A FRAMEWORK OF INSTRUCTORS’ METACOGNITIVE SCAFFOLDING IN LEARNING THROUGH FACEBOOK DISCUSSION

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ABSTRACT

Students often stumble on difficulties in learning especially when it comes to new subject matter. Scaffolding refers to a strategy that assist learners during learning in which it makes learning easier for them (Azevedo & Hadwin, 2005). Metacognitive scaffolding seems the best way to guide and help students in online learning environment as it guides the students to think critically and actively during the learning process. Vygotsky (1978) considered that students are ready to learn when they are assisted through the dialogues with an experts or knowledgeable person. As nature among students nowadays, many have turn to social networking site such as the most prominent one, Facebook. Facebook have a potential to act as a platform for students to discuss with their peers and instructors related to their course assignments. Students’ interactions between peers and instructors initiated different types of online interaction that eventually represents their learning process. In this study, we proposed a framework that can be utilized for instructors’ metacognitive scaffolding that would assist students in learning through Facebook discussion.

Keywords: Metacognitive Scaffolding; Online Learning; Facebook; Project-based Learning.

1. INTRODUCTION

Students often stumble on difficulties in learning especially when it comes to new subject matter. This includes novice learners who are first being introduced to new lesson topic. Hence, students need proper guidance and appropriate support from skillful peers and expertise in order to perform better. Scaffolding refers to a strategy or guidance that assisting learners during learning in which it makes learning easier for them (Azevedo & Hadwin, 2005). In this situation, the guidance given by the experts among the students or the lecturers themselves is actually reflected the zone of proximal development (ZPD) that also been introduced by Vygotsky (1978). He also considered that students are ready to learn when they are assisted through the dialogues with an experts or knowledgeable person.

Previous studies have reported how social networking sites promoted interactions and participations among instructors and learners to support their teaching and learning (Santos et. al, 2009; Schroeder, Minocha & Schneider, 2010; Shiu, Fong & Lam, 2010). In online learning environment, few types of scaffolding been used by researchers including the four most prominent scaffolding mechanism which are procedural scaffolding, conceptual scaffolding, strategic scaffolding and metacognitive scaffolding. Table 1 illustrates four types of scaffolding as defined by Hill and Hannafin (2001).

<table>
<thead>
<tr>
<th>Types of Scaffolding</th>
<th>Function</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Procedural Scaffolding</td>
<td>Assist students on how to use the resources.</td>
<td>• Providing “help” function that could assist students with trouble-shooting and problem solving. • Creating websites maps to the learner can get a sense of the scope of the site, as well as indicators of how varied elements in the website are linked together.</td>
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<tr>
<td>Conceptual Scaffolding</td>
<td>Mechanism designed to assist with defining things to consider.</td>
<td>• Creating an outline of a paper before you start to write or examining a map of location to determine best ways to reach your destination (either in a paper or physical place).</td>
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<tr>
<td>Strategic Scaffolding</td>
<td>Sought to assist students in finding alternative ways to do a task.</td>
<td>• Arranging for an expert consultant to demonstrate how to perform a task so learners can observed and ask questions while learning a new technique.</td>
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Creating “question pools” where learners can pose questions for others to provide responses, enabling multiple perspectives on a problem.

<table>
<thead>
<tr>
<th>Metacognitive Scaffolding</th>
<th>Assist with establishing what is known and how to think.</th>
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<td></td>
<td>• Providing learners with structured “reflection reminders” which may come in the form of daily journal entries.</td>
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<td></td>
<td>• Enabling scaffolded enquiry so that as learners are engaging the process, they are assisted in ways that make the most sense of them.</td>
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In this study, we only focuses on metacognitive scaffolding prompted by the instructors in an attempt to assist students in learning by guiding them to think critically and actively through the discussion that takes place in Facebook.

2. METACOGNITIVE SCAFFOLDING

Metacognitive scaffolding assists learners to provide reflections on what they had learnt and do reflections on how they are learning. The assistance may be in various structure, for instance like a simple question prompt on what learners had learnt in class, to more particular guidance that assist them in organizing and accessing their knowledge (Way & Rowe, 2008). This kind of scaffolding is known as a support that related to individual learning management (Hannafin, 1999). For example, metacognitive scaffolding guides students on how to think proprietly during their learning. It derived from the term metacognition. Dawson (2008) explained the trait of metacognition as “thinking about thinking” where metacognitive skills are highly relevant to measure individual competencies in thinking and learning. This skill is highly necessary for active learning, critical thinking, reflective judgment, problem-solving and decision making.

Metacognitive scaffolding intends to increase students learning abilities by means of systematic approach (Bannert, Hildebrand, & Mengelkamp, 2009) and in assisting students on how to think about the problem under study. This can be done if one understands the metacognition aspects that include metacognitive knowledge, metacognitive judgement & monitoring and metacognitive self-regulation & control. With the existance of metacognitive prompts by the instructors, it is certainly requiring students to carry out certain tasks or activities when the learning takes place. As a result, learners could highly stimulate to activate their own heuristic learning (Bannert & Mengelkamp, 2008). Other than that, the metacognitive support focuses on students’ awareness of their own thinking and on understanding the activities they are engaged during the learning process.

Reingold, Rimor, and Kalay (2008) introduced seven instructors’ metacognitive scaffolding mechanism that can be used in online learning environment including:
i. Presenting rationale for task and activities.
ii. Presenting the relationship between reading items, course objectives and tasks.
iii. Supporting reflective writing.
iv. Focusing on the process of learning.
v. Encouraging relationships among participants.
vi. Discriminating between conclusion/fact/opinion/hypothesis.
vii. Supervising text comprehension.

They initially include the point of presenting rationale for task and activities. This mechanism refers to the instructors guide in giving rationale or asking students on the rationale of particular topic lesson. Presenting the relationship between reading items, course objectives and tasks refers to instructors’ guidance to initiate interaction that require students to compare two concepts known, and identifying either the differences or similarities of both concepts. Instructors could also support students by giving appropriate feedback whether it is positive or negative in order to encourage students’ reflection on topic lesson. For example, if students correctly reflect on certain tasks, instructors could encourage them in providing more excellent reflections by giving compliments towards their achievements. In addition, instructors could aid students to focus on the process of learning by monitoring the learning process and asking students with questions with regards to trigger their learning process. Instructors for example, could ask students on new ideas or opinions regarding their learning. In order to encourage relationships among participants, instructors are meant to ask questions that could persuade students to interact with their peers or by giving compliments when they are working with their partners or in group. Instructors could enhance students reflection practice by assist them to provide points that trigger them to discriminate between facts in hand, opinion or even hypothesis throughout their learning. Finally, instructors could scaffold students by supervising text comprehension in which instructors must refers to previous statement that posted by the students and then comments or ask students regarding their statements. For example, instructor could ask students about their progress in learning; encourage them to elaborate upon their understanding and even giving appropriate suggestion on the particular topic.

3. FACEBOOK

Everyone could not have even more agreed that Facebook dominates a social networking space nowadays. Facebook is now even known as the most popular social networking site among university students (Kabilan, Ahmad & Zainal Abidin, 2010; Hew, 2011, DiVall & Kirwin, 2012). As of December 2011, Facebook had estimated 483 million daily active users, while monthly active users were up to 845 million, whereas 80% of them are people outside U.S region and Canada (www.facebook.com). Facebook was created on 2004, open its site only for Harvard students and finally exist to the public eye on 2006. Like any other social networking sites, Facebook allows users to create their profile page, and make a connection with others, who finally will be listed as their “friends.” Facebook also contains few features like notifications update, post status, the “Like” button and also creating “Pages” for public figures, celebrities, organizations, etc. Other features including users whom able to join groups of common interest. Figure 2.4 shows a world map of social networking sites as in June, 2012. Data were taken from Google Trends and Alexa ranking. Facebook continues its world domination and at this point in time nearly 2 billion internet users worldwide signed up on Facebook.
Munoz and Towner (2009) stated that Facebook can offer positive advantages among students in higher education. As for instance, students could use Facebook to connect with their friends and discussing about their course assignments, talk about problems and issues they face in class and even sharing valuable information with one another. On the other hand, instructors or teachers could share helpful resources and provide useful links and sample of works to their students. However, Munoz and Towner (2009) in their study did not provide such empirical findings to support such claims.

Both students and instructors could benefit Facebook as a potential platform for social communication and networking by providing alternatives that being a supplement of traditional classroom setting (Munoz & Towner, 2009, Gunawardena et al., 2009). For example, instructors can create online classroom community on Facebook that discuss mainly on subjects that had been learnt in class. As a result, students can discuss freely about issues, ideas, opinions and arguments between their classmates and instructors. This can be possibly done through a group discussion that gathers all the students in the class. Visagie & de Villiers (2010) argued that it is more likely for students to use Facebook for academic purposes if they are encouraged by instructors or lecturers and to get involve in group work or online discussion. Students in turn will be motivated to do their academic work before and after class thus benefiting their learning process even further. Instructors at the same time could monitor student’s achievements and understanding of particular subject, thus guide them in their learning process. On the other hand, instructors should promote active learning in this online learning community and observe their students’ progress in learning regularly. In this present study, instructors could promote active learning through various instructors’ metacognitive scaffolding mechanism proposed by Reingold, Rimor and Kalay (2008). Besides, this will increase instructor-students and students-students interactions. These interactions are not mainly about the communication between entities; it is far more consider as evaluating students learning process if one looks onto different types of online interaction existed from students’ discussion.
4. ONLINE INTERACTION

The importance of interaction in online learning environment has been widely discussed over the years. Previous studies discussed that the interaction could take place between instructor-learner, learner-learner and learner-content with the mediation of technology (Hillman, Willis & Gunawardena, 1994; Anderson & Garrison, 1998). Sims (2003) study learners’ expectation in interactive online environment that requires their engagement and participation revealed that the learners could control the environment with active communication by providing feedback and it is compulsory components of interactivity.

Interaction could influence students learning processes because due to the fact that communications are able to motivate and stimulate students’ thinking (Stern & Huber, 1997). However, how can one really examine whether the interaction has affected students’ learning and their thinking process? Therefore, there is a need to analyzed the interaction processes especially in online learning environment and identify its value in terms of students’ learning process (Woo & Reeves, 2007). Educators have come with different approaches to analyze interaction within online learning. Most of them prefer on using content analysis or discourse analysis that are able to extract the richness of students’ written interaction in online learning. Several researchers have developed models and tools to facilitate the analysis data representing online interaction.

In this study, a researcher will focus on interaction occurs between instructor-student and student-student. All the posts, reflections and feedbacks from students will be coded accordingly to specific types. In recent study, a researcher will analyze students’ types of online interactions based on a coding technique of messages proposed by MacKinnon (2000). This coding technique will classify different types of online interactions based on ten specific types of interactions suggested by MacKinnon (2000) and this coding technique was chosen among others because it only focuses on interactivity. Topcu & Ubuz (2008) had also used this coding technique to assess students’ types of interaction in forum discussion while Abd. Kadir (2010) assesses students’ types of interaction in Facebook group discussion.

Table 2: Coding techniques of messages (MacKinnon, 2000)

<table>
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<tr>
<th>Types of Interaction</th>
<th>Code item</th>
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<tr>
<td>Acknowledgement of Opinions</td>
<td>A</td>
</tr>
<tr>
<td>Question (thoughtful query)</td>
<td>Q</td>
</tr>
<tr>
<td>Compare (similarity, analogy)</td>
<td>CM</td>
</tr>
<tr>
<td>Contrast (distinction, discrimination)</td>
<td>CN</td>
</tr>
<tr>
<td>Evaluation (Unsubstantiated judgment, value)</td>
<td>EV</td>
</tr>
<tr>
<td>Idea to example (deduction, analogy)</td>
<td>I2E</td>
</tr>
<tr>
<td>Example to idea (induction, conclusion)</td>
<td>E2I</td>
</tr>
<tr>
<td>Clarification, elaboration (reiterating, building on a point)</td>
<td>CLE</td>
</tr>
<tr>
<td>Cause and effect (inference, consequence)</td>
<td>CE</td>
</tr>
<tr>
<td>Off topic/faulty reasoning (entry inappropriate)</td>
<td>OT</td>
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Online interaction may not only depending on instructor scaffold, it also depending on the learning task provided by the instructors. One of the type of learning task that require instructor scaffold and generate students active involvement and interaction is project-based learning.
5. PROJECT-BASED LEARNING

Project-based learning approach exposed students to solve problems and the project should be realistic or authentic. In turn, authenticity can be adapted from learning by doing or in educational terms known as project-based learning. It is essential in helping students at a metacognitive level such as asking them further question. Authentic learning are supporting by the technology which have project based task on that technology.

Project-based learning acquires tasks to be hands-on complemented by students in real-world situations, which are authentic. Krajcik et al. (1998) described project based learning as an approach that involves finding answers to real world problem that were done collaboratively and supported by technology.

A researcher will provide authentic tasks that comprise sets of activities of each topics learning at the end of class session. Several iPad apps were developed in order it could offers project-based tasks to students and assist students in learning and as it mentioned earlier it is supported through technology, thus iPAD acts as a trending technology-mediated learning tool in this modern era. The learning materials in the apps are presented as project whereas students are been given one task on particular topic in learning Adobe Flash, upon completion of each lesson tutorial on the iPad apps. By referring to the video tutorial apps on the iPad, it is assume that it can be some kind of guidance and reference to the students in learning Adobe Flash. The result will finally measure by the instructors to identify whether students can complete the task given in a period of time. Students need to refer to the iPad apps in order to complete the given tasks. The iPad apps consist of interactive information and step-by-step video tutorial to assist students in learning Authoring System software, Adobe Flash. There are a total of four apps installed by the instructors to each iPad. The iPad on the other hand will be lending to the students throughout the class lesson.

6. RESEARCH FRAMEWORK

Theoretical framework outlines a basis of theories or the base concept that a researcher will use throughout this study. In this study, a researcher will employ several concepts that act as a baseline that will contribute on developing framework of instructor’s metacognitive scaffolding in learning through Facebook discussion as shown in Figure 2.

Firstly, researchers will evaluate students’ metacognitive abilities in learning from a set of 30 questions in General Metacognition Questionnaire (GMQ) developed by Topcu (2005) will be distributed to students. GMQ comprise questions that could assess students’ metacognitive knowledge, metacognitive judgment & monitoring and metacognitive self-regulation & control. Researchers will be conducted pre-test assessment to test students’ prior knowledge in Adobe Flash. Four iPad apps will be developed and is associated with project-based learning approach.

Instructor will create a Facebook Group page that serve as platform of a class discussion. Instructor will prompt several metacognitive scaffolding mechanism proposed by Reingold, Rimor and Kalay (2008). Students then will be evaluated through types of interaction that reflects on their learning process based on the responses, feedbacks and reflections provided upon answers on instructors questions prompted earlier. At the end of class
lesson, post-test assessment will be given prior to identify students' performances in learning through instructors scaffolding and the discussion that takes place on Facebook. Figure 3 illustrates a flow of learning process through Facebook discussion.

Finally, a framework of metacognitive scaffolding in learning through Facebook discussion will be proposed in this study.
Figure 2: A framework for instructors’ metacognitive scaffolding in learning through Facebook discussion.
Instructor create Facebook Group Page

Students will use iPad Apps 1
Instructors’ build and post Topic 1 in SN
- Respondents have to give their comments

Students will use iPad Apps 2
Instructors’ build and post Topic 1 in SN
- Respondents have to give their comments

Students will use iPad Apps 3
Instructors’ build and post Topic 1 in SN
- Respondents have to give their comments

Students will use iPad Apps 4
Instructors’ build and post Topic 1 in SN
- Respondents have to give their comments

Conduct online survey with the respondents

Collect all the data (Online responses)

Analyze and code the raw data

Figure 3: Flow of discussion in Facebook
7. **IMPLICATION**

Findings from this study will inform students on how to perform better in learning through interactions and participation in online discussion in Facebook. Students will prompt different types of online interactions that represent their learning process through the discussion session with instructors and peers in Facebook group page.

With the existence of the framework, it will provide a proper guideline for the instructors or lecturers on how to trigger online discussions with their students on what they have learnt in class through Facebook based on metacognitive scaffolding. At this point, they can monitor and assist their students based on metacognitive support indices so that they can evaluate what are the types of interactions occur through discussions on Facebook.

Furthermore, Ministry of Higher Education (MOHE) able to identify what are the mechanisms of metacognitive scaffolding that helps students to perform better at class. With the existence of proper framework gives an initiative for MOHE to implement metacognitive scaffolding in learning through the discussions in Facebook. Facebook on the other hand will be recognized as a potential platform for students to discuss on their course assignments and other activities in classroom.

8. **SUMMARY**

There was a growing body of research in scaffolding students in order to perform at their best in study. However, metacognitive scaffolding seems the best way in assisting students in learning as it offers comprehensive strategy and as it guides students to think critically during the learning process. Interactions among peers and instructors allow researcher to look upon types of interactions among students as it will represent their learning process.

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