AN EXPLORATORY STUDY: COLLABORATIVE PROBLEM SOLVING WITH EDMODO AMONG ECONOMICS STUDENTS

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ABSTRACT: *The Ministry of Education Malaysia has spent more than RM6 billion to leverage the Information and Communication Technology (ICT) over the past decade. Utilizing the ICT in education institutions is the seventh shift in the Malaysian Education Blueprint 2013-2025. Among all the social network tools, Edmodo is a free and secure educational learning network. It has a similar function with Facebook. However, Edmodo has been designed a little differently from Facebook where it has a private and safe learning environment. Edmodo provides a simple way for lecturers to create and manage an online classroom community as well as enable students to connect and work with their peers in groups anywhere and anytime.The aim of the study is to identify the role of Edmodo in collaborative problem solving. This study employed the descriptive method. A total of 52 students were selected randomly as samples. The findings revealed that Edmodo can enhance collaborative problem solving. The qualitative research such as interviews with the students may be carried out to obtain more details about Edmodo in future research*.

Keywords: online, collaborative problem solving, economics students, EDMODO

1. INTRODUCTION

With the explosion of the technological revolution, the growing use of online technologies has increased dramatically over the past decade providing new opportunities for students to interact with their lecturers. The Ministry of Education Malaysia has spent more than RM6 billion to leverage the Information and Communication Technology (ICT) over the past decade. Utilising the ICT in education institutions becomes one of the main shifts in the Malaysian Education Blueprint 2013-2025. Malaysia with the vision of enhancing an e-learning society has to upgrade the quality of undergraduates through various forms of learning. Undergraduates are involved with social networks such as Facebook and Twitter in their daily lives. Consequently, some educators have also expanded their teaching and learning tools to online learning rather than the traditional face-to-face learning. Online learning can train students to become collaborative partners in the knowledge-building process [1,2,3]. Although some tools such as e-mail, chats and forums have allowed effective online communication, it has often been a challenge to collaborate learning using these tools [4, 5, 6]. Some of the exiting tools and technologies that can support the collaborative online learning of students are Edmodo, Wikis, Facebook, Yahoo Messenger and others.

Among all the social network tools, Edmodo is a free and secure educational learning network [7]. It has a similar function with Facebook. However, Edmodo has been designed a little differently from Facebook where it has a private and safe learning environment. Edmodo provides a simple way for lecturers to create and manage an online classroom community as well as enable students to connect and work with their peers in groups anywhere and anytime. Edmodo also allows lecturers to create small groups in the virtual class by using laptops or smart phones.

Furthermore, researchers found that economics is a difficult subject for university students [8, 9]. Most of the art students who take economics are not keen in analysing and understanding economics concept with the application of mathematics element. Therefore, an active learning method should be implemented. Among all the active learning methods, researchers found that educators should implement active learning situation through collaborative problem solving [10]. Waleed Mugaheed and Akram [11] showed that networked groups on online collaboration generally outperform in students' performance as compared to face-to-face group discussion. In other words, an effective online collaborative learning approach needs to be implemented in the online learning environment. The aim of this study is to identify the role of Edmodo in collaborative problem solving.

2. LITERATURE REVIEW

This study has its conceptual foundations in Adult Learning [12, 13] Zone of Proximal Development (ZPD). According to Knowles, Holton and Swanson [12], adults are autonomous and self-directed learners. Their learning experiences should engage them actively where they have opportunities to serve as facilitators. The ZPD is the difference between what a learner can do without help and what he or she can do with help under the guidance of a facilitator. In this study, Vygotsky's concept of the Zone of Proximal Development (ZPD) is utilised to explore how educational technology can support effective learning. ZPD is the use of scaffolding, or the provision of feedback and support to challenge, but not to overwhelm the learner. Thus, effective learning occurs where problems and feedback are slightly above the current level of the learner's performance. In many cases the ZPD is easier to achieve in an activity such as a collaborative group work [13]. For this study, students will be exposed to new information during the discussion with peers in Edmodo. They will be asked to resolve key ideas between their prior understanding of old information and new information provided by peers. Students will share their ideas and help peers to achieve a productive learning zone through the help of a more capable peer and lecturer. The lecturer will play an important role as the facilitator in assisting and explaining content to students. On the other hand, social interaction among members is central in the students' acquisition of new knowledge [13]. The discussion in Edmodo adapts the learning experience to assist the students in the ZPD.

Researchers believe that the collaborative problem solving learning can serve as learning and teaching tool used in education to explore concepts [14]. The use of online learning can create interest and be used to foster after class learning activities [15]. Besides promoting students' communication skills, collaborative problem solving can stimulate productive discussion, clarification and restructuring of the ideas. From this point of view, a collaborative problem solving has the potential to enhance collaborative skills.

3. METHODOLOGY

This study employed the descriptive method. A quantitative analysis and a survey design were applied in the quantitative study. The survey was employed to explore the use of Edmodo in online collaborative problem solving. A set of 30 item questionnaires constructed by main researcher employed in this study. Each item has constructed on 5 point Likert scale from strongly agree to disagree. This study took 10 weeks to complete. A total of 52 students from a public university in Malaysia were selected randomly as samples. Content and face validity had been measured to ensure a set of systematic assessments employed in this study. The instrument has a reliability of Cronbach's Alpha .884. Since the result of Cronbach's Alpha is higher than .70, it showed a high reliability standard [16].

4. RESEARCH PROCEDURE

Lecturers' and students' preparation for using Edmodo with collaborative problem solving began well before the implementation of the actual study. Preparation included managing the lecturer's relevant skills of the new learning environment. The questionnaire gave to the students after the intervention. The intervention took eight weeks to complete. The students participated in the online group discussion but they had to send their reports individually. The learning materials sent to the students through Edmodo every week with different sub-titles that are related to economics. Students need to form a group and discuss in the collaborative group. The students need to answer the questionnaire on the week 11.

5. RESULTS

From the findings as reported in Table 1, the result indicated that the mean score is between 4.5577 to 1.8077. The first three highest results were 1) I can receive info from lecturer from time to time 2) I will recommend Edmodo to others 3) Edmodo is a good platform for collaborative problem solving (with the mean score =4.5577, 4.2885 and 4.2308 respectively). The lowest mean score was I won't use Edmodo anymore (mean score = 1.8077, SD =.86406).
The average of mean score from item 1-30 was 3.8077.
Figure 1 showed the overall result of mean from item 1-30. The graph indicated 28 items of the mean score are higher than 3.
Table 2 showed the findings of frequency and percentage of students' collaborative problem solving which was derived from the 30 items. The respondents answered the questionnaire based on their own experiences. Majority of the respondent (57.7%) selected strong agree of the item " I

can received info from lecturer from time to time." On the other hand, " I read the material from Edmodo" indicating the highest percentage (67.3%) of agree.
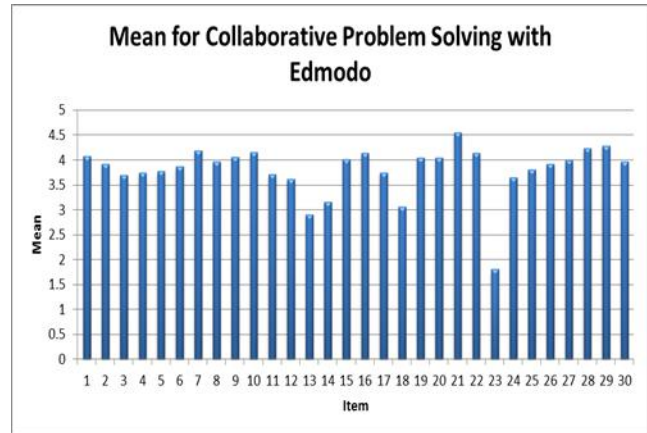

Figure 1: Mean for Collaborative Problem Solving

Table 1: Mean and Standard Deviation

Item	Mean	Std. Deviation
I like to use Edmodo for discussion.	4.0769	.62139
I am confident when using Edmodo.	3.9231	.62139
I can master the skill for online discussion.	3.6923	.61160
I learn the skill for collaborative problem soling.	3.7500	.62230
I like to discuss with peers online.	3.7692	.70336
I like collaborative problem solving.	3.8654	.68682
Work in group is better than work alone.	4.1923	.84107
Edmodo helps us in solving problem.	3.9615	.76598
I can get the resource easily from Edmodo.	4.0577	.66902
Discuss online is fun.	4.1538	.75107
I solve the economics problem.	3.7115	.66676
I learn the economics theory with Edmodo.	3.6154	.91080
I spend more time with Edmodo.	2.9038	.56913
I like to post questions with Edmodo.	3.1538	.57342
I can reach my instructor easily.	4.0192	.75382
I read the material posted in Edmodo.	4.1346	.56112
I start to put "like" in Edmodo.	3.7500	.90478
I can learn without help in Edmodo.	3.0577	.75182
I can learn freely in Edmodo.	4.0385	.65564
I can interact with my friend easily.	4.0385	.73994
I can receive info from lecturer from time to time.	4.5577	.53919
I read the material in Edmodo.	4.1346	.59504
I won't use Edmodo anymore.	1.8077	.86406
I check the Edmodo regularly.	3.6538	.88306
I use to discuss with my friends about the topic.	3.8077	.71506
I try to explore more about Edmodo.	3.9231	.68158
I try to search more material for my discussion.	4.0000	.71401
Edmodo is a good platform for collaborative problem solving.	4.2308	.64521
I will recommend Edmodo to others	4.2885	.63667
I will use Edmodo for other courses.	3.9615	.76598
Total	**3.8077**	

Summarizing the average percentage of the 30 items in the questionnaire, 20.6% of the respondents selected 'strongly agree', followed by 47.6% of the respondents selected 'agree' , 26.1 % selected 'neutral', 4.54%selected 'disagree' and followed by 0.65% selected disagree.

Table 2 : Frequency and Percentage

Item	Frequency and Percentage					Total
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
I like to use Edmodo for discussion.	12 (23.1)	32 (61.5)	8 (15.4)	0 (0)	0 (0)	52 (100)
I am confident when using Edmodo.	8 (15.4)	32 (61.5)	12 (23.1)	0 (0)	0 (0)	52 (100)
I can master the skill for online discussion.	4 (7.7)	28 (53.8)	20 (38.5)	0 (0)	0 (0)	52 (100)
I learn the skill for collaborative problem soling.	4 (7.7)	32 (61.5)	15 (28.8)	1 (1.9)	0 (0)	52 (100)
I like to discuss with peers online.	7 (13.5)	27 (51.9)	17 (32.7)	1 (1.9)	0 (0)	52 (100)
I like collaborative problem solving.	8 (15.4)	30 (57.7)	13 (25.0)	1 (1.9)	0 (0)	52 (100)
Work in group is better than work alone.	23 (44.2)	17 (32.7)	11 (21.2)	1 (1.9)	0 (0)	52 (100)
Edmodo helps us in solving problem.	13 (25.0)	25 (48.1)	13 (25.0)	1 (1.9)	0 (0)	52 (100)
I can get the resource easily from Edmodo.	13 (25.0)	29 (55.8)	10 (19.2)	0 (0)	0 (0)	52 (100)
Discuss online is fun.	18 (34.6)	25 (48.1)	8 (15.4)	1 (1.9)	0 (0)	52 (100)
I solve the economics problem.	6 (11.5)	25 (48.1)	21 (40.4)	0 (0)	0 (0)	52 (100)
I learn the economics theory with Edmodo.	8 (15.4)	23 (44.2)	14 (26.5)	7 (13.5)	0 (0)	52 (100)
I spend more time with Edmodo.	0 (0)	5 (9.6)	38 (73.1)	8 (15.4)	1 (1.9)	52 (100)
I like to post questions with Edmodo.	1 (1.9)	10 (19.2)	37 (71.2)	4 (7.7)	0 (0)	52 (100)
I cn reach my instructor easily.	13 (25.0)	29 (55.8)	8 (15.4)	2 (3.8)	0 (0)	52 (100)
I read the material posted in Edmodo.	12 (23.1)	35 (67.3)	5 (9.6)	0 (0)	0 (0)	52 (100)
I start to put "like" in Edmodo.	11 (21.2)	21 (40.4)	17 (32.7)	2 (3.8)	1 (1.9)	52 (100)
I can learn without help in Edmodo.	2 (3.8)	10 (19.2)	29 (55.8)	11 (21.2)	0 (0)	52 (100)
I can learn freely in Edmodo.	12 (23.1)	30 (57.7)	10 (19.2)	0 (0)	0 (0)	52 (100)
I can interact with my friend easily.	14 (26.9)	27 (51.9)	10 (19.2)	1 (1.9)	0 (0)	52 (100)
I can receive info from lecturer from time to time.	30 (57.7)	21 (40.4)	1 (1.9)	0 (0)	0 (0)	52 (100)
I read the material in Edmodo.	13 (25.0)	33 (63.5)	6 (11.5)	0 (0)	0 (0)	52 (100)
I won't use Edmodo anymore.	1 (1.9)	1 (1.9)	6 (11.5)	23 (44.2)	21 (40.4)	52 (100)
I check the Edmodo regularly.	8 (15.4)	23 (44.2)	17 (32.7)	3 (5.8)	1 (1.9)	52 (100)
I use to discuss with my friends about the topic.	8 (15.4)	27 (51.9)	16 (30.8)	1 (1.9)	0 (0)	52 (100)
I try to explore more about Edmodo.	10 (19.2)	28 (53.8)	14 (26.9)	0 (0)	0 (0)	52 (100)
I try to search more material for my discussion.	11 (21.2)	32 (61.5)	7 (13.5)	2 (3.8)	0 (0)	52 (100)
Edmodo is a good platform for collaborative problem solving.	18 (34.6)	28 (53.8)	6 (11.5)	0 (0)	0 (0)	52 (100)
I will recommend Edmodo to others	20 (38.5)	27 (51.9)	5 (9.6)	0 (0)	0 (0)	52 (100)
I will use Edmodo for other courses.	13 (25.0)	25 (48.1)	13 (25.0)	1 (1.9)	0 (0)	52 (100)
Average of percentage:	20.6	47.6	26.1	4.54	0.65	(100)

6. DISCUSSIONS

From the findings, it indicated that Edmodo is an effective platform for collaborative online learning. Edmodo is a free, user-friendly educational social media. Students can solve the problem through the discussion online. These findings shared the same view with Chia, *et al*. [17] that collaborative activities promoting problem solving. This learning method not only enhances students' collaborative problem solving skill but also promotes their teamwork skills. One of the advantages of using Edmodo is the lecturer can respond to the students immediately. In addition, Edmodo allows students to interact with others who share the same interest from all over the world. Learning beyond boarder can just happen within the fingertips. Edmodo also enhances the students' learning interest and encourage them to self-directed learning. The findings confirmed that Edmodo allows students to work in groups virtually. Students found that the discussions conducted using Edmodo is fun. The findings in line with the prior researches [18]; Andre & Hastle [19] proposed that online learning enhances students' learning interest. However, the success of all online learning depends on the effort made by facilitators.

6. CONCLUSION

This paper provides an alternative method for blended learning. This method can create self-directed learning to students. Edmodo also encourage students to discuss and interact with peers. Students can learn anywhere and anytime. Edmodo has opened the door to new ways of fostering interaction and collaborative outside the classroom.

The present results suggest that Edmodo has the potential of further development. Further research on this topic is warranted. The qualitative research such as interviews with the students may be carried out to obtain more details about Edmodo.

7. ACKNOWLEDGEMENT

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