

The Effect of Metacognitive Scaffolding Framework towards Students' Performance

Noriesah Ahmad, Nurul Farhana Jumaat, Norazrena Abu Samah, Zakiah Mohamad Ashari,

Abdul Halim Abdullah, Dayana Farzeeha Ali

ABSTRACT: *The purpose of this study is to investigate the effectiveness of metacognitive scaffolding framework in social learning environment towards students' success. This framework was developed by Jumaat and Tasir (2016) and it is focused on two dominant mechanisms of metacognitive scaffolding which are: i) Supporting reflective writing (MS3) and ii) Guide students to focus on the learning process (MS4). Initially, a survey on students' perceptions using Facebook as a platform for instructor scaffolding were administered. Then student's improvements in learning were also investigated after the mediation from metacognitive scaffolding. Twenty-three (23) undergraduate students who enrolled in Telecommunication and Networking course were involved in this study. Data were gathered from the questionnaire, the online discussion transcripts in Facebook and also a performance test. Results showed that Facebook can be a platform for instructor scaffolding which they perceived that this platform enabled them to communicate at their convenience and it allows them to communicate with their lecturer frequently. Results also revealed that there is a significant difference on students' performance before and after the mediation from metacognitive scaffolding ($t = -10.94$, $df = 22$, $p < 0.05$). Thus, this study suggests that framework of metacognitive scaffolding is important to enhance student's performance in social learning environment[12].*

Index terms: *Metacognitive Scaffolding, Social Network, Social Learning Environment, Online Learning Environment*

I. INTRODUCTION

Social Networking Sites (SNS) such as Facebook has proven attractive to students in high school, college and university as it brings orientation towards self-presentation, the viewing of other's personal information and multiple means of communication). It is often conceived as a space for exchanging thoughts and opinion among students[30]. It has

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Noriesah Ahmad, School of Education, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor

Nurul Farhana Jumaat, School of Education, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor

Norazrena Abu Samah, School of Education, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor

Zakiah Mohamad Ashari, School of Education, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor

grown rapidly in popularity in recent years. As one of the member-based internet communities, Facebook allows users to communicate with each other in innovative ways such as sending public or private online messages or sharing photos online

Facebook has the potential to support educational communications and collaborations in higher education. Students in higher education use Facebook commonly for social benefits such as to keep in touch with friends (Roblyer, McDaniel, Webb, Herman & Witty, 2010)[25]. Educators as well, have long considered in using Facebook as a platform to support teaching and learning. For example, Gasco and stated that this technology permits exchange of information among students[7]. In addition, one of the main educational uses of social networking site is seen to lie in their support for interaction among learners and instructors.

In online social learning environment like Facebook, interaction plays a key element to measure student's learning process in online learning environment (Roblyer et al., 2010). Learning process can occur interchangeably from both outside and inside of the classroom with the participation of members in a learning environment through Facebook (Peter & Firpo, 2011)[28]. Although Facebook allow interactions between peers in the learning environment, without guidance from instructors or skilful peers, the conversations are ineffective because students may prone to discuss unrelated topics. Angeli, Valanides and Bonk (2003) found that only few percentages of replies are justified as reply and comments caused by less monitoring from mentor[26]. Therefore, Paloff and have suggested that in order to excite further discussion, instructors need to design the interactions and to have instructional guidelines[1]. Instructor then act as a cheerleader that encourages students to go details with the materials.

Furthermore, to make sure Facebook used by the students in effective way, instructional strategy is needed in order to foster the interaction between the instructor and students. One of the instructional strategies that are widely used within an online learning environment is metacognitive scaffolding[23]. Metacognitive derived from the concept of metacognition. As

being mentioned by Hacker, Dunlosky and metacognition is



thinking about one own's thinking[8]. It refers to the mechanism of arrangement, monitor and manage someone performance and understanding.

Meanwhile, scaffolding is a form of support delivered from knowledgeable person to other person. Thus metacognitive scaffolding can be defined as the learning process where students will be assist by constructing problem, guidance and help them to find ways to possible solutions Reingold, Rimor and Metacognitive scaffolding has a root of scaffolding that allows instructor to support students in an online learning environment[27]. Metacognitive scaffolding provides strategy and assists students throughout their learning process. It enables them to plan what they will learn, monitor their learning and reflect upon what they have learned about a particular task. Therefore, in this study, the existing framework of metacognitive scaffolding will be implemented in learning. This framework is developed by (Jumaat & and employs two of the most dominant mechanisms of metacognitive scaffolding which are: (i) guiding the students to focus on the process of learning and (ii) supporting student's reflective writing[.

II. PROBLEM BACKGROUND

University students nowadays are much more interested to learn from social networking site. Oradini and believed that students can benefit social network in various ways, such as by integrating it with class activities or by sharing information about the activities they are engaged in[22]. It is also supported & Tasir, 2016) who found that social networking sites such as Facebook may also promote informal dialogues and knowledge sharing among students. According to Lucas and social networking tools also have the potential to support innovative pedagogical practices and different students' learning types[19][24]. For instance, the Facebook site has become a platform for students and teachers to be connected. This connection allows them to communicate and share their thoughts, emotions, facts and opinions without feeling hesitant and shy towards others since the communications take place virtually[32].

Discussion that occurs without any guidance from the expertise is considered as useless or waste of time. In Bernt and study, they concluded that students who do not receive any external feedback or responses about their learning progress will have low learning achievements[3]. Without online guidance from instructor, learning will be disturbed by confusion and leading complaints among students. Hence, the students need continuous support from instructors or knowledgeable peers. Further, Smith, Butcher, Litvin and also mentioned that, feedback from instructor on the assignment, for example, was fundamental to the student's understanding that leads to higher achievement in examination[31]. In addition, according to Choi, Land and online guidance reportedly functioned as initial point for some students to create questions when they had trouble in asking questions[4]. In online learning, the term support is recognized as instructional scaffolding. Interpretation and operationalization

of scaffolding has been in various contexts including online interactions. The terms scaffolding means an assist from expert to novice in the process of learning. The expert can be from instructors or peers.

Besides, the presence and guidance of instructor is still needed in order to promote meaningful interaction. In education, guidance is known as scaffolding and guiding the students on thinking perspective is known as metacognitive scaffolding. There are seven mechanisms of metacognitive scaffolding as proposed by (Reingold, Rimor and Kalay, 2008). Further study conducted by (Jumaat and Tasir (2016) have shown that the dominant mechanisms used by the online instructor including: i) Supporting reflective writing (MS3) ii) Guide students to focus on the learning process (MS4).

Supporting student's reflective writing is initiated by providing students with suitable feedback whether positive or negative feedback in order to prompt students' reflection on topic lesson. For example, if students give correct answer on certain task, instructor could inspire them in giving more excellent reflections towards their achievement by giving compliments.

Guiding student to focus on the process of learning is one of the metacognitive scaffolding's mechanisms in online learning environment. In this mechanism, instructor could assist students to focus on the process of learning by monitoring the process of learning and asking students with questions as to activate their learning process. This shown that, the consistency and continually discussion between instructors through metacognitive scaffolding may develop students' learning progress.

asserted that peer interactions can increase informal learning experiences. Students can instantly obtain new information on their academic contents from other students or teachers[5]. Furthermore, Facebook can be one of the teaching

methodologies that instructor may use to boost the teaching and learning process (Sanchez, Cortijo & Javed, and this site has the potential to support teaching and learning sessions as they complement the traditional and online classroom activities

Therefore, this research aims to:

1. Identify the level of Facebook usage among students.
2. Identify students' perception on having Facebook group page as a platform for
 - i) Instructor scaffolding
 - ii) Peer interaction
3. Examine the effect of metacognitive scaffolding framework in Facebook learning environment towards students' performance[17].

III. METHODOLOGY

A quantitative approach using a pre-experimental research design was used throughout the study. A pre-experimental design does not involve control group or comparison group. Control group means the group that does not have any treatment in the study. This design was chosen because researcher is concerned with any direct interaction between participants in control and treatment group. This will validate the findings of the study. Figure 1 represents pre-test and post-test variables.

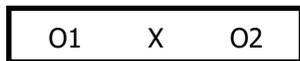


Figure 1. Variables of Pre-Test and Post-Test

Purposive sampling technique was used in this study and 23 students in section 1 from Telecommunication and Networking course was chosen as a sample for this study. Questionnaire was distributed to 23 students and all 23 questionnaires were returned back.

IV. RESEARCH PROCEDURES

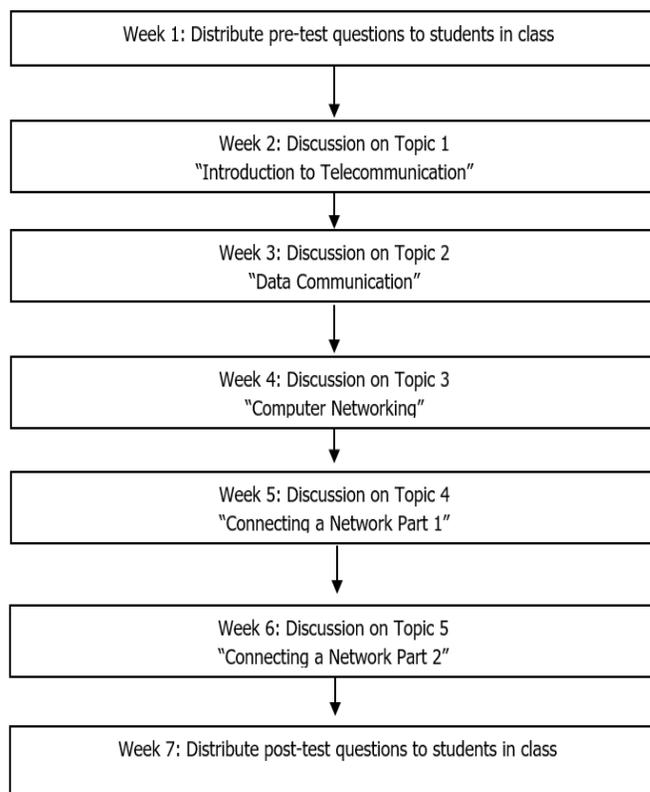
This research will be carried out based on several phases as below:

Phase 1: Investigation on the Level of Facebook Usage Among the Students

In this phase, researcher is investigating the level of Facebook usage among students. Data were collected based on the questionnaire adapted from Erlin, Fitri, and [6].

Phase 2: Investigation the Student's Perception on Having Facebook Group Page as a Platform for Student-Student Interaction and Instructor-Student Interaction

The questionnaire will explain the students' perceptions towards instructors scaffolding and peer interaction in the platform of Facebook. Data were collected based on the items adapted from Wang, Woo, Quek, Yang & [34].



Phase 3: Investigation on the Implementation of the Framework of Metacognitive Scaffolding That Could Improve Student's Performance in Learning Through Facebook

In this phase, the researcher creates a Facebook group. The group is set as private and all students in that class are invited to join that group. Researcher started the discussions by asking questions in the group. The questions covered from chapter 1 until chapter 5 of the syllabuses which are: i) introduction to telecommunication, ii) data communication, iii) computer networking, iv) connecting a network Part 1 and v) connecting a network Part 2. In addition, researcher will integrate framework of metacognitive scaffolding developed by Jumaat and throughout the discussion along seven week of experiment.

A pre-test will be conducted in the first week prior to the discussion in a Facebook group. While a post-test will be conducted in the 7th week, and data collected will be analysed to examine student's performance. Figure 2 shows the discussion plan on Facebook.

Figure 2. Discussion Plan on Facebook Group Page

V. RESEARCH INSTRUMENTS

The instruments involved in the current study including: i) a set of questionnaire, ii) mechanisms of metacognitive scaffolding (MS3 and MS4), and iii) pre and post-test assessment.

VI. QUESTIONNAIRE

The questionnaire used is adapted from a research conducted by Erlin, Fitri and Susandri (2015) and modified based on necessity of this study. The questionnaire consists of three sections which are:

- i) Section A: consists of six questions examining respondent's demographic profiles.
- ii) Section B: consists of sixteen questions assessing student's Facebook usage and activities.
- iii) Section C consists of two parts: part A is discussing about student perception towards instructor in Facebook group and part B is perception on peer interactions on Facebook group.

Mechanisms of Metacognitive Scaffolding Prompted by Instructors

In this research, two dominant mechanisms of metacognitive scaffolding suggested by (Jumaat & will be used by the instructor to assist the discussion in Facebook. The two dominant mechanisms are: (i) guiding the students to focus on the process of learning (MS3) and (ii) supporting student's reflective writing (MS4).

The examples of instructor's metacognitive scaffolding posted in Facebook group discussion are shown in Table 1.

Table 1. Example of Instructor's Metacognitive Scaffolding

Topic	Example of instructor's metacognitive scaffolding
Introduction to telecommunication • Development of telecommunication technology • Basic elements of computer and communication systems	"I hope you can get some ideas and knowledge from our first discussions and yes, it is true that they are the expert in computer such your friends mentioned in above comments, with the expert of course they are mastering the theories of computer technology and have gone through special training in that field. Thank you for your opinion." (MS3) "In telecommunication, there are 2 types of users which are end user and professional. Example of end user is like us, the user of Facebook. How about professional user? Anyone can give answer, opinion or example who is professional user? It's ok if you get wrong, we are in learning phase. Just state what's on your mind" (MS 4)
Data communication • Types of signal • Data transmissions • Communication channels • Serial communications • Synchronous - Asynchronous transmission • Data compression	"Good and thank you for sharing. Mind to share what type of signal exists after it is being processed?" (MS 3) "Okay, last week we have learned about digital signal. Do you still remember? Can you share a little bit about the types of signal and why the signal needs to be transformed into other form? Feel free to share your thoughts" (MS 4)
Computer Networking • Types of Network • Networking methods : peer to peer, Client server • Network topology • Physical topology • Logical topology • LAN Applications	"Very good explanation. Nice sharing lutfi! Thank you so much" (MS 3) "Hi guys. Our discussion tonight is about type of networks. One of the types of network is Local Area Network (LAN). What it is and what are their characteristics? Just put your thoughts about it in the

	comment below" (MS 4)
Connecting to a network: Part 1 Networking software : NOS Wired network- Types of cables Networking hardware and their functions • Network interface card • Switches • Router • Modem • Repeater	"Yes exactly! router and server are necessary in network setup. Meanwhile, Wifi is network transmission. Thank you." (MS 3) "Today is about devices usually use in computer networking setup. One of the devices/ equipment we need is hub? Any other devices cross in your mind guys? Come on put it in comment?" (MS 4)
Connecting to a network: Part 2 Wireless networking • Technology and standards • IEEE802.XXX • WiFi • Bluetooth • Infra red • Broad band • Hardware	"Good. You always have ideas. It is true that 4G technology is the upgrade version of 3G; it has more advantage than 3G. Thank you for your comment." (MS 3) "By looking at this picture? What do you know about this device? Feel free to share" (MS 4)

VII. RESEARCH FINDINGS

The researcher used descriptive analysis method to analyze the obtained data. All the data are obtained from research on 23 students.

Table 2. Student Demographics and Other Background Questions

Background questions	n
Gender	
Male	4
Female	19
Age	
20 - 24	23
Race	
Malay	21
Chinese	2
Indian	0
Have Facebook account before took degree program	
Yes	23
No	0
How long have been using Facebook	
Less than 1 year	1
1-2 years	2
3-4 years	9
5-6 years	11
Frequency log on into Facebook	
Several time/day	7
Once a day	4
2-3 times/week	5
Once a week	3
Once a month	3
Once a year	1

Table 2 presents an overview of student demographics

and background questions. The participants were undergraduate students (n = 23) at one of public universities in Malaysia. They were taking Telecommunication and Networking course. Altogether they are 19 females and 4 males ranged in age from 20 to 24 years old. All 23 students have Facebook account; most of them have created the account for the past five or six years and most of them log in to their Facebook account several times a day, which means they are an avid user of Facebook.

Facebook Usage and Activities among Students

This part is aimed to identify usage and activities students usually do when log in onto Facebook account. The result of students' activities on Facebook which consisted of 16 items is represented as percentage in Table 3. The survey require the respondents to give answer based on Likert Scale type with five different answer from '1=Strongly Disagree', '4=Disagree', '3=Average', '4=Agree', to '5=Strongly Agree'.

Table 3. Students' activities on Facebook

Items	1 %	2 %	3 %	4 %	5 %
Communicate with friends	0.0	4.3	17.4	39.1	39.1
Get information about people and events	0.0	0.0	8.7	34.8	56.5
Entertain myself and relax	4.3	4.3	17.4	30.4	43.5
Message my friends	13.0	4.3	34.8	30.4	17.4
Upload photos	13.0	43.5	30.4	8.7	4.3
Spent leisure times	17.4	4.3	30.4	30.4	17.4
Read wall posts	17.4	4.3	17.4	43.5	17.4
Gain latest information	0.0	4.3	17.4	56.5	21.7
Share updates or status	17.4	34.8	30.4	13.0	4.3
Judging people based on their posts	34.8	21.7	17.4	21.7	4.3
Add and delete friend(s)	30.4	30.4	26.1	8.7	4.3
Get information about an event	0.0	0.0	13.0	43.5	43.5
Update profile	13.0	26.1	39.1	17.4	4.3
Comment photos	17.4	30.4	26.1	21.7	4.3

Post or share links like YouTube etc.	26.1	21.7	34.8	13.0	4.3
Tag or untagged photos	21.7	26.1	34.8	13.0	4.3

Results indicated 56.5% students strongly agree that they used Facebook to get information about people and events, 43.5% strongly agree that they used Facebook for entertainment and get latest updates of events and another 39.1% agree that Facebook allows them to communicate with their friends.

Students' Perception on Having Facebook Group as a Platform for Instructor Scaffolding and Peer Interaction

This part is aimed to identify students' perception on using Facebook Group as a platform for instructor scaffolding and peer interaction. This part covers 2 main aspects which are:

- i. Instructor scaffolding and,
- ii. Peer Interaction,

The survey requires the respondents to give answer based on Likert Scale type with five different answer which are '1 = Never', '2 = Rarely', '3 = Sometimes', '4 = Commonly' and '5 = Always'. Table 4 indicates the reported result of students' perception on having Facebook group as a platform for instructor scaffolding.

Table 4. Students' Perception on Having Facebook Group as a Platform for Instructor Scaffolding

Items	1 %	2 %	3 %	4 %	5 %
I could see what lecturer did by viewing the posts on the wall	0.0	0.0	43.5	39.1	17.4
The Facebook group provided a friendly environment for social interaction with lecturer	0.0	0.0	30.4	47.8	21.7
The Facebook group enabled me to communicate at my convenience	8.7	0.0	21.7	56.5	13.0
Facebook allow me to communicate with my lecturer frequently	8.7	8.7	21.7	56.5	4.3
Instructor is helpful in guiding the discussions towards understanding the topics	4.3	8.7	34.8	43.5	8.7
Instructor stimulated students to explore on new ideas and concepts	0.0	17.4	26.1	43.5	13.0
The instructor make me engaged and participate in productive dialog	4.3	17.4	39.1	30.4	8.7
Instructor keep all students on task which is also one way to help me in learning	0.0	26.1	30.4	39.1	4.3
Instructor provides sufficient feedback on activities and assignments posted.	0.0	8.7	39.1	39.1	13.0



The assessment provide by instructor tested my understanding of the key concepts that I have learnt	0.0	13.0	34.8	43.5	8.7
Assessment of my posting by instructor is stimulating and interesting	0.0	17.4	26.1	47.8	8.7
Instructor help me to discover faults and misunderstanding	0.0	13.0	39.1	34.8	13.0

Results indicate that the highest percentage (56.5%) of the students commonly feels that Facebook group enabled them to communicate at their convenience and it also allows them to communicate with their lecturer frequently. While 47.8% commonly feels that Facebook group provided a friendly environment for social interaction with lecturer and they decided that assessment in Facebook is stimulating and interesting.

Meanwhile, the percentage of students' perception on having Facebook group as a platform for peer interaction which consisted of 14 items is displayed in Table 5.

Table 5. Students' Perception on Having Facebook Group as a Platform for Peer Interaction

Items	1 %	2 %	3 %	4 %	5 %
I could see what my peers did by viewing the posts on the wall	0.0	0.0	21.7	43.5	34.8
Facebook group enabled me to have online discussions with my peers	4.3	4.3	30.4	56.5	4.3
The Facebook group provide a friendly environment for social interaction with my peers	4.3	0.0	39.1	47.8	8.7
I know my peers better through the use of Facebook group	13.0	17.4	26.1	39.1	4.3
I feel close social relationship existed in the Facebook group	13.0	8.7	47.8	30.4	0.0
Facebook increase my involvement in this course	13.0	26.1	34.8	26.1	0.0
I could feel sense of belonging to the community in Facebook group	21.7	8.7	34.8	34.8	0.0
My peers in Facebook group behave in well manner (e.g they spoke politely)	21.7	13.0	26.1	30.4	8.7
My peers in Facebook group will help me if I need help	4.3	13.0	34.8	43.5	4.3
My peers used understandable sentence during discussions	13.0	4.3	17.4	65.2	0.0

through Facebook					
I enjoy helping my peers in Facebook group as it can enhance my achievements too	8.7	4.3	30.4	52.2	4.3
I can obtained abundant of knowledge and information through post shared by my peer	0.0	0.0	21.7	52.2	26.1
Knowledge shared by my peers are reliable and accurate	4.3	4.3	47.8	34.8	8.7
There are a lot of responses made by my peers in Facebook discussions	8.7	8.7	17.4	47.8	17.4

Based on the result, 65.2% considered the sentence used by their peers throughout the discussion is understandable. 56.5% perceived that Facebook group enabled them to have online discussions with their peers. While 52.2% came to agreement that they truly enjoy helping their friends in Facebook group as it can indirectly enhance their understanding. Additionally most of them also agree that they have obtained abundant of knowledge and information through post shared by their friends in Facebook discussion.

Overall, based from the findings gathered from the questionnaires, it shows that all undergraduate students who were involved in this study have moderately high level of Facebook usage. This finding also revealed that they have high perceptions for using Facebook group as a platform for instructor scaffolding which perceived that Facebook group enabled them to communicate at their convenience and Facebook allow them to communicate with their lecturer frequently. They also agree that Facebook group enabled them to have online discussions with my peers. This information serves as an overview for the researcher in determining suitability of Facebook group as a platform for instructor scaffolding and peer interaction. Next, the researcher proceeds to identify the effectiveness of framework of metacognitive scaffolding in learning through Facebook.

Effectiveness on the Implementation of Metacognitive Scaffolding Framework in Learning through Facebook

To achieve the third objective of this study, the researcher has conducted a Pre Test and Post Test assessment to all 23 students. To examine the mean differences on students' performance in learning, a paired sample t-test was used. Answers given by the students wererecorded based on the marking scheme and a total mark of each test is 100. Overall, the distribution of students' scores in Pre Test and Post Test is indicated in Table 6.

Table 6. Overalls Marks Obtained by Students in Pre Test and Post Test

Student	Pre Test (100%)	Post Test (100%)
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1	16	58
2	12	64
3	16	32
4	32	46
5	24	44
6	22	40
7	32	58
8	16	51
9	26	58
10	36	71
11	16	52
12	22	46
13	18	28
14	22	46
15	34	86
16	22	59
17	22	77
18	26	44
19	16	51
20	12	36
21	24	57
22	12	36
23	22	82

Based on the data from Table 6, there is an increment of all student's marks in Post Test. For example student 1 obtained 16 marks in Pre Test, and 58 marks in Post Test. Surprisingly, student 22 showed excellence achievement since there is 60 marks differences as compared to her score in Pre Test. However, only one student which is student 13 gets only 10 marks increments in the Post Test, from 18 marks in Pre Test and 28 marks in Post Test. Furthermore, the mean analysis of the Pre Test and Post Test is shown in Table 7.

Table 7. Mean Analysis for Pre Test and Post Test Marks

Test	Mean	N	SD
Pre Test	21.74	23	6.99

N	Correlation	Sig.
23	.448	.032

Post Test	Mean	N	SD
Post Test	53.13	23	15.39

Mean score for Pre Test is 21.74, while mean score for Post Test is 53.13. Based on these two mean obtained in the analysis, we can conclude that the mean score in Post Test is higher than mean score in Pre Test. Table 8 shows the correlations of Pre Test and Post Test. While table 9 indicates the significant difference between marks in Pre and Post Test.

Table 8. Correlations of Pre Test and Post Test Marks

Table 9. Paired Differences of Pre Test and Post Test Marks

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Devi	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
-31.4	13.76	2.87	-37.3	-25.4	-10.9	22	0

Based on the t-test output in Table 9, result shows that there is a significant difference on students' performance before and after the implementation of instructor's scaffolding based on the two dominants Metacognitive Scaffolding as suggested in the framework. Higher value of mean in post-test indicates that this approach could enhance students' performance in learning.

VIII. DISCUSSION

Based on the findings, it is shown that students are addicted to Facebook, in terms of their daily usage. They often logged in to the site few times in a day. Besides, this result indicated that all students are familiar with Facebook and it is one of the important aspects to show that students are conveniently used this site and it allows them to participate in the discussion easily because they already familiar with the navigation, features and functions in Facebook. These results match those observed in previous study which revealed that student's familiarity in using the technology might reduce the communication gap between the students and instructors, especially in online learning environment

Most students use Facebook to get information about people and events. Most of them do agree that they access the site to attain latest information from others[2]. They also use it to socialize with friends. This result is also consistent with Hew's study, in which he claims that students logged in to Facebook everyday with the purpose to keep in touch with friends. In addition, this finding supported by previous study (Sanchez, Cortijo & Javed, 2014) which found that students used Facebook to keep contact with other people with the same interest with them.

Hence, it can be concluded that Facebook is the place suitable for online discussions. Additionally, stated that communicative activities such as commenting are positively in relation to student engagement[15]. Furthermore the group feature provided by Facebook is nonetheless exists to support discussions among group member as stated by de Villiers (2010), and this reinforces the fact that Facebook is

convenient for online discussions. This finding is very important to this study as initial indicator that Facebook is suitable for online discussions.

As stated by Sanchez, Cortijo and Javed it is necessary for instructors to know their



student's perceptions in using Facebook for educational purpose when they want to integrate learning with Facebook. In addition, it is important to consider student's perceptions towards technology due to the fact that universities nowadays are focus on student-centred learning orientation.

Results also revealed that most of the students agree that Facebook group enabled them to communicate at their convenience and Facebook allow them to communicate with their lecturer frequently. While others are sharing the same opinion in which Facebook provided a friendly environment for social interaction with lecturer and assessment given by the instructor through Facebook is stimulating and interesting. This means that students agreed that this platform can create friendly engagement with their lecturer. This is because, good interactions will lead to active participations among student and they will be more comfortable to express their views on learning. also stated that there is a strong relationship between the levels of student's interaction with instructor with the level of student's satisfaction of their courses[33].

This result is consistent with those found by Irwin, Ball, Lesbrow and Leveritt (2012) which indicated that most of the students in their study agreed that Facebook would assist them in learning through a lot of interactions between students and instructors. Therefore, from the data obtained, the researcher found out that student's acceptance is quite high with regards of using Facebook as a platform for instructor scaffolding. This can be as one of the alternatives of learning outside formal class which in turn could enhance students' achievement.

According to instructional Scaffolding refers to temporary support form given by instructors to assist students to new understandings which they cannot achieve by themselves. Based on the findings, most of the student's perceived instructor scaffolding on Facebook by having friendly interactions with instructor. This kind of interaction is very important in online learning as it is the factor that uses to predict the level of students' achievement in their learning. Additionally, social interaction between students and instructors exist when instructor apply strategies to build interpersonal encouragement (Jung, Choi, Lim & Thus, researcher concludes that, a framework of metacognitive scaffolding developed by Jumaat and may contribute positively in student's performance in learning.

In terms of student's perceptions, the most favourable among students is the Facebook group page enabled them to have online discussions with their peers. The notification functions allow them to keep track and stay updated with any recent news from their peers. This result is consistent with the one conducted by Wang et al. which revealed that participants in their study agreed that Facebook provides a space for information sharing. Menzies, Petrie and Zarb (2015) also stated that by integrating educational elements into Facebook may help students to stay alert upon other student's posts[20].

As being mentioned earlier, interactions play a vital role in the learning process, especially in online learning environment. reported a high level interaction among students may contributes to interactive and meaningful discussion, a large number participation and response rates are higher. Additionally, according to Livengood & Casarez (2015), interactions between students can create social presences which support and maintain cognitive development among students[18].

The present study was also being designed to examine the effectiveness of the framework of metacognitive scaffolding to enhance students' performance in learning through Facebook. The findings revealed the increment of mean in post-test as compared to mean in pre-test. This result may be explained by the fact that the two dominant mechanisms of metacognitive scaffolding do have positive influence on student's performance in learning. This consistency may be due to other research by Molenarr, Boxel and Slegers (2011) who also suggested that metacognitive scaffolding can improve cognitive development process of an individuals and also stresses the viewpoint in scaffolding studies, which is improve learning outcomes. For example, in the topic of Telecommunication and Networking, the instructor posted a question as below:

Instructor: "Hi guys! Our discussion today is about software system. By hearing those words, what's on your mind guys? Feel free to share"

The above question posted is actually MS4 which is guiding students to focus on the process of learning and given by the instructor aimed to make the respondents to think and share their point of view regarding the question asked. The purpose is to encourage the students to participate in the discussion as stated by interactions are essential in online learning environment. At the same time, instructor should provide feedbacks. Bernt and study also agreed that students who do not receive any external feedback or responses about their learning progress will have low learning achievements. Thus, feedback from instructor in this study also is important to the contribution towards students learning. For instance, in the same topic and question as mentioned above, instructor and respondents are interacting as follow:

Student: Hmm, a system software? Software that runs a system?

Instructor: Once again, the first person to response! Congratulations dear. Can you give me example to your answer?

Student: Thank you, teacher. I'm always with my phone!

That's why. Software system is the same as compared to operating system. Like Windows, Android, iOS, Ubuntu and Linux.

Instructor: Oh good, that's the advantage of a smartphone. Yes! Absolutely correct! Thank you dear.

Student: Yes. I know about operating system but I'm not sure about other software system.

Instructor: Most of us use operating system. Other example is disk operating system (DOS). It "must be there", in order to make our computer works. When we uninstall it, our computer is not functioning. For example when we uninstall OS like windows 7 from our laptop, we cannot use it. Therefore, system software is mandatory software to make our computer "alive".

Student: Oh, now I know. Thank you very much for the explanation.

Instructor: Welcome, my pleasure dear.

Based on the example of conversation above, metacognitive scaffolding is indeed able to increase interactions which can be seen that it increased questioning behaviour among students in online discussions (Choi, Land and Turgeon, 2005).

IX. CONCLUSIONS

From the research findings, found that level of Facebook usage is moderately high. The most dominant activity that contributes to this result is students use Facebook to interact and keep contact with their friends. Secondly, students also agreed that Facebook as a platform for instructor scaffolding and peer interactions. They mentioned that this platform may provide friendly environment with the instructor and peers. As interaction is the main element to measure a successful online learning, this findings proven to significantly true that Facebook is suitable for instructor scaffolding and peer interactions platform. Lastly, the guideline that has been used by the instructor, such as the framework of metacognitive scaffolding is indeed able to foster interactions and enhance student's performance in learning.

X. LIMITATIONS

Since this study is a small scale study that involved only one class of students at university level, the findings cannot be generalized. However, the research findings can give ideas to other researchers regarding Facebook usage and student's perceptions in using Facebook for their learning purposes. On the other hand, the researchers did not consider students' ICT literacy in the online discussion, as students are assumed to be competent and to enjoy using Facebook as part of their learning process. Moreover, for the purpose of this research, researchers focused only on the Telecommunication and

Networking course, which implies that the findings might be different if the same method is conducted for other courses.

The duration for the online discussion activities was only five weeks. Due to the time constraint, the time allowed for each topic to be discussed was limited, as a new topic was posted each week. This meant the students had less discussion with their instructors and peers for each topic. The results could have been different with a greater variety of comments and if they had more time allocated for discussion session.

XI. SUGGESTIONS

In this research, effectiveness of framework metacognitive scaffolding in learning through Facebook is established. Future research should investigate the effectiveness of this framework in group feature of other social media or applications. It would be interesting to compare the effectiveness of framework metacognitive scaffolding in other social media.

To increase participation among students, instructor can give extra marks for active participations to encouraged students to give feedback on the post. Besides, this study only focused on undergraduate students in one section of the Telecommunication and Networking. Future study need to increase variety of participants such as from difference university to increase the quality of the study.

It also would be interesting to conduct this study by involving participants from other country to examine whether differences in sociocultural contexts could give effect on the framework of metacognitive scaffolding used in Facebook.

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