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Fostering Better Student Performance Through Online Collaborative Learning via Edmodo

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Article Information

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Abstract

In the context of higher learning today, learning can happen through various modes. One such way is learning that takes place through collaborative efforts among members of an online community. A good example of such an online collaborative learning platform is Edmodo, dubbed the 'facebook of education'. In this study, members of the learning community had participated in an online discussion forum via Edmodo to appraise a video-taped public speaking presentation. The quality of their discussion was then evaluated based on Garrison, Anderson and Archer's (1999) Community of Inquiry (CoI) framework which comprise teaching, social and cognitive presences. Results obtained showed that the occurrences of social presence among the students who had participated in the discussion was the highest followed by cognitive presence, and then teaching presence, emphasising the high rate of exchange of ideas and free-flow of discussion among the students. Additionally, the results of the video appraisal quiz conducted after the video viewing session on members of the online discussion group and another group of students who had viewed the video individually (without discussion) was in favour of the online discussion group. Thus, it can be deduced that the creation of communities of inquiry (learning) through online facilities such as Edmodo are often viable platforms to encourage positive collaborative learning experiences among students at higher learning institutions.

INTRODUCTION

Teaching and learning activities in institutions of higher learning has shifted greatly in the last few years where direct instructions from instructor to students which were mainly confined to the physical classrooms have diminished, owing to the advent of e-learning. One such way of student learning in the present era is through the formation of virtual learning communities which are greatly facilitated by numerous social learning networking sites. These sites have become a common feature of the practice of online learning currently. Derntl and Motschnig-Pitrik (2005) have regarded strongly the current conception of the whole complex phenomenon of online learning where learning content delivery has been made anytime and anywhere. The creation and sustenance of learning communities has greatly enhanced their views. A learning community is conceptually a group of learners working on a learning task collaboratively by interacting either synchronously or asynchronously under any circumstances. According to Garrison (2007), the learning community is a crucial

element that supports collaborative learning and discourses associated with higher levels of learning in higher education.

There are so many social learning environments that have become very synonymous with students at higher learning institutions who engage actively in learning through virtual online learning communities, such as Edmodo, Facebook, Twitter, and others. Among these, Edmodo has established itself as one of the most popular and learner-friendly facility globally. Anbe (2013), has described Edmodo being somewhat similar in appearance to Facebook and has been widely used as a "digital way to communicate, collaborate and create not only with people in the classroom, but with people from all over."

For the purpose of this study, the researchers were eager to explore how a few such online learning communities could effectively function by engaging in discussions regarding their views based on a video of a public speaking presentation by using Edmodo as an online collaboration platform. The group discussion transcripts were evaluated according to the Community of Inquiry (CoI) framework developed by Garrison, Anderson and Archer (1999). The CoI framework provided a proper collaborative-constructivist perspective to understand the dynamics of an online learning experience of the students (Arbaugh et al., 2008). Thus, the CoI framework was deliberately chosen by the researchers to provide a credible yardstick in *evaluating the online discussions engaged by the students within their small groups, and how it could possibly lead towards better performance in the course.*

Objectives of the study

The objectives of this study are to find out the following:

i. the frequency of cognitive, social and teaching presence as evident in the small group discussions of the students using Edmodo.
ii. the difference in the video appraisal quiz performance of the students between those who had participated in the online group discussion and those who had not on Edmodo.

LITERATURE REVIEW

Community of Inquiry (CoI)

Dewey's (1933) practical inquiry model forms the basis for the development of the community of inquiry by Garrison, Anderson, and Archer (1999). The model splits community-based learning into three overlapping areas: teaching presence, social presence, and cognitive presence (McKlin, Harmon, Evans, & Jones, 2001).

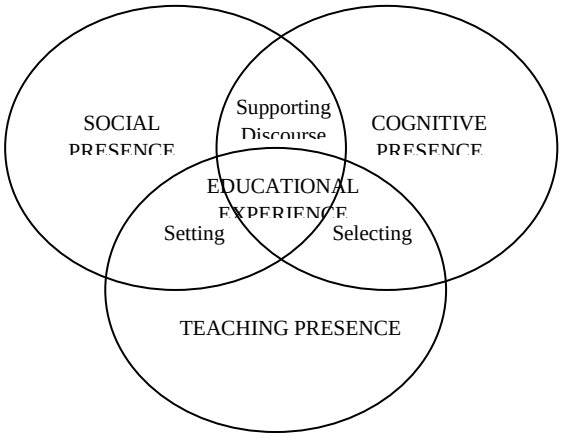

Fig. 1.
The Community of Inquiry (CoI) Framework by Garrison et al. (1999)

Social presence is described as the ability to project one's self and establish personal and purposeful relationships. The three main aspects of social presence are effective communication, open communication and group cohesion (Garrison, 2007). Cognitive presence on the other hand, is defined as the exploration, construction, resolution and confirmation of understanding through collaboration and reflection in a community of inquiry (Garrison, 2007). Teaching presence has three distinct categories – design, facilitation and direct instruction, and has an influence on the success of an online learning experience (Garrison, 2007).

Edmodo as an online collaborative learning platform.

Edmodo was founded by Nic Borg and Jeff O'Hara, two school district employees in Chicago, Illinois in 2008 when they set out to bring education into a 21st century environment. Anderson (2010) has described Edmodo

as a Web 2.0 discussion tool specifically designed for education, while Buescher (2010) has termed it as an educational program that allows teachers and students to participate in microblogging discussions, respond to polls, and manage and submit assignments. The working interface of Edmodo is quite similar to Facebook and this eases the difficulty level for most students because they are more likely to be already familiar with Facebook and other social networking websites from their personal use. In short, according to its official website (www.edmodo.com), Edmodo is a free, safe, secure social networking tool for education. Teachers have the liberty to create, host, manage and monitor group discussions. In fact, Edmodo is more than a blogging tool, where educators can post messages, assignments, and links; upload files; create tags and polls; set up alerts; maintain grades; and archive discussions. Additionally, members of the Edmodo learning community can also keep track of the latest updates of the learning events and content via text message or even Twitter.

Numerous research has been conducted on the use of Edmodo as an educational tool. One such study by Türkmen (2012) had found that if applied properly with certain aims, a social networking site such as Edmodo can provide learners with a frame to assist them in structuring and coordinating acts of knowledge construction.

METHODOLOGY

Sample and Instrument

The sample for this study was derived from among the ELC590: English for Oral Presentations course students that comprised two groups: PEE2003B1B2 (30 students) and PEE2003C1C2 (32 students) for the March – July 2016 semester. These are part three degree students from the Faculty of Electrical Engineering from the UiTM Penang campus. From the pool of 62 students, 32 students were randomly selected and assigned to six (6) discussion groups, with each group comprising between 5 and 6 students. These groups were labelled as Groups 1, 2, 3, 4, 5 and 6 respectively. Groups 1, 2 and 3 were assigned to watch a ten minute presentation of public speaking video recording which was deemed as poor presentation before engaging in their group discussion on Edmodo. Groups 4, 5 and 6 were assigned to watch another video recording of similar length of a public speaking presentation which was deemed as good presentation before engaging in their group discussion on Edmodo. All the groups were then given one week to engage in discussion regarding their views about the quality of the presentation in the two videos based on the earlier class lectures on the principles of public speaking and also based on the presentation evaluation form that they had access to.

Meanwhile, the other 30 students who were not assigned to any discussion groups were divided into two separate groups: 15 students to watch the first video (poor presentation) and the other 15 students to watch the second video (good presentation).

After one week, all the 62 students were subjected to the Video Appraisal Quiz in class. The paper and pen quiz comprised 12 questions made up of open-ended, structured and multiple choice items with a total of 15 marks.

Analyses of the Data

The analyses of data for the study were conducted at two levels. Firstly, the transcript of each discussion group was extracted from Edmodo, and the corresponding discussion threads were carefully studied by the researchers. Each utterance and exchange by the group members were then tagged based the CoI framework. Tags C1-C4 belong to the domain of cognitive presence (C), tags S1-S3 (social presence, S) while tags T1-T3 come under the teaching presence (T). (Refer to Table 1)

TABLE I
ELEMENTS, CATEGORIES AND INDICATORS OF THE COMMUNITY OF INQUIRY (COI) FRAMEWORK

Domains/ Elements	Categories	Indicators
Cognitive Presence	Triggering Event - ***(C1)***	Sense of puzzlement
	Exploration - ***(C2)***	Information exchange
	Integration - ***(C3)***	Connecting ideas
	Resolution - ***(C4)***	Apply new ideas
Social Presence	Emotional Expression - ***(S1)***	Emotions
	Open Communication - ***(S2)***	Risk-free expression
	Group Cohesion - ***(S3)***	Encouraging collaboration
Teaching Presence	Instructional Management - ***(T1)***	Defining and initiating discussion topics
	Building Understanding - ***(T2)***	Sharing personal meaning
	Direct Instruction - ***(T3)***	Focusing discussion

Besides tagging and analysing the utterances of the students according to the three main domains, the subdomains/categories of each domain were also analysed and presented in both number of occurrences and in percentages.

The video appraisal quiz was analysed based on their raw scores between the students who had participated in the group discussion and the students who had not participated in the group discussion. Besides the mean score and standard deviation, the t-test for independent samples was also carried out to determine the existence of a significant difference between the quiz scores of two big groups.

RESULT AND DISCUSSION

First, the analysis of the group discussion for the two video groups is presented: according to the three domains of cognitive presence, social presence and teaching presence, followed by an analyses of each of their subdomains.

Analyses of Students' Group Discussion in Edmodo

Figures and tables must be centered in the column. Large figures and tables may span across both columns. Any table or figure that takes up more than 1 column width must be positioned either at the top or at the bottom of the page.

A. Video Presentation (Poor)

TABLE 2
OCCURRENCES OF DISCUSSION AMONG GROUP MEMBERS ACCORDING TO THE DIFFERENT CATEGORIES OF THE COMMUNITY OF INQUIRY (COI) FOR GROUPS 1, 2 AND 3

Group/ Categories	***Cognitive Presence (C)***								***Social Presence (S)***						***Teaching Presence (T)***						***Total***
	C1	***%***	***C2***	***%***	***C3***	***%***	***C4***	***%***	***S1***	***%***	***S2***	***%***	***S3***	***%***	***T1***	***%***	***T2***	***%***	***T3***	***%***	
Group 1	1	3.6	3	10.7	4	14.3	3	10.7	3	10.7	11	39.3	2	7.1	1	3.6	0	0.0	0	0.0	***28***
Group 2	0	0.0	2	6.7	4	13.3	6	20.0	4	13.3	9	30.0	4	13.3	1	3.3	0	0.0	0	0.0	***30***
Group 3	0	0.0	2	7.1	2	7.1	2	7.1	2	7.1	15	53.6	4	14.3	0	0.0	0	0.0	1	3.6	***28***

	%C	%S	%T
Group 1	39.3	57.1	3.6
Group 2	40.0	56.7	3.3
Group 3	21.4	75.0	3.6

It can be seen from Table 2 that social presence utterances were the highest for all the groups that had viewed the video presentation (poor). For Group 1, social presence was 57.1%, Group 2 (56.7%) while Group 3 had the highest occurrences of social presence (75.0%). Next, was cognitive presence for all the groups: Group 1 (39.3%), Group 2 (40.0%) and Group 3 (21.4%). Teaching presence was minimal for all the groups, where Group 1 only had 3.6%, Group 2 (3.3%) and Group 3 (3.6%).

Among all the components (10) spread out over the three components of CoI (social, cognitive and teaching presences), it was found that the students had engaged in social presence (open communication, S2) the most: Group 1 (39.3%), Group 2 (30.0%) and Group 3 (53.6%). Meanwhile, the students' engagement in the other two subcomponents of social presence was somewhat even. For the subcomponent of emotional expression (S1), Group 1 had 10.7%, Group 2 had 13.3%, and Group 3 had 7.1% engagements. The other subcomponent of group cohesion (S3) showed the following patterns of engagement: Group 1 (7.1%), Group 2 (13.3%) and Group 3 (14.3%).

For Group 1, the other notable engagement besides social presence was from the cognitive presence domain; with integration (connecting ideas, C3) - 14.3%, exploration (information exchange, C2) - 10.7%, and resolution (apply new ideas, C4) - also 10.7%. For Group 2, however, resolution (apply new ideas, C4) was (20.0%), followed by integration (connecting ideas, C3) with 13.3%. For Group 3, the cognitive presence was not that significant as the majority of the students had their discussion that had centred on the social presence domain (75.0%).

B. Video Presentation (Good)

TABLE 3
OCCURRENCES OF DISCUSSION AMONG GROUP MEMBERS ACCORDING TO THE DIFFERENT CATEGORIES OF THE COMMUNITY OF INQUIRY (COI) FOR GROUPS 4, 5 AND 6

Group/ Categories	***Cognitive Presence (C)***								***Social Presence (S)***						***Teaching Presence (T)***						***Total***
	C1	***%***	***C2***	***%***	***C3***	***%***	***C4***	***%***	***S1***	***%***	***S2***	***%***	***S3***	***%***	***T1***	***%***	***T2***	***%***	***T3***	***%***	
Group 4	0	0.0	3	8.3	5	13.9	4	11.1	5	13.9	13	36.1	5	13.9	1	2.8	0	0.0	0	0.0	***36***
Group 5	1	3.2	4	12.9	3	9.7	2	6.5	2	6.5	10	32.3	7	22.6	0	0.0	0	0.0	2	6.5	***31***
Group 6	0	0.0	2	8.3	3	12.5	2	8.3	3	12.5	8	33.3	5	20.8	1	4.2	0	0.0	0	0.0	***24***

	%C	%S	%T
Group 4	33.3	63.9	2.8
Group 5	32.3	61.3	6.5
Group 6	29.2	66.7	4.2

It can be seen from Table 3 that social presence utterances were the highest for all the groups that had viewed the video presentation (poor): Group 4 - social presence (63.9%), Group 5 (61.3%) and Group 6 had the highest social presence (66.7%). Next, was cognitive presence for all the groups: Group 4 (33.3%), Group 5 (32.3%) and Group 6 (29.2%). Teaching presence was minimal for all the groups, where Group 4 only had 2.8%, Group 5 (6.5%) and Group 6 (4.2%).

In a detailed look, among all the components (10) spread out over the three components (social, cognitive and teaching presences), it was found that the students had engaged in open communication (S2) the most: Group 4 (36.1%), Group 5 (32.3%) and Group 6 (33.3%).

The students' engagement in the other two subcomponents of social presence was also evident. For the subcomponent of emotional expression (S1), Group 4 had 13.9%, Group 5 (6.5%), and Group 6 had 12.5% engagements. The other subcomponent of group cohesion (S3) showed that Group 4 had 13.9%, Group 5 (22.6%) and Group 6 had 20.8% engagements.

For Group 4, the other notable engagement besides social presence was from cognitive presence domain: integration (connecting ideas, C3) – 13.9%, followed by resolution (apply new ideas, C4) – 11.1%. For Group 5, however, exploration (information exchange, C2) was more prominent from the cognitive presence with 12.9%, followed by integration (connecting ideas, C3) with 9.7%. In the case of Group 6, the most prominent subdomain of cognitive presence was also integration (connecting ideas, C3) with 12.5%, followed by exploration (information exchange, C2) and resolution (apply new ideas, C4) with 8.3% respectively.

Descriptive and Inferential Statistics of the Video Appraisal Quiz of the Students

The raw scores of both groups of students (participated and did not participate in the discussion) was analysed both descriptively to the mean and standard deviation, and inferentially to determine of any significant difference between the two groups.

TABLE 4
MEAN AND STANDARD DEVIATION BETWEEN THE SCORES OF THE VIDEO APPRAISAL SCORES BETWEEN INDIVIDUAL STUDENTS AND DISCUSSION GROUP STUDENTS

	Groups	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Score	Individual Appraisal	30	10.9167	1.13018	.20634
	Group appraisal	32	11.9063	1.17389	.20752

TABLE 5
INDEPENDENT SAMPLES T-TEST BETWEEN THE SCORES OF THE VIDEO APPRAISAL SCORES BETWEEN INDIVIDUAL STUDENTS AND DISCUSSION GROUP STUDENTS

t-test for Equality of Means						
t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-3.377	60	.001	-.98958	.29301	-1.57569	-.40348

According to Table 4, the mean score for the quiz for the individual students was 10.92 (s.d. 1.13) while the discussion group students was 11.91 (s.d. 1.17). Meanwhile, the independent samples t-test (refer Table 5) clearly indicates a significant difference between the video appraisal quiz scores of both these big groups (t = -3.377, <0.05). Thus, it is clear there is a significant difference between the Video Appraisal scores of the students who had appraised the public speaking video presentation without group discussion and those with group discussion in their small groups: Groups 1, 2, 3, 4, 5 and 6.

CONCLUSION

From the results, it is quite evident that group discussions are a fruitful way in enabling students to perform better in a course. In the context of this study, it has been found that online virtual group discussions that were conducted via Edmodo had greatly advanced the ability of the students to perform significantly better in the subsequent video appraisal quiz in comparison to their counterparts who had not engaged in any form of discussion. While still acknowledging the existence of other factors that may have enabled better performance of the students in the study, it can be argued to a certain extent that the exchange of information and ideas among the group members during the discussion stage may have contributed strongly towards their performance in the quiz.

On a micro level, it was also found that among the three domains of the Community of Inquiry (CoI), the bulk of discussion occurrences had centred on social presence which mainly comprised of emotional expressions, open communication and group cohesion. It can thus be deduced that students within their discussion groups were able to engage in risk-free expressions and collaborative interaction in a free and non-threatening environment. This augurs well for them as it can help them to engender ideas and opinions with little fear of being watched by the teacher which is often a discouraging factor that inhibits student learning in the normal classroom. Next, cognitive presence in the form of exploration, integration and resolution was also evident where students were able to exchange information, connect ideas and also apply new ideas in the course of interacting with their peers.

In conclusion, the study had aimed to prove how effective online group discussion could pave the way towards better performance in a course. As mentioned at the beginning of this paper, learning is not confined to the physical classroom anymore. It is left to the creativity of the teachers to determine just how best to offer our budding learners the best opportunity to learn in the way they feel most comfortable with. We have seen that Edmodo could be one such way where learning could be conducted collaboratively through virtual group discussions, which had adhered to the principles of the Community of Inquiry. Nevertheless, Derntl and Motschnig-Pitrik (2005) have given a timely reminder that in order to improve learning effectiveness and motivation of students, technological advances must go hand in hand with improved interpersonal skills and attitudes of educators, that will ensure that learning amongst our students is optimal at all times.

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