was carried out at Makerere University, Uganda particularly at CEES and CHS using a quantitative approach. The quantitative approach effectively ensured that the collected data was reliable, objective, and generalizable to a wider population. The study correlational and cross-sectional in nature. The correlational design established the relationship between social presence and student engagement, while the cross-sectional nature helped collect data from the sampled population at a single point in time and cheaply as suggested by Bordens and Abbott (2011). The study used a sample size of 283 students out of the target population of 2931 students enrolled in blended distance learning programs at Makerere University. Stratified sampling technique was used where students were stratified according to their college, program, and year of study. The sample size was determined based on Krejcie and Morgan (1970)'s table for sample size determination. The Krejcie and Morgan table is an appropriate and effective method of determining sample size for a finite population. From each year of study, a proportionate sample of students was selected. The probability sampling strategy used ensured that each member of the population had an equal chance of being selected for easy generalization of results.

The study used a self-administered questionnaire to collect the data and had three sections (A, B, C). Section A had items on demographic characteristics. Sections B and C comprised items on student engagement adopted from Lee et al. (2019) with Cronbach's (α) value of 0.93 for overall factors, and social presence adopted from Arbaugh et al. (2008) with an overall internal consistency of 0.94 respectively. The response choices for the survey items on student engagement and social presence were

scaled based on a 5- point Likert-type scale (i.e. 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree). The data were analyzed using both descriptive and inferential statistics. Descriptive analysis included the use of item means, while correlation and regression analyses constituted the inferential analyses to establish relationships and used IBM Statistical Package for Social Sciences (SPSS) Version 23.

RESULTS AND DISCUSSIONS

The study sought to establish whether social presence predicted student engagement in the online component of blended distance learning programs at Makerere University. Results from both descriptive and inferential analyses are presented.

Demographic Characteristics of Respondents

Of the 283 respondents, 49.1% were male, 50.1% female, in the age bracket of (47% 18-25, 40.6% 26-25, 9.5% 36-45, and 2.8% 46 and above). The students were from two colleges (93.3% CEES and 6.7% CHS), enrolled in different programs (20.1% Bachelor of Commerce External, 63.6% Bachelor of Education, 2.8% Bachelor of Youth Development Work, 6.0% Bachelor of Agriculture and Rural Innovation, 0.7% Masters of Instructional Design Technology, and 6.7% Master of Public Health Distance Education), and at different levels of study (92.6% Undergraduates, and 7.4% Masters), and in different years of study (33.6% year 2, 59.0 year 3, and 7.4% year 4). The respondents had an online learning experience in different course units (6.0% 1-course unit, 4.2% 2-3 course units, 80.2% 4-5 course units, 9.5% 6 or More).

Descriptive Results on Student Engagement

Student engagement was operationalized in terms of three sub-constructs, namely: Behavioral engagement (5 Items), Emotional engagement (6 Items), and Cognitive engagement (10 Items). Table 1 presents the means of the items, factor loadings for construct validity, and Cronbach alpha (α) for internal reliability for the items.

Table 1: Descriptive results for student engagement

Behavioral Engagement (Overall Mean =3.49)	**Means**	**Factors**	**α**
I often ask the instructor (s) about the contents of the lesson.	3.11	.758	.811
I study related learning content by myself after the online lessons.	3.66	.736	
I remove all distracting environmental factors when taking online classes.	3.53	.746	
I manage my learning using the online system.	3.58	.722	
When I take an online course, I plan a learning schedule.	3.59	.749	
Emotional Engagement (Overall Mean = 3.13)			
I am motivated to study when I take an online class.	2.91	.787	.903
Online classes are very useful to me.	3.06	.838	
It is very interesting to take online classes	3.09	.883	
After taking an online lesson, I look forward to the next one.	3.15	.834	
I am satisfied with the online classes I am taking.	2.99	.823	
I feel a connection with the students who are in my online classes.	3.56	.653	
Cognitive Engagement (Overall Mean =3.61)			
I study the lesson contents with other students	3.6	.619	.902
I try to solve difficult problems with other students when I encounter them.	3.83	.718	

I work with other students on online projects or assignments.	3.65	.768
I ask other students for help when I can't understand a concept taught in my online class.	3.80	.670
I try to answer the questions that other students ask	3.73	.726
I can derive new interpretations and ideas from the knowledge I have learned in my online classes.	3.40	.766
I can deeply analyze thoughts, experiences, and theories about the knowledge I have learned in my online classes.	3.45	.826
I can judge the value of the information related to the knowledge learned in my online classes	3.52	.773
I tend to apply the knowledge I have learned in online classes to real problems or new situations.	3.51	.754
I try to approach the subject of my online class with a new perspective.	3.64	.671
Student Engagement Overall Mean Index	**3.41**	

Results from Table 1 show that students perceived higher cognitive engagement (M =3.61) compared to behavioral engagement (M = 3.49) and emotional engagement (M = 3.13). The overall index of student engagement scores revealed that students perceived the overall engagement level to be fair (M = 3.41). Factor loadings for all the valid items and Cronbach alpha for behavioral engagement (α= .811), emotional engagement (α= .903), and cognitive engagement (α= .902) indicate that the items were valid and internally reliable for further analysis.

Descriptive Results for Teaching Presence

Social presence was operationalized in terms of affective expression, open communication, and group cohesion. Table 2 presents the means, factor loadings, and Cronbach alpha (α) for the items.

Table 2: Descriptive Results for Social Presence

Affective Expression (Overall Mean = 3.51)	**Means**	**Factors**	**α**
Getting to know other course participants gave me a sense of belonging to the course.	3.44	.847	.810
I was able to form distinct impressions of some course participants.	3.53	.890	
Online or web-based communication is an excellent medium for social interaction.	3.57	.818	
Open Communication (Overall Mean = 3.5147)			
I felt comfortable conversing through the online medium.	3.40	.889	.890
I felt comfortable participating in the course discussions.	3.55	.926	
I felt comfortable interacting with other course participants	3.59	.903	
Group Cohesion (Overall Mean = 3.39)			
I felt comfortable disagreeing with other course participants while still maintaining trust	3.37	.847	.801
I felt that my point of view was acknowledged by other course participants.	3.29	.824	
Online discussions help me to develop a sense of collaboration.	3.51	.867	
Overall Social Presence Mean Index = 3.47			

Results in Table 2 indicate that students rated affective expression (3.5) and open communication (3.51) as good compared to group cohesion (3.39). The overall index of social presence scores revealed that students perceived the overall social presence levels (3.47) to be fair. Factor loadings for all the valid items and Cronbach alpha for affective expression (α=.810), open communication (α=.890), and group cohesion (α= .890) indicate that the items were valid and internally reliable.

Correlation of Social Presence and Student Engagement

To ascertain whether there was a correlation between social presence measured by individual dimensions namely; affective expression, open communication, and group and student engagement in the online learning component of blended distance learning programs at Makerere University, and to test the three hypotheses (H1-H3), a correlation test was conducted. Results are presented in Table 3.

Table 3: Correlation matrix of student engagement and social presence

	Student Engagement	Affective Expression	Open Communication	Group Cohesion
Student Engagement	1			
Affective Expression	.703** .000	1		
Open Communication	.750** .000	.777** .000	1	
Group Cohesion	.721** .000	.692** .000	.774** .000	1

**. Correlation is significant at the 0.01 level (2-tailed).

Results in Table 3 suggest that all three individual constructs of social presence namely, affective expression ($r = .703$, $p = .000 < .05$), open communication ($r = .750$, $p = .000 < .05$), and group cohesion ($r = .721$, $p = .000 < 0.05$) correlated significantly with student engagement, suggesting a positive linear correlation. Respective p values of social presence dimensions i.e. .000, .000, .000; were less than $\alpha = 0.05$ ($p < 0.05$). Hence at the preliminary level, all three hypotheses (H1-H3) were supported. Open communication correlated most significantly with student engagement, followed by group cohesion and then affective expression respectively.

Regression of Student Engagement on Social Presence

To confirm whether social presence predicted student engagement in the online learning component of blended learning distance programs at Makerere University, linear regression analysis was performed. The results are presented in Table 4.

Table 4: Regression of student engagement on social presence

Social Presence		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta (β)	t	Sig.
1	(Constant)	.981	.116		8.458	.000
	Affective Expression (AE)	.193	.048	.236	3.994	.000
	Open Communication (OC)	.262	.052	.336	4.988	.000
	Group Communication (GC)	.245	.048	.297	5.057	.000

$R^2 = .633$, Adjusted $R^2 = .629$
$F = 160.302$, $p = .000$

The results in Table 4 show that the three constructs of social presence namely; affective expression, open communication, and group cohesion explained 63.3% of the variance in student engagement scores (Adjusted $R^2 = .633$). This means that 36.7% of the variation was explained by other variables. The regression model was significant ($F = 160.302$, $p = .000 < .05$). All the three constructs of social presence namely; affective expression ($\beta = .236$, $p = .000 < 0.05$), open communication ($\beta = .336$, $p = .000 < 0.05$), group communication ($\beta = .297$, $p = .000 < .05$) had a positive and significant predictive influence on student engagement. At the confirmatory level, open communication was observed to be a strong positive significant predictor followed by group communication, and then affective expression.

DISCUSSIONS

Results of the study showed a positive and significant relationship between social presence dimensions and student engagement. This confirms findings from past studies (e.g. Aguiar, 2017; Doo & Bonk, 2020; Vohra, 2016; Wu,2017) that found social presence to have a significant and positive effect on student engagement scores. This implies that the more the students perceive higher levels of social presence, the more they will participate and engage in their learning activities. The study found open communication the most significant predictor of student engagement than affective expression and group cohesion. This agrees to previous studies for instance, Park and Kim (2020) found interactive communication tools in online learning related to strong student-instructor interactions which greatly enhanced student engagement in online classes. Anderson (2016) attributed increased student engagement to the use of communication tools such as course announcements, course notes, blogs, discussion forums, and virtual meetings. While Martin and Rimm-Kaufman (2015) found that high-quality teacher-student interactions enhanced students' self-efficacy and contributed to their engagement. However, the study contradicted results by Wu (2016) who did not find social interactions to be significant in predicting engagement. Nevertheless, open communication remains a critical bargain in stimulating student engagement in blended learning.

Results further revealed that group cohesion positively and significantly predicted student engagement in blended distance learning. This is in line with Dixson (2010) and King (2014) who established that cooperation and collaboration between students and instructors in online courses led to increased engagement levels. As also reported by studies (e.g. Chen et al., 2010; Kupczynski et al., 2012; Louwrens & Hartnett, 2015), students who engage in collaborative learning groups reported higher engagement. This kind of collaboration helps students establish a community of online learners, which can foster deeper learning (Shackelford & Maxwell, 2012). Affective expression was also positively and significantly related to student engagement in this study. This agrees with Imlawi et al. (2015) who found use of humor by instructors in communicating with their learners highly impacting their engagement levels. Erdoğdu and Çakıroğlu (2021) found diversity of humorous elements in the online course important in creating a significant difference and improved behavioral engagement for course materials, discussions, and assignments. However, they found humorous elements not contributing to behavioral engagement for quizzes.

CONCLUSION AND RECOMMENDATIONS

The study concludes that social presence plays a vital role in predicting student engagement in blended distance learning programs. In particular, the study concluded that open communication was the most significant predictor of student engagement, followed by group cohesion and affective expression in that order. Therefore, if students perceive a great sense of connectivity through high-level interactions between peers, instructors, and content, a sense of networked community, and collaboration, the more they will be motivated and interested in actively engaging with their online learning activities. The results of this study advocate that stakeholders in blended distance learning programs at Makerere University should consider ways to foster social presence components namely affective expression, open communication, and social cohesion in their online component of blended distance learning courses to maximize gains in student engagement for better educational outcomes.

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