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EXPLORING THE USE OF SOCIAL MEDIA TOOLS AMONG STUDENTS FOR TEACHING AND LEARNING PURPOSE

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ABSTRACT

Social media network is a fairly recent word used to define a form of learning that can be performed via websites online learning. The exploring of the potential use of social media tools and impact of contingent factors on the relationship between three predictors was investigated. A total of 235 valid responses were received from undergraduate students Faculty of Computing, Universiti Teknologi Malaysia (UTM) in the study. Several factors have been found to correlate with social media use, active learning both to affect teaching and learning. The researchers made use of the structural equation modelling (SEM) method with the SmartPLS program to shed a light on the adoption process. The results show that the use of social media positively and significantly relates to active learning, which in turn affect teaching and learning.

Keywords: *Social Media, Teaching and Learning, Higher Education, Active Learning*

1. INTRODUCTION

Social media sites such as Facebook, Twitter, Instagram, YouTube and Blog have attracted millions of users and they are used for many different purposes [1]. Social medias are used not only for social and entertainment purpose, but widely used in various field such as business [2], engineering [3], medical [4], educational [5, 6] and also for teaching and learning [7, 8]. With the increasing use of social media in educational environment has attracted the attention of previous researchers to determine how such tools could be used for teaching and learning. Research studies show that social medias can be used for educational purpose and have a positive impact on students [9, 10, and 11]. Many educational institutions also have taken advantage of social media site for maintaining their teaching and learning activities [12] and putting great effort into adopting such technologies to communicate with their faculty members and students to provide better services [13]. This is because social medias have an important educational potential that support educational activities by making interaction, collaboration, active participation, information and resource sharing, and critical thinking possible [14].

Despite the significant increase in the number of papers that examine potential educational use of social media, Kalin [15] stated that, before we can realize the benefits of technology, we must better understand how students use it. Furthermore, while many educators and researchers would attest to the potentials of social media for learning, there are also those who argue that young adult learners view and use social medias as a platform for socializing more than learning [16]. Therefore, this study aimed to identify the activities using social media sites that facilitate student's learning and to discover student view about the potential use of social media for teaching and learning. We propose a conceptual framework based on the literature review and posit that social media positively affects teaching and learning process. To verify the model, we conduct a survey among undergraduate students of Universiti Teknologi Malaysia using adopted questionnaire. In this study, a quantitative approach is applied and the reliability and validity of the scales were tested.

The rest of the paper is organized as follows. Section 2 provides a literature review. Section 3 describes the hypothesis derived from a literature review. Section 4 describes the methodology, including sampling technique and measurement. Section 5 discusses the results of data analysis obtained from structural equation modelling. Finally, Section 6 concludes the paper, presents limitations and gives suggestions for future research.

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2. LITERATURE REVIEW

Social media sites are the latest online communication tool that allows users to create a public or private profile to interact people in their network [17]. The social media has become a part of university students' live as it helps them build their online social connections with others. Through the social media use, students understand how to share, communicate, collaborate and socialize information and knowledge.

The uses of social media among students in universities and colleges have been a topic of great discussion among researchers throughout the world. Many studies discovered that social media influence the effectiveness of learning and teaching in general [18]. Social media demonstrated in many studies have discovered a positive impact on learning and teaching foreign language as they can enhance and improve students' written and oral language skills [19]. Kabilan et al. [11] found that university students consider Facebook as a useful and meaningful online environment that can support and improve their learning of English. Social media technologies have several advantages such as create new methods of interaction, collaboration, improving learning motivation, enhancing relationship, ability to share and create content, developing collaborative abilities and offering personalize course material [20, 21]. With this characteristics, social media are recognized as important tools for reshaping the learning and educational environment.

Despite the significant increase in the number of papers that examine potential educational use of social media, it may also give a bad influence on student engagement in learning [22]. Students who spent more times and involve in multitasking would have lower GPA [23] and significantly associated with lower performance [24]. These applications may also a source of distraction and can effect or divert students' attention from their academic goals [25]. In addition, several studies concluded that slightly more than a quarter of the students surveyed said they would like to see greater use of social media in their course [26, 27]. Although they increasingly use technology in their personal lives, they feel comfortable with traditional learning ways and prefer moderate use of information and communication technologies in their courses [28]. After doing a comprehensive literature review, it is necessary to conduct more empirical research on the use of social media for teaching and learning purpose [29]. To shed light upon this topic, we conduct a study to identify the activities using social media sites that facilitate student's learning and to discover students view about the potential use of social media for educational purposes. Conclusions extracted from this research will help us to understand and improve our use of social media tools in educational contexts so that we can adapt our teaching strategies to the educational needs.

3. RESEARCH HYPOTHESES

Figure 1 shows the research framework for this study. This study combines the relevant factors namely social media use, active learning and teaching and learning into a single model that can be tested and validated – such integration of social media aspects was never conducted in prior studies. The main study hypotheses of the current study are as follows:

H1: There's a significant relationship between social media used and teaching and learning.
H2: There's a significant relationship between social media use and active learning.
H3: There's a significant relationship between active learning and teaching and learning.

3.1 Social Media Use

Social media can be defined as a social structure for a group of individuals that connects both directly or indirectly based on each interest or importance and allow the creation and exchanges of user-generated content [30, 31]. The popularity of social media has grown extensively over the past few years [32]. Social media used has the ability to promote collaboration and cultural understanding among students. Plus, social media has a great potential as an educational tool to support the interactions between students and lecturers. Some previous researchers believe that social media can be used as an effective teaching tool in higher education because of its ease of use, ready availability, and individual affordability and network effects [33]. According to Greenhow et al. [34], social media have made communication, collaboration and interaction possible and more efficiently. Consequently, they have been introduced to support educational activities. Social media also play a very important role in providing knowledge equally for the students and lecturers. Klamma et al. [35] highlighted that one of the most important advantages of social media is the ability to manage knowledge and learning by connecting with different experts and knowledgeable people in order to share the ideas, information, activities and

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so on. Greenhow and Robelia [36] found that social media as social learning resources provided students with opportunities for the validation and appreciation of creative work and school-task related support. Murphy and Lebans [37] also found that the integration of social media tools in learning increased student engagement with content, quality of assignments and a sense of responsibility for their learning.

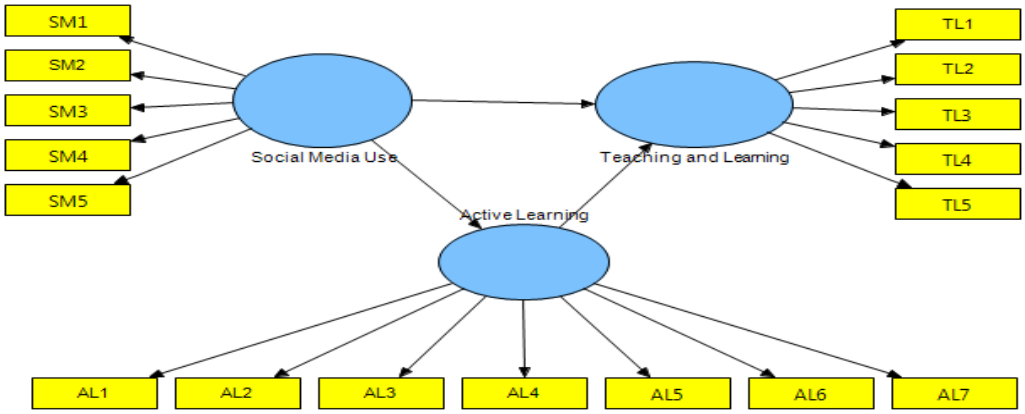

Figure 1: Research Model

3.2 Active Learning

Learning is a process of interaction among students and instructors to get a variety of information, knowledge and experience lead to changes in behaviour. Active learning refers to a general type of learning methods that focus on active participation of learners [38]. Active learning practices favour student participation and engagement in learning activities, such as active writing, discussion, problem solving, case study and learning by teaching. Many social media technologies support active learning such as blog, social network, forum and other community of practice [38]. In recent years, many studies have emphasized the importance of active learning [39, 40, 41] because it can promote the development of self-efficacy, enhance learning motivation and active learning attitudes and lead to improved learning outcomes. Many researchers have started to explore the technology in enhancing their teaching as well as in promoting active learning for students. Zheng [38] focused on the use of blogs to promote active and collaborative learning and found that blogging activities was used to engage students in the learning process by active student contribution and interaction with peers. In promoting active learning among their medical students, George et al. [39] found that Google Docs can facilitate interaction and provide students with control over content and flow of lecture-based courses, but educators must be mindful of practical and conceptual limitations.

3.3 Teaching and Learning

Learning is more meaningful when students can create and build their own knowledge. According to Batchelder [42], the activities in social media provide students with an active process that gives a significant meaning to them. Social media tools have a significant role to transform teaching and learning process because they provide specialized services for learning including blogs, microblogs, social bookmarking, media sharing and social media sites. The use of social media tools can support students' creativity and collective formation [43]. Recent years, many researches have uncovered the use of social media that have been used by students from various countries. Zakaria et al. [44] found that students in Malaysia are reasonably well exposed to social media applications and comfortable to use them for learning purposes. In general, the acceptance of Malaysian students in the use of social media for learning seems positive. The integration of social media tools used by instructors or lecturers will be able to improve student learning and facilitate students on the development of lifelong skills such as collaboration, creative thinking and generating knowledge. Al-Rahmi et al. [45] also found that social media is significantly affects the academic

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performance, but with the help of collaborative learning.

4. RESEARCH METHODOLOGY

A total of 235 questionnaires were collected in this study. Using systematic random sampling technique, participants were chosen randomly from among all undergraduate students studying at Faculty of Computing at Universiti Teknologi Malaysia. In this study, students come from the Department of Information System, Department of Software Engineering, Department of Computer Graphic and Multimedia, Department of Industrial Computing and Modelling and Department of Computer System and Communication.

Data analysis was carried out through the SPSS application, Version 20 and Smart PLS. Specifically, the instrument utilized in this study was developed based on the study objectives, after which it was piloted and the Cronbach's alpha reliability and validity was found to be 0.814. Such validity is acceptable and thus, the instrument was deemed to satisfy the reliability requirement. Also, a five-point Likert scale with 1 depicting strongly disagree and 5 depicting strongly agree was employed in this study. The questionnaire was refined according to the results of the pilot study conducted among students. The questionnaire comprised of 17 items.

5. RESULTS AND DISCUSSIONS

Table 1 illustrates the demographic profiles and descriptive statistics of respondents. Two hundred and thirty five responses were received. Regarding the gender, it is evident that the majority of the population consists of female students. The females students comprised 65.1% (f=153) of the population, while male students comprised 34.9% (f=82).

Table 1: Demographic Profiles and Descriptive Statistics of Respondents

Measure	Item	Frequency	Percentage (%)
Gender	Male	82	34.9
	Female	153	65.1
Age	17-18	5	2.1
	19-20	22	9.4
	21-22	123	52.3
	23-24	72	30.6
	25-26	13	5.5
Nationality	Malaysian	231	98.3
	Other	4	1.7
Department	Information System	123	52.3
	Software Engineering	80	34.0
	Computer Graphics & multimedia	20	8.5
	Industrial Computing & Modeling	5	2.1
	Computer System & Communication	7	3.0

The majority of the students are from the age group of 21-22 years old (52.3%). This is followed by the age of 23-24 years old (30.6%), 9.4% (f=22) were at the age of 19-20 years old, 5.5% (f=13) were at the age of 25-26 years old and 2.1% (f=5) were at the age of 17-18 years old. Out of 235 respondents, only 1.7% (f=4) is non-Malaysian, while the rest are Malaysian (f=231). According to the distribution, 52.3% (f=123) of the students were studying at the Department of Information System, 34.0% (f=80) at the Department of Software Engineering, 8.5% (f=20) at the Department of Computer Graphics and Multimedia, 3.0% (f=7) at the Department of Computer System and Communication where 2.1% (f=5) of the students were at the Department of Industrial Computing and Modeling.

5.1 Measurement and Instrumentation

The initial phase in confirming the validity and reliability of the measurement model is through the use of Partial Least Square Structural Equation Modelling (PLS-SEM), Smart PLS 3.0. Before the hypotheses are tested, two steps were conducted to establish the model's goodness-of-fit; first the construct validity test that includes the determination of factor loadings, composite reliability, Cronbach's alpha and convergence

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validity. According to [46], the criterion test should be used to confirm discriminant validity. The tests are discussed in the following sub-sections in detail.

5.2 Construct Validity of the Measurements

Construct validity is considered as the level to which the items developed to measure a construct can suitably measure the concept they are intended to measure [47]. It is important for the entire measures developed to measure a construct to load higher on their construct compared to other constructs. This was guaranteed through a thorough literature review of prior studies to identify items that whose reliability has already been established and tested. On the basis of the results of factor analysis, all items were appropriately assigned to their constructs as they revealed high loadings to their respective constructs in comparison to other constructs (See Table 2) according to the criterion proposed by [48].

5.3 Convergent Validity of the Measurements

The values of composite reliability in Table 3 reveal that the values differ from 0.832- 0.939, where they all exceeded the recommended value of 0.70. Additionally, the values of Cronbach's alpha differ from 0.741 to 0.918 exceeding the recommended value of 0.70, and the average variance extracted (AVE) values differ from 0.508 - 0.754, all over the recommended value of 0.50. The entire factor loadings are significant and exceeded 0.50 indicating that the recommendations provided by [46&47] were satisfied. Table 3 also displays the CFA results for the measurement model.

5.4 Discriminant Validity of the Measures

Discriminant validity is a test that assesses the level to which a concept and its indicators vary from one concept to the next [49]. The discriminant validity is achieved when the square root of the construct's AVE exceeds the inter-correlation between each construct and the reset of the constructs. Table 4 depicts that the results of each indicator item and it shows that all the AVE values exceeded the 0.50 recommended value with p= 0.001. From the results shown, it is found that the criteria of discriminant validity are adequate and indicates that the discriminant validity is supported for the entire constructs [46&47].

5.5 Analysis of the Structural Model

Following the establishment of the measurement model's goodness of fit, the next phase involved the testing of the hypothesized relationships among the constructs and this is carried out through Smart PLS 3.0, specifically through the PLS algorithm. In this test, all value for factors loading, R-Square, Cronbach's alpha, composite reliability and AVE were accepted. The path coefficients were produced as displayed in Figures 1 based on the illustrations in Figures 2, 3 and Table 3 and 4.

Table 5 shows that all the hypotheses were supported. Based on the analysis, the results revealed that social media use positively and significantly influenced teaching and learning at (β=0.224, t=3.743, p< 0.001) and active learning at (β=0.706, t=21.446, p< 0.001). Further from the analysis, it shows that active learning was positively and significantly related to teaching and learning at (β=0.578, t=10.860, p< 0.001). This indicates that H1, H2 and H3 are supported.

Table 6 shows the relationship among variables and items. The result shows all the relationships between 17 variables and items are supported. The results found that social media use is positively and significantly with 5 items with the t-value 30.873 to 5.338. The results also found that active learning is positively and significantly with 7 items with the t-value 27.132 to 18.431. The results also show that teaching and learning is positively and significantly with 5 items with the t-value 56.581 to 24.848.

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Table 2: Loadings and Cross-loadings Of the Items

No	Variables	Code	SMU	AL	TL
1	Social Media Use	SMU1	**0.866**	0.582	0.516
2		SMU2	**0.849**	0.582	0.488
3		SMU3	**0.541**	0.340	0.328
4		SMU4	**0.710**	0.572	0.468
5		SMU5	**0.520**	0.373	0.422
6	Active Learning	LA1	0.511	**0.749**	0.702
7		LA2	0.564	**0.727**	0.676
8		LA3	0.526	**0.778**	0.479
9		LA4	0.435	**0.771**	0.522
10		LA5	0.563	**0.753**	0.494
11		LA6	0.503	**0.844**	0.512
12		LA7	0.649	**0.740**	0.504
13	Teaching and Learning	TL1	0.417	0.561	**0.875**
14		TL2	0.591	0.668	**0.898**
15		TL3	0.572	0.642	**0.898**
16		TL4	0.534	0.672	**0.876**
17		TL5	0.602	0.634	**0.792**

Table 3: Loadings and Cross-loadings Of the Items

No	Variables	Code	Factors Loading	R-Square	Cronbach's Alpha	Composite Reliability	AVE
1	Social Media Use	SMU1	**0.866**	0.000	0.741	0.832	0.508
2		SMU2	**0.849**				
3		SMU3	**0.541**				
4		SMU4	**0.710**				
5		SMU5	**0.520**				
6	Active Learning	AL1	**0.749**	0.498	0.883	0.909	0.588
7		AL2	**0.727**				
8		AL3	**0.778**				
9		AL4	**0.771**				
10		AL5	**0.753**				
11		AL6	**0.844**				
12		AL7	**0.740**				
13	Teaching and Learning	TL1	**0.875**	0.567	0.918	0.939	0.754
14		TL2	**0.898**				
15		TL3	**0.898**				
16		TL4	**0.876**				
17		TL5	**0.792**				

Table 4: Discriminant Validity

Variables	SMU	AL	TL
Social Media Use	0.767		
Active Learning	0.706	0.712	
Teaching and Learning	0.736	0.632	0.869

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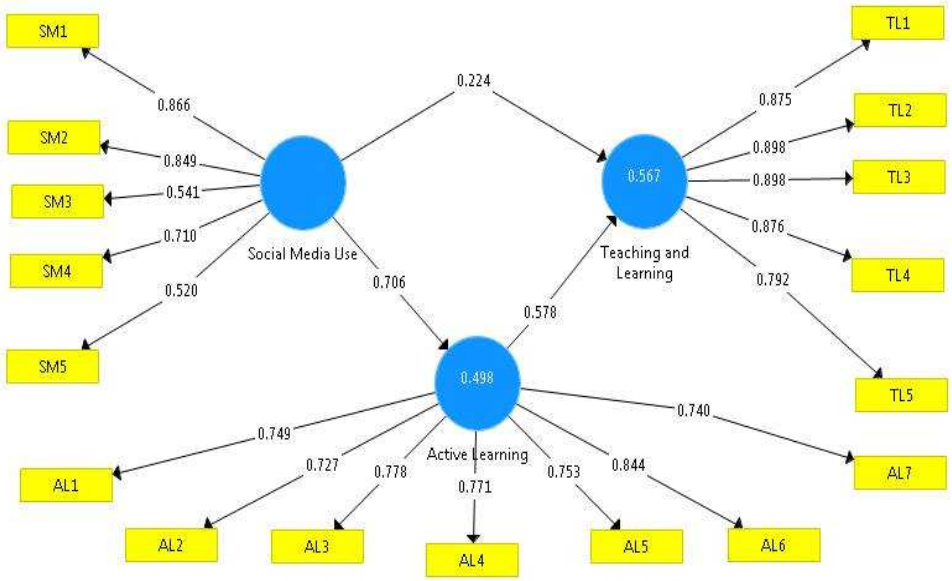

Figure 2 Path Coefficients Results

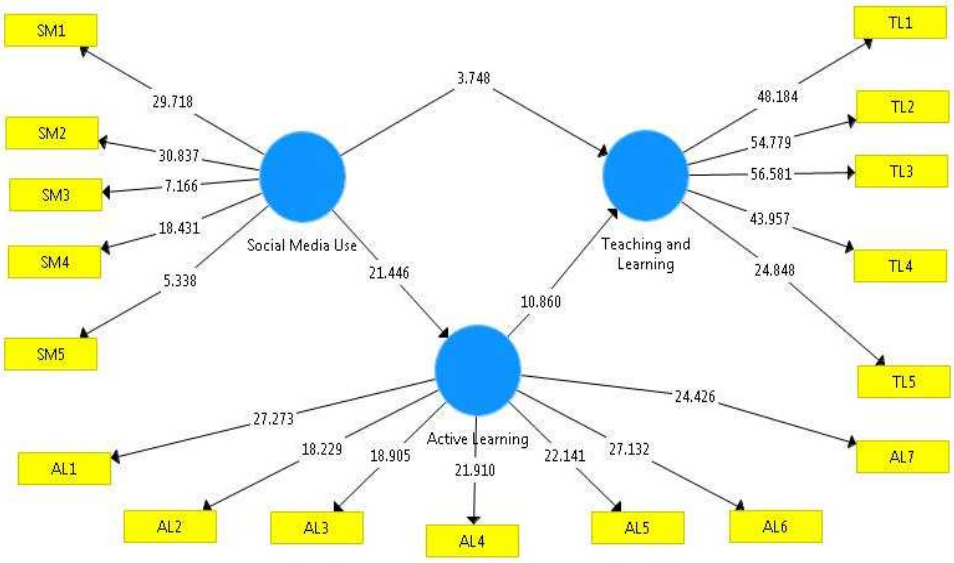

Figure 3 Path Coefficients T Values

Table 5: Hypotheses Testing for Variable

H	Independent	Relationship	Dependent	Path Coefficient	Standard Error	T value	P value	Result
H1	SMU	→	TL	0.224	0.055	3.743	0.000	Supported
H2	SMU	→	AL	0.706	0.033	21.446	0.000	Supported
H3	AL	→	TL	0.578	0.048	10.860	0.000	Supported

Note: $p < 0.001$

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Table 6: Relationship between Variables and Items

R	Independent	Relationship	Dependent	Factor Loading	Mean	Standard Deviation	T value	P Value
1	SMU	→	SMU1	0.866	0.867	0.026	29.718	0.000
2	SMU	→	SMU2	0.849	0.850	0.025	30.873	0.000
3	SMU	→	SMU3	0.541	0.530	0.072	7.166	0.000
4	SMU	→	SMU4	0.710	0.705	0.038	18.431	0.000
5	SMU	→	SMU5	0.520	0.517	0.097	5.338	0.000
6	AL	→	AL1	0.749	0.748	0.027	27.273	0.000
7	AL	→	AL2	0.727	0.726	0.038	18.431	0.000
8	AL	→	AL3	0.778	0.777	0.042	18.905	0.000
9	AL	→	AL4	0.771	0.768	0.032	21.910	0.000
10	AL	→	AL5	0.753	0.752	0.034	22.141	0.000
11	AL	→	AL6	0.844	0.841	0.028	27.132	0.000
12	AL	→	AL7	0.740	0.738	0.028	24.426	0.000
13	TL	→	TL1	0.875	0.873	0.019	48.184	0.000
14	TL	→	TL2	0.898	0.896	0.016	54.779	0.000
15	TL	→	TL3	0.898	0.897	0.016	56.581	0.000
16	TL	→	TL4	0.876	0.874	0.020	43.457	0.000
17	TL	→	TL5	0.792	0.789	0.032	24.848	0.000

Note: $p < 0.001$

6. CONCLUSION AND FURTHER RESEARCH

This study aimed to explore the potential use of social media tools and impact of contingent factors on the relationship between three predictors (social media used, active learning, teaching and learning) was investigated. In order to accomplish that goal, we propose a conceptual framework based on the literature review and posit that social media positively affects teaching and learning process. The findings indicate that social media use positively and significantly related to affect active learning in turn affect teaching and learning. These results are in agreement with [32] who reported that most students did realize academic benefits in using social media sites. Lecturers also thought that using social media as an instrument for teaching and learning enhanced the academic performance of their students. Overall, as a result of these findings, hypotheses H1, H2 and H3 are confirmed, which agree with the results of several past studies [50, 51 and 52] but contradict the findings of past studies that suggested that the frequent use of social media harms academic performance [53].

The present study supported the contention that social media use is effective both active learning and teaching and learning. In the field of social media use, no study has been conducted to identify the factors causing teaching and learning with active learning by social media use. Therefore, the present study highlighted such factors in the context of Malaysian higher education institutions. The findings revealed enhancement of students' perceptions of social media use. The present study's results led the researcher to conclude that the model well represents the data collected based on its goodness-of-fit. For future studies, it is recommended that researchers include other factors that align with the educational environment, in terms of the barriers of integrating instructional technology into higher education in various countries. Such factors include discussion, sharing, generating knowledge and collaborative learning.

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APPENDIX: *Questionnaire*

Social Media Use

SMU1 I can get a lot of knowledges about my learning through my friends through social media tools.
SMU2 Through the media tools, I can share ideas or information's that I know to the others without fear of being ridiculed partners.
SMU3 I learn from the ideas and comments given by friends in a social media tool.
SMU4 Social media tools can help users to express their ideas and opinions.
SMU5 I'm not embarrassed to ask other friends through social media tools about something that I do not understand in the learning process.

Active Learning

AL1 Upload/download/share files
AL2 Join groups
AL3 Online quizzes
AL4 Playing games
AL5 Become a fan on any page
AL6 Surfed the official website related to study
AL7 Health information

Teaching and Learning

TL1 Social media tools should use by instructors for teaching and learning outside the lecture time.
TL2 Social media tools can be used as a medium of teaching and learning between students and instructors.
TL3 The use of social media tools are new ways of teaching and learning process more interactive than the teaching and learning in the classroom.
TL4 Social media tools like Facebook and blogs potentially are used for teaching and learning process.
TL5 Social media tools can be a good learning tool because the information's is continually updated.