Promoting Knowledge Management Approach and Active Learning Model in Blended Learning Activities of Higher Education

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This research studies the implementation of blended learning and to promote the implementation of knowledge management techniques and active learning model in the learning process. The data was taken by examining the theory, documents and surveys. Also data was collected by observation of activities in blended learning courses involving 100 students experienced in blended learning courses from the faculty of teacher training and educational science, majoring in four study programs. The research method applied was qualitative descriptive. This was done by describing the proses of teaching in blended learning courses and the implementation of knowledge management and active learning in blended teaching and learning activities. The key findings showed that the blended learning process consists of three steps: planning, developing and implementation. There was a significant correlation between variable X1 (knowledge management) and variable X2 (active learning) with variable Y (blended learning).

Key words: *Blended learning, knowledge management, active learning.*

Introduction

Rapid development of requirements in higher education field is unbearable. Colleges, universities and schools share the same problems, and they are required to find the answers to the questions of: which programs and services are essential to their mission and vision; what student involvement in teaching and learning process are effective; and how can institutions improve students' outcomes. Education components such as institutions, educators, parents

and students now   begin to seek better outcomes from education. It is said that many governments are trying to understand the world competitiveness; in fact schools are also have many efforts to be the best in the future. "Competitiveness frameworks in governments and schools as institutions are more and more linked with characteristics of ability to maintain high quality level of services, ability to manage risks and ability to have the sense of accountability towards the future". (Mohamed Buheji, Said Al-Hasan, Brychan Thomas, Denis Melle, 2014). Knowledge management is described as providing the right knowledge to the right people at the right time in order to improve organisational performance (C. O'Dell & C. Hubert, 2011). It should allow for creating organisational knowledge.

Lin, X. (2019), categorised knowledge in three aspects: knowledge as an object or equal to information acquisition, it should focus on establishing and managing knowledge reserves; knowledge as a process, it should focus on the process of knowledge flow; and knowledge creation, sharing and distribution. Knowledge as a capability perspective focuses on building core competitiveness, understanding strategic advantages, and creating intellectual capital. The process of knowledge management needs technology as an instrument that complements creativity, leading to the dissemination and utilisation of knowledge in achieving organisation specific objectives (Sharma, V.K. and Deb, M., 2019).

Some of the ways to answer the questions and to improve the efficiency of administrative services and the effectiveness of the academic programs are done through the use of information management tools. To improve performance, many educational institutions have also invested in technology. However, some of them are not able to develop their information culture even though they have invested a lot in technology.

Information culture that can be developed by human is in correlation with technology culture. Educational organisations, schools, colleges and universities are assigned to provide: knowledge to students through the exchange of information; knowledge between students and teachers, between students and books or other resources; and between students themselves. In small situations like in classroom activities, knowledge management aims to address actively both students' information culture and their technology culture. This tacit knowledge will be processed by the knowledge management system. Knowledge management systems process the implied knowledge possessed by people, starting with identifying, searching, planning to acquire, develop and release knowledge from people. Then, the knowledge that has been obtained will be stored and classified. The knowledge is transferred and disseminated quickly and appropriately throughout the class with the intention that knowledge can be used in making decisions, solving problems, increasing abilities and knowledge for students in the class (Pattama Chandavimol, Onjaree Natakuatoong, Pornsook Tantrarungro, 2013).

Knowledge management consists of three major resources: people, processes, and technologies. To share and communicate knowledge with others in a useful and efficient way tools are needed. The use of technology is required to maximise the access to such knowledge. Candlin & Wright (1992), stated that knowledge should always be stored in a knowledge repository which can be accessed easily by all employees in the organisation by using modern technologies and innovations for maximum access. Furthermore, the digital world of information technology has brought various new technologies that play an important role in many fields of life, including in education. Thus, learning in the era of education evolution and knowledge-based society of 21st century has changed (Yilmaz, 2012).

The theory of knowledge management is covering any processes and practices concerned with the creation, acquisition, capture, sharing and use of knowledge, skills and expertise. Sharing with a group that helps spread knowledge in ways that directly affect performance is one of characteristics of knowledge management. This creates the knowledge development value chain and enhances each student's own knowledge. The students will acquire this learning with practice. Revans (1998), describes learning as having two components. One part consists of programmed instruction, where a teacher or instructor provides information to the learner and the other part consists of the understanding that arises when learners collaborate; this second component can be referred to as action learning.

Action learning is an experiential learning method where students learn by doing and then reflecting on what they have done. Marquardt (1999), expresses action learning for building knowledge management systems through four viewpoints: the knowledge source; the knowledge development; the knowledge storage; and the knowledge transfer and utilisation. As the source of knowledge in action learning, the learners should think about the organisation's resources, facilities in sharing the knowledge and how to develop knowledge. Learners should also search and develop new methods in solving problems because the old knowledge may be obsolete; this is the implementation of knowledge development. Next, the organisation should classify which knowledge should be stored, provide an encoding system and protect that knowledge. This is described as knowledge storage. As for the knowledge transfer and utilisation, during the reflection and feedback period, the knowledge becomes clearer and meaningful.

In action learning, group members (students) gain knowledge in various fields and develop their ability to become experts in that field. They will then transfer the knowledge through discussion and experience gained from their problem solving group. Action learning is developed from experience and knowledge, as well as individual and group skills. This model is applicable in the teaching and learning process. Echols (2010), states that the next issue that needs to be addressed is how to integrate those four viewpoints in action learning with practice learning. Action learning draws on the collective knowledge and experience of the

learners and requires good access to online knowledge resources so that they can effectively share their knowledge and experience.

Silbermen (1996), says that there are more than one hundred techniques in active learning strategies for whole class and small group instruction, and methods for reviewing and assessing what students have learned. Those strategies might be applied to any age level, either older children or adults in middle school, high school, college and adult education centres.

One sector that is most important from the current technological advancement is education. In maximising the use of technology in education, the concept of distance learning has been revolutionised to what is now known as e-learning. In implementing the knowledge management approach, the role of collaboration becomes pivotal. However, the problem that lies in the implementation of knowledge management is the lack of sharing knowledge among members of groups. In such cases, blended learning is the best way to help acquire the self-motivated, distributed, shared and collaborated knowledge through technological resources to support this building process. An outcome of an effective learning process should be not only to know the facts about an individual subject but also to have practical skills and develop competency in that given domain. The expected results of the learning process must be agreed upon and combined with some of the skills acquired in the education process. From this approach communication and collaboration will be improved and free exchange of competencies will be provided.

Methodology

The aim of this study is to describe the implementation of blended learning and to promote the implementation of knowledge management techniques and the active learning model in the learning process by using blended learning. The research method applied was qualitative descriptive by describing the proses of teaching in blended learning courses and the implementation of knowledge management and active learning in blended teaching and learning activities. The quantitative step was conducted by giving questionnaire to the students (Creswell, 2017). The data was taken by examining the theory, documents and questionnaires. Also data was collected by observation of activities in blended learning courses involving 100 students experienced in blended courses from the faculty of teacher training and educational science, majoring in four study programs.

A questionnaire designed by the authors of this paper was provided by using Google forms. The questionnaire consisted of 10 questions regarding each student's experience in the blended learning course, with the knowledge management approach in relation to the action learning model. The investigator transferred the questionnaire responses to an Excel spread

sheet for the purposes of examining and analysing the data. This data was then combined with the data collected through interviews, observations and course documents, and triangulated to help in answering the following two research questions:

1. How are knowledge management and action learning applied in a blended learning course?
2. What aspect of the course is attributed to the implementation of knowledge management and action learning?

Figure 1: The Implementation of Knowledge Management Approach and Active Learning Model in Blended Learning Activities.
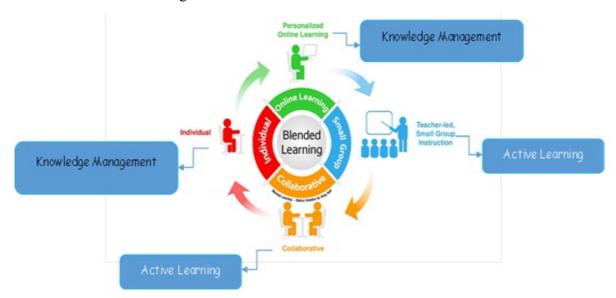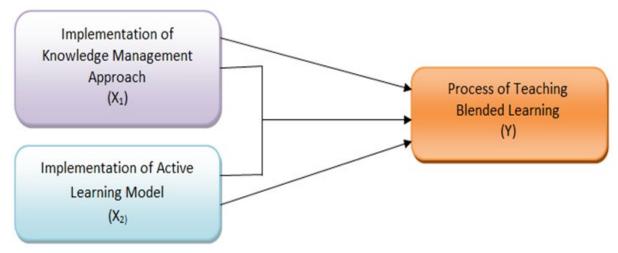

Figure 2: The Constellation of the Implementation of Knowledge Management Approach, Active Learning Model and the Process of Blended Learning.

Results and Discussion

Most of blended learning model consists of various activities combining face to face learning activities and online learning activities. The aim of blended learning is to combine the best of classroom face to face learning experiences with the best of online learning experiences.

The Implementation of Knowledge Management Approach and Action Learning Model in Blended Learning Activities

The implementation of the knowledge management approach and the action learning model was divided into three sections namely: pre learning activities, whilst learning activities and post learning activities. The table below shows the activities of the blended learning model applied in the teaching and learning process.

Table 1: Knowledge Management and Action Learning in Blended Learning Activities.

Steps	Activities and Method
Pre-Learning	
Students Orientation 1. The lecturers prepare the students. (Face to Face)	1.1. The lecturers inform the students of the learning objectives, activities, process, and evaluation criteria. 1.2. The lecturers demonstrate and give hands-on practice by using communication and collaboration technologies such as logging in to the e-learning websites, downloading learning materials, uploading assignments, having online quizzes, doing online chat, and discussing in forum discussion. 1.3. Lecturers share the information about knowledge management and action learning.
Learning Process 2. The students identify problems and desired knowledge, set up group of practice. (Action Learning) (Face to Face and online)	2.1. Each student downloads the materials provided by the lecturers in e-learning or from other online resources. 2.2. The students summarise and discuss the material in forum discussion. 2.3. The students are divided into groups. 2.4. Each group discusses and does the practice and helps each other to assess the material and assignments both in e-learning and in conventional class, and then propose solutions via chat room.

3. Students share the material, information, experience and opinions. (Face to Face and online) Action Learning and Knowledge Management	3.1.The students in groups explain and present the material divided for each group. 3.2.The other students from other groups may ask questions to the group presenting the materials/topic (classroom). 3.3.The students propose solutions to solve the problems or answer questions, reflecting on the opinions gathered from exchanging information via chat room or forum discussion. (e-learning)
4. The students acquire new knowledge (Online)	4.1 The students access e-Learning • e-Learning: download the material • e-Book: search for other online resources 4.2. Each student acquires more information on learning and media development design from the Internet, and other knowledge sources provided. 4.3. The lecturers bring together the knowledge from groups presentations, and upload it to the e-learning, and to forum discussion. 4.4. The students bring their questions, discuss the information that the lecturers brought together, propose, and brainstorm solutions to solve the problems via chat room. 4.5. The lecturers lead the groups/students to summarise the solutions and document the solutions.
5. The students apply the knowledge to their work (Action Learning and online)	5.1. The students do the assignments posted in e-learning. 5.2. The lecturers lead the exchanges of opinions, evaluations, feedbacks and suggestions after the test.

Post Learning	
6. The students store their own and group knowledge into the system and utilise the information. (Online)	6.1. The students store their own and practice knowledge in an online portfolio such as blog. 6.2. The students utilise the knowledge on the websites for further study.
	The students record the new knowledge from personal and community of practice into their blog, dividing it into 3 categories: • Knowledge from learning • Knowledge from sharing information • Knowledge from e-Learning

Table 1 describes the activities from a blended learning model, where the implementation of knowledge management and action learning were shown in several activities. The activities of blended learning in the teaching and learning process were divided into the two stages of pre learning and learning process.

In pre learning activities, the implementation of knowledge management and action learning was conducted in sharing sessions and collaboration through the introduction to blended learning models by the lecturers. The transfer of knowledge was also done in the beginning of the semester when the lecturers and the students discussed the learning objectives and the activities they would have during the semester. Hartigan (2014), suggests that the master teacher must be responsible for setting classroom management, instructional strategies and daily routines. Teachers must have a unique knowledge about teaching; they can adapt some skills to meet the needs of the teaching profession (Maskit, 2014).

The implementation of knowledge management and action learning in core learning activities were divided into five stages. Chang & Chen (2015), says that using e-learning as an information technology will provide future readiness in different subjects from courses. The teachers must challenge this tendency that will be encountered. In the instructional process, they should use different instructional strategies according to students' backgrounds. The first stage was shown when the students were introduced to the learning objectives and learning targets. The students were asked to download and study the materials uploaded in e-learning. They were also allowed to find learning materials from other online resources. Then, in the learning activities, they were asked to identify the problems based on the topics presented in the syllabus. In a conventional session or face to face session, the students were divided into groups (action learning). They had to present the topics and discuss them with their classmates. Whenever they still had questions about the topics, they were free to ask for

explanations from other groups under the guidance of the lecturers both in the classroom and in e-learning (via forum discussion or chat room). Tapinos (2016), mentions that teachers might create their own self-limitations and also receive minimal input, but the solution is doing training on how to teach and implement creative thinking skills. The impacts of the training will motivate teachers to reflect on the integration between theories and practice (de Lima & Bertotti, 2016).

The last session of the learning process was the assessment. The lecturers provided the assignments and quizzes for the students in e-learning. After submitting the assignments and quizzes in e-learning, the students and the lecturers discussed the answers and the lecturers gave feedback and suggestions to the students. Piske, et al., (2016), described that the teacher is a facilitator of the teaching-learning process and encourages their students to study. They also should encourage conducive situations in the teaching and learning process. Teaching and learning are cooperative processes, give many opportunities to participate actively in pedagogical practices (or at work), and propose more participation and inclusion of all participants, with simple changes and explicit known procedural rules and structures (dos Santos, 2016). The most important aspect for mastering the learning process is motivation, i.e. higher motivation increases mastering (Jelle, 2017). Participants recognised the necessity of shaping the environment for schema development and assessing the state of student knowing for supporting assimilation and accommodation in schema development (Kaplan, 2018). It is said that creativity isn't a single act but a permanent process combining: the accumulation of knowledge and crafts; reflection; mastering and testing them; inventing something new and testing it; and disseminating it into a permanently changing society (Yanitsky, 2019). But in fact the faculty in this institution is not encouraged to seek pedagogical training as an investment in their professionalisation (Santos, et. 2019). The three interrelated features of creative pedagogy are creative teaching, teaching for creativity, and creative learning (Lin, 2011).

Data Analysis from Questionnaire

The questionnaire was distributed to the students who experienced blended learning. In the questionnaire given to students, there were several sections. The first was participant personal data, the second was the number of blended learning courses they took during the current semester, and the last was ten questions about the activities in a blended learning model in relation to knowledge management and action learning. The questions was also aimed at obtaining student's general opinions toward the use of blended learning courses, reactions towards the interactions in blended learning activities, the content, and the implementation of knowledge management and action learning in blended learning activities.

The respondents of the questionnaire were randomly selected from four study programs in the faculty of teacher training and educational sciences. They were the seventh semester students who experienced blended learning in the on-going semester or in the previous semester. Based on the result of the questionnaire, 76.5% said that their first opinion of the blended learning course was the flexibility of being able to complete assignments anytime/anyplace. This means that most of the students were interested in blended learning because they could do and access the assignments anytime and anyplace and were not limited only to the classroom. Therefore, the flexibility of time and place matters for the students. The second question was about the interaction with other students in a blended learning class, 47.1% said that the interactions were increased; however 23.5% said the interactions descreased since they didn't need to meet their classmates in the classroom. As well the same percentage of students stated that there was no difference between having an online class or conventional class. The rest had the opinion that the interactions decreased. On the other hand, 47.1% of the respondents said that the interactions with the lecturer was equally consistent between online and conventional learning.

Of the research respondents, 58.8% said that the interactions between students were mostly done in forum discussion activities. . The rest said that the interactions occurred when they were doing quizzes or discussing the material. This question was related to the principal of action learning (collaboration). 70.6% of the respondents stated that collaboration was done equally between online and conventional class.

In terms of knowledge management 27% of the respondents agreed with the statement that through blended learning activities, they could gain knowledge independently. About 33.3% were neutral and the rest disagreed or strongly agreed. About resources and the content of blended learning courses, almost 50% said that the resources of the online course were sufficient. While83.3% said that the workload in blended learning was moderate or still acceptable. When the respondents were asked about the time provided by the lecturers to discuss the material in face to face and online meeting, 55.6 % agreed that there was such activity. The last question was about the time for the sharing session of materials, and 61.1% of the respondents said that there was the same amount of time for sharing both in face to face or a conventional meeting.

Following is the qualitative calculations with statistics. First step is to measure the reliability of X1 (knowledge management), X2 (active learning), and Y (the process of blended learning). Here we see that there is a very significant influence between X1 with Y, X2 with Y, X1 and X2 together with Y.

1. Knowledge Management (Variable X1)

Table 2: Reliability Test of Variable X1

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.748	0.757	10

Table 3: Total Item Scale of Variable *X*1

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VAR00001	29.93	23.157	0.592	0.987	0.699
VAR00002	30.27	25.573	0.436	0.979	0.725
VAR00003	29.65	23.482	0.421	0.988	0.726
VAR00004	29.93	22.995	0.620	0.986	0.695
VAR00005	30.32	25.917	0.427	0.975	0.727
VAR00006	29.58	23.337	0.438	0.988	0.723
VAR00007	29.67	26.930	0.199	0.552	0.756
VAR00008	30.42	27.519	0.255	0.461	0.745
VAR00009	29.51	24.475	0.337	0.282	0.741
VAR00010	29.61	24.968	0.421	0.659	0.725

The statement item found its r value (r arithmetic) using the formula below, then compared it with the value of r product moment (r table). If r arithmetic > r table it means the item statement is valid, conversely if r arithmetic < r table it means the question item is invalid. Refer to the formula df = N-2 with sig. 5%, then df = 100-2 i.e. df = 98, it is found that r table is 0.196.

Table 4: The Value of Variable X1

No. Item	r count	r table	Notification
1	0.592	0.196	Valid
2	0.436	0.196	Valid
3	0.421	0.196	Valid
4	0.620	0.196	Valid
5	0.427	0.196	Valid
6	0.438	0.196	Valid
7	0.199	0.196	Valid
8	0.255	0.196	Valid
9	0.337	0.196	Valid
10	0.421	0.196	Valid

Based on the above results it shows that all items are valid and this test can be said to be reliable because the value of Cronbach's Alpha Based on Standardized Items is 0.748 greater than r table.

2. Active Learning (Variable X2)

Table 5: Reliability Test of Variable X2

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.748	0.758	10

Table 6: Total Item Scale of Variable X2

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VAR00001	29.91	22.992	0.583	0.986	0.702
VAR00002	30.22	25.022	0.442	0.979	0.724
VAR00003	29.56	23.017	0.423	0.988	0.727
VAR00004	29.91	22.830	0.611	0.985	0.698
VAR00005	30.27	25.371	0.433	0.975	0.726
VAR00006	29.49	22.858	0.443	0.988	0.723
VAR00007	29.61	26.159	0.229	0.540	0.752
VAR00008	30.36	27.041	0.254	0.449	0.746
VAR00009	29.43	24.066	0.337	0.281	0.741
VAR00010	29.59	24.790	0.399	0.645	0.729

The statement item found its r value (r arithmetic) using the formula below, then compared it with the value of r product moment (r table). If r arithmetic > r table it means the item statement is valid, conversely if r arithmetic < r table it means the question item is invalid. Refer to the formula df = N-2 with sig. 5%, then df = 100-2 i.e. df = 98, it is found that r table is 0.196.

Table 7: The Value of Variable X2

No. Item	r count	r table	Notification
1	0.583	0.196	Valid
2	0.442	0.196	Valid
3	0.423	0.196	Valid
4	0.611	0.196	Valid
5	0.433	0.196	Valid
6	0.443	0.196	Valid
7	0.229	0.196	Valid
8	0.254	0.196	Valid
9	0.337	0.196	Valid
10	0.399	0.196	Valid

Based on the above results it shows that all items are valid and this test can be said to be reliable because the value of Cronbach's Alpha Based on Standardized Items is 0.748 greater than r table.

3. Process of Blended Learning (Variable Y)

Table 8: Reliability Test of Variable Y

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.748	0.756	10

Table 9: Total Item Scale of Variable Y

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VAR00001	29.88	23.420	0.586	0.988	0.700
VAR00002	30.23	26.179	0.428	0.978	0.727
VAR00003	29.68	23.816	0.438	0.988	0.724
VAR00004	29.88	23.258	0.612	0.987	0.696
VAR00005	30.28	26.527	0.418	0.974	0.729
VAR00006	29.61	23.675	0.453	0.988	0.721
VAR00007	29.65	27.422	0.199	0.560	0.756
VAR00008	30.39	28.079	0.248	0.474	0.746
VAR00009	29.56	24.895	0.333	0.292	0.742
VAR00010	29.55	25.341	0.422	0.672	0.726

The statement item found its r value (r arithmetic) using the formula below, then compared it with the value of r product moment (r table). If r arithmetic > r table it means the item statement is valid, conversely if r arithmetic < r table it means the question item is invalid. Refer to the formula df = N-2 with sig. 5%, then df = 100-2 i.e. df = 98, it is found that r table is 0.196.

Table 10: The Value of Variable Y

No. Item	r count	r table	Notification
1	0.586	0.196	Valid
2	0.428	0.196	Valid
3	0.438	0.196	Valid
4	0.612	0.196	Valid
5	0.418	0.196	Valid
6	0.453	0.196	Valid
7	0.199	0.196	Valid
8	0.248	0.196	Valid
9	0.333	0.196	Valid
10	0.422	0.196	Valid

Based on the above results it shows that all items are valid and this test can be said to be reliable because the value of Cronbach's Alpha Based on Standardized Items is 0.748 greater than r table.

Table 11: The Correlation of Variable X1, X2, and Y

Correlations				
		Knowledge Management	Active Learning	Blended Learning
Knowledge Management	Pearson Correlation	1	0.954**	0.809**
	Sig. (2-tailed)		0.000	0.000
	N	100	100	100
Active Learning	Pearson Correlation	0.954**	1	0.764**
	Sig. (2-tailed)	0.000		0.000
	N	100	100	100
Blended Learning	Pearson Correlation	0.809**	0.764**	1
	Sig. (2-tailed)	0.000	0.000	
	N	100	100	100

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

From output Table 11 we know the value of Sig. between X1 and Y is 0.00 <0.05, which means that there is a significant correlation between the variable Knowledge Management and Blended Learning. Then, the Sig. between X2 and Y is 0.00 <0.05, which means there is a significant correlation between the variables of Active Learning and Blended Learning.

Conclusion

According to the result of the research, the conclusion that we can draw about the implementation of knowledge management and action learning in blended learning activities was divided into two aspects. The first was the description of activities in blended learning and the second was the aspects related to knowledge management and action learning.

Nevertheless, to make implementation of knowledge management and action learning effective and successful, the role of the lecturers as the facilitators of the teaching and learning activities was important. The role of the lecturers started as the administer for the online learning portal. They provided and developed the content of the course, prepared the students to gain and share their knowledge from group or class discussion. Also they were pivotal as they gave feedback and lead the students in the ability of acquiring knowledge in collaboration and as an individual.

The data from the study, documents, observation and questionnaires indicate that the implementation of knowledge management and action learning were shown in pre learning and learning activities. In pre learning activities, the students were introduced to the topic material that would be discussed during the semester. They discussed the material and gained the knowledge about the topic. Then, they had to share the knowledge with their friends in groups or in class. The action learning was also shown when they had to collaborate with their friends in discussing and doing the assignments or quizzes.

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