The Effect of Edmodo Learning Network on Students' Perception, Self-Regulated Learning Behaviors and Learning Performance

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ABSTRACT

As the use of social networking sites and online collaborative tools increases, educators can utilize these technologies to improve student engagement in the virtual classrooms. Edmodo, an internet-based learning management system (LMS), offers a secure virtual classroom that can be moderated by an instructor. In this study Edmodo was used to create supportive learning by facilitating channels for students to communicate with the teacher and participate in class activities. The virtual class space provided students opportunity to share ideas, follow up with class assignments, and take quizzes. The main aim of this study was to investigate the effects of integrating this networking system regarding students' perception towards the learning platform. Self-regulated learning (SRL) behaviors of students along with their learning performances were also examined. Students were to sign up for Edmodo classroom and work with provided class activities. Learning materials were uploaded for students and pre- and post-test scores were collected and analyzed. Self-reported survey questionnaires about SRL and students' perceptions were administered at the end of the course. The statistical analysis revealed that learning activities provided on the LMS significantly improved self-regulated learning behaviors and learning performance of students, with a positive perception towards the online learning environment.

Keywords: Edmodo, Learning Management System, Secondary Education, Learning Network, Learning Performance, Students' Perception, Self-Regulated Learning Behavior, Computer-Supported Collaborative Learning

1. INTRODUCTION

The development of advanced information and communication technologies (ICT) has led to computer application in education such as e-mail, chat room, video conference, discussion forum, social network and learning management system. These technologies become potentially useful tools to enhance effective learning environment for students while the benefits of ICT in moderating positive effects on students' learning have also been regularly reported [1]. Current applications such as gadgets compatible with smart phones are developed to support trendy life style for daily use. Likewise, these applications are also available and become potential tool for educational purposes and learning can occur anytime anywhere.

A new concept of learning is recognized by researchers and theorists that learning is not only cognitive but also a social cultural and interpersonal constructive process [2]. Instructional strategies such as collaborative learning are increasingly used in educational setting to create interaction among students. In a collaborative learning environment, students work together in groups, exchange ideas and share experiences to achieve group solutions for complex problems, hence build up knowledge based on constructivism approach. Several positive effects of collaborative learning have been well documented by researchers that it enhances students' cognitive performance and stimulates students to engage in knowledge construction [3]. Moreover, the process of collaboration can be effectively accelerated by the use of technology.

A combination of social networking and collaborative learning results in a new field of educational design; computer-supported collaborative learning (CSCL) which concerning collaboration, learning processes, and the use of technology. The primary aim of CSCL is to provide an environment that supports collaboration among students and enhance learning processes [4]. CSCL offers specific tools that facilitate sharing of information and ideas, as well as the distribution of expertise among group members in the social network [5]. When students collaborate in a CSCL setting, they use an application to communicate with group members in form of a chat facility video conferencing, a discussion forum, e-mail including social network system.

Research involving implementing of CSCL in educational setting has been increasingly paid attention to in recent years. The findings indicate that CSCL environments offer a medium for classroom discussion that possibly facilitates participation and social interaction among students, hence providing more effective interaction and participation than in traditional classroom setting [5]. Several studies have reported the benefits of CSCL in facilitating task oriented and reflective activity [6], complex reasoning and argumentation, critical thinking and authentic proof activity [7].

Effective learning environment of CSCL also requires particular online learning behaviors for successful outcomes. In general, online learning environment needs more learner control and self direction as the situation represents higher level of intellectual development [8]. Hence, students participating in this learning setting should be able to direct themselves and manage their

learning effectively. In addition, providing learners with control of their own learning, it is recommended that self-regulated behaviors are essentially required [9].

The potential of learning via computer is greatly improved when social media like Facebook and Twitter were used as communicating channel amongst users. These types of social network simply allow people to connect with others for general purposes i.e. sharing information and exchanging ideas. In an educational setting, appropriate use of these tools can encourage collaboration, sharing of resources, transmitting new ideas, and the virtual expansion beyond classroom walls. The website url:http://www.edmodo.com was created in 2008 by Nic Borg and Jeff O'Hara especially for educational purposes. The goal of Edmodo is to help educators harness the power of social media to allow easy customization of the classroom. Edmodo is used by approximately 32 million people including teachers, educators and students around the world in various fields of subjects and learners' grades [10]. The main objective of Edmodo network is about teaching and learning amongst students and teachers. Besides, sharing ideas in teaching methodology, materials as well as collaboration is also encouraged for network members. Unlike other social media community, Edmodo generally focuses on helping teachers and educators along with learners to manage their own strategies in working online regarding the tasks. Most teachers find Edomodo useful and challenging for outside classroom activities to help students learned regardless of space and time constraints. Moreover, different versions of Edmodo application are also available to be downloaded for small gadgets i.e. smart phone, tablet and other hand devices. That makes the possibility of accessing virtual classroom even greater and hence, positively affects the learning outcomes of students in the learning network.

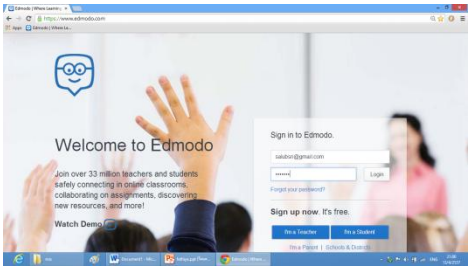

Figure 1 Edmodo Website URL:http://www.edmodo.com

This study reports results of the investigation into CSCL setting under Edmodo online learning network and its effect on learning performance, self-regulated learning behaviors and perception of students participating in the network activities. Learning performance of students was determined by test scores on the unit of Biodiversity whereas students' perception and self-regulated learning behaviors were examined through self-reported survey questionnaires.

2. MATERIAL AND METHOD

Participants and setting

126 of Grades 12 students in biology class from Suratpittaya secondary schools in Thailand took part as distributed learners in Edmodo learning network. The main objective of learning was about Biodiversity. The resources and learning materials, assignments, quizzes as well as tests were available on provided learning platform and communication among participants was facilitated through instruction under Edmodo network system. While students were engaged in learning activities, the development of students' progress was monitored through participation and collaboration among participants in the network. Pretest and posttest were used for data analysis to determine students' learning outcomes. The results from self-reported survey questionnaires were investigated to examine students' self-regulated learning behaviors and perception.

Procedure and task

Students participating in the learning procedure were required to sign up for online virtual classroom on the website: http:///www.edmodo.com. Registered students were divided into groups, with the selected head of each group. They were also required to study the manual of online classroom protocols and were anticipated to regulate their own strategies of learning in each session. Leaning activities included three main sessions i.e. lectures, assignments and quizzes. Students were to follow up lecture notes with power point slides and also to collaborate on given assignments. After that the unit test was administered to evaluate students' learning performance.

During the learning process, students were encouraged to contact the teacher as well as other network members for sharing ideas and catching up with tasks and quizzes. Basically, students worked both in group and individually. The group task resulted from learning activities were uploaded and shared for constructive comments. Prior to the beginning of online learning students were asked to take the pretest and later, after the program ended, the posttest was carried out. Similarly, self-regulated learning behaviors questionnaires were administered before and after the online learning session. The other self-reported survey questionnaires were also distributed by the end of learning activities in Edmodo network to examine students' perception.

Measure and Data analysis

The unit test of Biodiversity was done prior to and after the end of learning session. Two self-reported survey questionnaires; self-regulatory learning questionnaires and students' perception questionnaires with 5-points Likert scale were used to examine learning behaviors and students' perception. Self-regulated learning questionnaires consisted of 22 items in six dimensions, adapted from previous study of Barnard et al. [11] with internal consistency reliability of Cronbach α 0.90. Students' perception questionnaires consisted of 16 items adapted from the studies of Tseng, Chiang, & Hsu, (2008) [12], Liaw et al. [13] with Cronbach α 0.93. Pretest and posttest results from self-regulated learning behavior questionnaires and the posttest of students' perception questionnaires were quantitatively analyzed using SPSS version 16 software.

3. RESULTS

The pretest and posttest scores analysis

The average percentage pretest and posttest scores were presented in Table 1 with the percentage of 40.63 for the pretest and 62.16 for the posttest. The results from paired sample t-test of SPSS analysis show that the posttest mean scores of the unit test is significantly higher than the pretest mean scores $t(126)=12.29$, $p<0.05$ with the mean scores of pretest and posttest 24.38 (SD=17.27) and 37.10 (SD=8.55) respectively as shown in Table 2.

Table 1 Pretest and posttest mean scores of the unit test

Scores	Mean (60)	Percentage
Pretest	24.38	40.63
Posttest	37.10	62.16

Table 2 T-test analysis of pretest and posttest mean scores of the unit test

Scores	Mean	S.D.	
Pretest	24.38	17.27	12.29*
Posttest	37.10	8.55	

P< 0.05

Students' self-regulated learning behavior

The results of self-reported survey questionnaires from the studied group regarding self-regulated behaviors of students in the network presented in Table 3. Over all pretest and posttest mean scores of students' SRL behaviors are 2.84 (*SD*=0.97) and 3.98 (*SD*=0.84) respectively. T-test analysis shows significant difference $t(126)=42.51$, $p<0.05$ (Table 4).

Table 3 Students' SRL behaviors in Edmodo learning platform

No.	Items	Pretest		Posttest	
		Mean	SD	Mean	SD
	Goal setting				
1	Standard setting	2.81	1.07	4.19	0.53
2	Short/long term goal	2.83	0.86	4.02	0.61
3	Keeping high standard	2.75	0.99	4.87	0.71
4	Time setting	2.67	0.88	3.94	0.73
5	Work quality	3.02	1.00	4.02	0.64
	Environmental setting				
6	Working location set	2.95	1.03	3.87	0.91
7	Comfortableness	3.17	1.02	4.04	0.95
8	Efficiency	3.29	0.94	4.27	0.72
9	Convenient time	2.85	0.83	3.94	0.85
10	Note taking	3.19	1.17	4.12	0.94
	Task strategies				
11	Reading aloud	2.85	0.99	4.00	0.95
12	Be well prepared	2.48	0.94	3.83	0.88
13	Working extra time	2.87	0.91	4.08	0.81
	Time management				
14	Allocating working time	2.94	1.07	4.06	0.83
15	Keep regular schedule	2.81	0.93	3.98	0.87
16	Keeping track daily	2.84	1.11	3.65	0.95
	Help seeking				
17	Seek consultation	2.73	0.80	3.69	1.00
18	Sharing problem	3.56	0.96	4.44	0.75
19	Being persistence	2.10	1.03	3.21	1.19
	Evaluation				
20	Checking progress	2.63	0.97	3.87	0.79
21	Asking questions	2.58	0.96	3.67	0.86
22	Monitoring	2.58	0.98	3.75	0.93
	Mean	2.84	0.97	3.98	0.84

Table 4 T-test analysis of pretest and posttest mean scores of the SRL behaviors

Scores	Mean	S.D.	
Pretest	2.84	0.97	42.51*
Posttest	3.98	0.84	

P< 0.05

Students' perception

The results of self-reported survey questionnaire from the studied group regarding perception towards learning platform are presented in Table 5. Over all mean scores of students' perception is 3.76 (*SD*=0.81).

Table 5 Students' perception toward participating in Edmodo learning network

No.	Items	Mean	SD
1	The network system is suitable for learning	4.10	1.02
2	The platform is user friendly	3.78	0.75
3	Edmodo is suitable for different learning styles	4.08	0.91
4	Students like to learning via Edmodo	3.78	0.65
5	Satisfaction and realization of benefits gained	3.90	0.72
6	The program is good for cooperative learning	3.88	0.78
7	Students can share ideas working with others	3.80	0.65
8	Edmodo supports group learning	4.08	0.83
9	Communicating with others help learning	4.06	0.78
10	There is a sense of belonging in a group	4.08	0.79
11	Edmodo induces autonomous learning	3.98	0.87
12	Students feel as a part of the group	3.79	0.72
13	Increasing of problem solving skill	3.65	0.74
14	Students are motivated to learn via Edmodo	3.54	0.80
15	Edmodo helps students improve thinking skill	3.63	0.95
16	Learning is integration of various set of skills	3.63	0.84
	Mean	3.76	0.81

4. DISCUSSION

Results of from statistical analysis indicate positive effect of learning on students' performance when participating in the learning setting. The findings are in accordance with previous studies reported by teachers who implemented using Edmodo in the classroom for online or blended learning. Edmodo was used as learning tool to engage grade 6 students in a writing class to improve students' achievement. It is found that students who participated in Edmodo initially scored higher and it also showed positive effect of Edmodo not only on students' achievement but also on learning engagement and students' behavior [14]. Similar findings are reported in researches conducted by Penwell [15].

Edmodo is a free online learning management system that provides a private virtual space for students and teachers to share and discuss text, images, audio, and video. It has become a popular platform used in primary and secondary schools as well as universities. Edmodo network is an initial place where class activity takes place. It is also assumed that if students are able to sign in and participate in Edmodo learning network, they have the digital literacy skills necessary for the 21 century learning competency as required in Thai National Education Standard [16].

A significant aspect to this application is the establishment of student collaboration in the network learning community. Edmodo is recommended as an advantageous tool for specific kinds of writing tasks to allow students to interact and this sort of personal interaction with literary texts encourages discussion and feedback from fellow students as well as from the teachers [17]. Online space is considered as suitable for students to learn by directing their own learning to accomplish the assigned tasks. Students in the network were to follow up with class activities while managing their time to interact with friends and the teacher. The discussion among group members facilitated by text and social interaction can increase comprehension, thinking skills and self-directed response of students participating in the social network [18]. As a result, self-regulated learning behaviors of students in the learning network were significantly improved. Students from studied groups perceive the learning platform in Edmodo social network with positive effect though not at a high level, i.e. the average score of 3.76. Overall mean score of students' perception in a study conducted by Tseng et al. is 3.89[12]. Generally students'

perception obtained from students participating in learning activities in this study, is considered satisfying.

Edmodo is a simple, easy-to-use, multi-platform learning management system that provides useful tools for students and teachers to interact online outside of class. It is accessible via web browser and/or a free smart phone application (iOS and Android). The user interface, common to all platforms, is simple and intuitive similar to that of social networking sites such as Facebook. Edmodo is also a safe way for teachers and students to use Internet in their classrooms. One reason that possibly leads to positive effect students' perception is due to friendly features of human-computer interface based on well-established network system with actively updated information. These Webpage features are in accordance with TAM-Technology Accepted Model and hence cause perceive of usefulness among users [19].

5. CONCLUSION

In summary, the investigation into Edmodo learning network provides initial information regarding effect of learning platform and students' perception to some extent. Although learning process in this network is group collaboration, the effectiveness of collaborative process resulted from enriched learning setting is apparently observed in an individual through learning outcomes and their perception. Further studies are essential to reveal more about the effect of social interaction in other aspects in order that the effectiveness of learning process in CSCL environment is possibly established.

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