DESIGNING MEANINGFUL INTERACTION IN FACEBOOK

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Interaction is an important key in any learning process. It's result in promoting students' achievement in learning and influence students, instructors and the learning experiences. Interaction is meaningful when interaction gives an impact on learners' intellectual development. The definition of meaningful interaction is related to the learning theories of all learning environments. The essential of interaction is also dependent upon the contexts in which interaction occurs, in a face-to-face situation or online environments and of course, every interaction in an online learning environment does not have an influence on increased learning. Therefore, the aim of this concept paper is to design meaningful interaction in Facebook based on the theory of learning and the strategies that could contribute to begin the understanding of the nature of interaction and learning processes it enables. Hence, the theory and principle selected to be applied in real study to investigate the effectiveness of the design. Based on the results, we will hopefully begin to understand clearly the nature of interaction and learning processes it enables. Based on this understanding, we can better manage and facilitate the interaction process as well as design meaningful interaction in online learning environments. It has several significant importance to certain entities including students, instructors, lecturers, and the Ministry of Education in Malaysia (MOE). This guideline might be useful for educators to generate meaningful learning interaction in social learning environment such as Facebook.

Keywords: Meaningful learning, Meaningful interaction, Interaction, Social networks.

1. INTRODUCTION

The interaction is said to be the key components of good pedagogy, regardless of whether technology is involved (Chou, 2015). Interaction is an essential ingredient of any learning environment including face-to-face classroom-based, synchronous/ asynchronous online education, or blended models. As a fundamental process for knowledge acquisition and the development of both cognitive and physical skills, therefore, interaction in learning is a necessary. Instructional designers believe the opportunities for and quality of interaction in support of learning can be improved by technology, a belief that has grown with the development of the Internet.

Maintaining interaction in online learning environments is more challenging than in face-to-face learning contexts because of the time and space separation enabled by the technology (Angeli, Valanides, and Bonk, 2003; Bannan-Ritland, 2002). Researchers have move their focus from learner-content interaction to

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learner-learner interaction as well as from the quantity of interaction to its quality (Deubel, 2003; Moallem, 2003; Vrasidas, 2000) in the context of online learning environments. More and better research is need in theaimed at improving the learning effectiveness of online interaction. Unfortunately, instructional designers still lack theoretical foundations for determining what is good quality or meaningful interaction (Woo and Reeves, 2007). Design guidelines for meaningful interaction in online learning are more akin to heuristics than to research-based principles. We will start with a brief review of the definitions of online interaction.

2.   THE MEANING OF ONLINE INTERACTION

Online interaction has been defined in a variety of ways, based upon the learners' level of involvement in a specific learning opportunity such as a university course and the objects of interaction such as other participants or content materials in various forms of learning environments (Chou, 2010). The essential of interaction is also dependent upon the contexts in which interaction occurs, in a face-to-face situation or online environments.

The definition of interaction based on Moore's (1989) is based upon a communication-based framework, defining the sender and receiver of three types of interaction: learner-content, learner-instructor, and learner-learner, within distance education. Also within the context of distance education, Wagner (1994) defined interaction as "the reciprocal events that require at least two objects and two actions" (p.8). Such interactions are said to occur when these two objects and events reciprocally influence each other. Hillman, Willis, and Gunawardena (1994) insisted that other past discussions of interaction overlooked the fact that all interaction is mediated via a online learning situations. Hillman *et al.* added a fourth kind of interaction, learner-interface interaction to Moore's three types of interaction. Meanwhile, Sutton (2001) defined a fifth type of interaction, vicarious interaction, which "takes place when a student actively observes and processes both sides of a direct interaction between two other students or between another student and the instructor" (p. 227). To be added, Northrup (2001) proposed five interactpurpose which to interact with content, to collaborate, to converse, to help monitor and supervise learning and to support performance.

Considering the previous definitions, Muirhead and Juwah (2004) defined interaction as "a dialogue or event between two or more participants and objects which occurs synchronously and/or asynchronously mediated by response or feedback and interfaced by technology" (p.13). Interaction could promote active learning, enabling effective assistance, allowing learner idea in the learning process, enabling the development of higher order thinking and abilities, and enhancing the quality of the learning experiences in the learner's learning process.

2.1 Definition of Meaningful

Of course, every interaction in an online learning environment does not have an influence on increased learning. Chatting, online surfing, or mindlessly clicking Facebook pages is unlikely to lead to substantive learning even though learners are interacting with other objects. Therefore, in this context, the focused is not just interaction but meaningful interaction Vrasidas and McIsaac (1999). The quality of interaction on learning are the impact of meaningful interaction (Hirumi, 2002; Chou, 2010). Just sharing personal opinions does not lead to meaningful interaction. Instead, the interaction must encourage the learners' intellectual curiosity and interest, Hirumi, 2002; Vrasidas and McIsaac, 1999).

The meant of meaningful interaction is changed depending on how learning is defined (Deubel, 2003; Vrasidas, 2000; Hannafin, 1989). That is, the meaning of meaningful interaction is strongly related to the learning theories of learning environments. For example, in the behaviorist learning, learning is defined as a change in observable behavior. The theory is called operant conditioning (Skinner, 1954). The interactions are meaningful within the principles of that learning theory and within the context of the computer-based program that has been designed according to the theory of operant conditioning (Deubel, 2003). Learners are viewed as somewhat passive, in need of external motivation, and directly affected by reinforcement, within the behaviorist model (Skinner, 1954). Much of the research on interaction strategies has also emphasized behaviorist functions of the interaction between learner and content as mediated on a computer screen such as confirmation, pacing, and navigation (Burton, Moore, and Magliaro, 2004).

As an effort to increase meaningful interaction, instructional technology researchers working from a communications or media theory framework (Krendl, Ware, Reid, and Warren, 1996) have studied the format in which content is presented to students in order to increase interaction with content (Moallem, 2003). Message design research (Stemler, 1997) is an example of this kind of inquiry that has sought to identify the characteristics of visual, auditory, and multi-channel communications that enhance learning (Anglin, Vaez, and Cunningham, 2004).

Cognitive learning theories such as information processing theory (Winn, 2004) are another perspective on the meaning of interaction. For example, Kirschner, Sweller, and Clark (2006) claim that "the aim of all instruction is to alter long-term memory. If nothing has been changed in long-term memory, nothing has been learned" (p. 77). It can be simplified as learning is primarily about fostering the interaction between working memory and long term memory, most, often via what they call direct instruction (Klahr and Nigam, 2004).

From a systems theory approach (Banathy and Jenlink, 2004); much research has been conducted in applying instructional design principles to the development

of more effective online learning environments (Moallem, 2003). For example, Chou (2010) developed the course management system (CMS) to aid faculty to develop interactive online courses. Most researchers and practitioners do not work within only one framework. For example, Stemler (1997), based on various theories such as Gagne's nine events of instruction, Keller's ARCS motivation model, human computer interaction theory, and message design theory. Research and development based on behavioral, communications, systems, and cognitive theories still comprise a major part of online interaction research. These lines of research have contributed to the development of relatively simple heuristics, guidelines, and tips for designing online based learning environments.

Constructivists assert that learning requires the personal interpretation of phenomenon such as the knowledge is constructed by learners as they attempt to make sense of their experiences (Driscoll, 2000). Therefore, when interactions in a learning environment are designed to enhance meaning making, then those interactions are meaningful within the principles of the constructivist learning theory and within context of interactive learning environments that have been designed according to the theory of constructivism (Fosnot and Perry, 2005).

2.2 Interaction in Social Constructivist Perspectives

In constructivist theory, the most highlighted element is that students build their knowledge based on their experience on the subject matter, especially through interaction process within social context (Vygotsky, 1978). Although there are other theorists who highlighted the importance of social context such as Bandura (1977) and Piaget (1959), only Vygotsky has been particularly prioritizing on the essential element of social process to support student's learning development (Tudge and Winterhoff, 1993). On the other hand, when it comes to the social learning theory originated by Bandura (1977), critical factors that primarily influence one's social development is through imitation. Meanwhile, Piaget had highlighted more on the importance of working alone before interacting with peers to strengthen the students' knowledge. Moreover, the importance of dealing with self-own thoughts and actions through the Piaget's constructivist account is also considered crucial for students to acquire learning progress (Bond, 2012).

Humans are grow up through the social interactions in various communities. Many educators have come to see the value of social constructivism as a foundation for the design of more effective learning environments. Social constructivists regard individual subjects and the social society are closely related to each other (Woo and Reeves, 2007). Social constructivists claim that learners understand the knowledge mainly through participating in the social practices of a learning environment including collaborative projects and group assignments as well as in the social practices of the local communities.

The interaction is meaningful when it has a direct influence on a learner's intellectual development (Hirumi, 2002; Vrasidas and McIssac, 1999). In an online learning environment designed on the principles of social constructivism, meaningful interaction should include responding, negotiating internally and socially, arguing against points, adding to evolving ideas, and offering alternative perspectives with one another while solving some real tasks (Lapadat, 2002; Vrasidas, 2000; Vygotsky, 1978). The social element will be integrated through the implementation of social learning environment of social network system which is Facebook. Facebook as a learning platform has been widely used as another option for learning management system. The attraction from the online users might due to the concept introduced by the Facebook developer on promoting social interactions and connections among its users (Cheung et.al, 2011), thus provides more added value to utilize Facebook as an online learning platform.

3.   MATERIAL AND METHODS

The aim of this concept paper is to design meaningful interaction in Facebook based on the theory of learning and the strategies that could contribute to begin the understanding of the nature of interaction and learning processes it enables. These key words were used to search for related articles and journal: meaningful learning, meaningful interaction, interaction, social networks. It was search through using EdITLib, SpringerLink, and via IEEE Xplore Digital Library.

4.   DISCUSSION

Below are the several topics that can be extract and discuss further which related in designing meaningful interaction in Facebook.

4.1 Facebook As a Context for Meaningful Interaction in Social Constructivism

Herrington and Oliver (2000) and other online learning experts have asserted that educational applications of the online learning can support and improve highly effective types of learner-to-learner interactions based upon social onstructivist learning theory. Social networks are web 2.0 technologies that facilitate social interaction and collaboration, and foster a sense of community in online learning environment (Bingham and Conner, 2010).

For this research, we chose Facebook as the social network site as it's allow learners to exchange information, contribute to discussions, the ability to accept and leave comments, private messaging, photo sharing, video sharing, blogging, and instant messenger capability (Boyd and Ellison, 2007). Learners can communicate interactively one to one or in-groups, making possible opportunities for collaboration such as team projects. The feature capability gives Facebook the most potential for implementation as a full-featured learning management system

and it is designed to help users get to know their friends better and to encourage more frequent communication and interaction. Instructors or moderators can provide through various communication tools, guidance, advice, coaching, and feedback (Hong, Lai, and Holton, 2001). Moreover, the interactive nature of the Facebook allows learners to explore a variety of resources and establish community, facilitate social presence, and encourage frequent interaction and connections with other knowledge domains that are meaningful to them (DeSchryver, M. *et al.*, 2009). However, without the provision of an instructional design model that fosters them, the meaningful interactions are unlikely to occur.

4.2 Meaningful Interaction and Authentic Task Activities

Authentic tasks have attracted some researchers that focused on employing social constructivist as a theoretical foundation for online learning (Herrington, Reeves, Oliver, and Woo, 2004; Lourdusamy, Khine, and Sipusic, 2002). The use of authentic tasks is also promoted to foster learning transfer in the belief that the collaboration among students helps them learn not only the concepts under discussion but also how these concepts are used in the workplace or in life. Students must interact through sharing what they are thinking, relating their ideas to past experiences, collaborating with their peers, actively constructing their own meaning, and incorporating the diverse perspectives of others in order to accomplish an authentic task (Barr and Tagg, 1995).

Authentic activities have potential for supporting meaningful interaction. There are several researchers that have tried to identify the characteristics required for its effective application in educational contexts. For example, Newmann and Wehlage (1993) proposed five standards for authentic activities which are higher order thinking, depth of knowledge, connectedness to the world, substantive conversation, and social support for students. Meanwhile, Sheurman and Newmann (1998) outlined three criteria of authenticity which are construction of knowledge, disciplined inquiry, and value beyond school. However, guideline provided by Reeves, Herrington, and Oliver (2002) are the most representative and comprehensive among another researcher. This is the guidelines for educational applications of authentic activities within online learning environments. Reeves, Herrington, and Oliver identified the following ten main characteristics of authentic activities:

(i)   Authentic activities have real-world relevance.

(ii) Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity.

(iii) Authentic activities comprise complex tasks to be investigated by students over a sustained period of time.

(iv) Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources.

(v) Authentic activities provide the opportunity to collaborate.

(vi) Authentic activities provide the opportunity to reflect.

(vii) Authentic activities can be integrated and applied across different subject areas and lead beyond domain-specific outcomes.

(viii) Authentic activities are seamlessly integrated with assessment.

(ix) Authentic activities create polished products valuable in their own right rather than as preparation for something else.

(x) Authentic activities allow competing solutions and diversity of outcomes.

The characteristic of authentic activities mentioned can acts as guidance for the researcher to design a meaningful interaction in social learning environment. In such social learning environment that based on authentic activities, students draw their information from various sources for their projects, use powerful communications tools and networks for various kinds of collaboration, and learn critical global and information-age skills as well as context related knowledge and skills (Woo and Reeves, 2007). However, the questions is does the use of authentic tasks guarantee meaningful interaction?

4.3 Analysing The Meaningfulness of Online Interaction

As mentioned before, interaction is meaningful when interaction influences students' meaning making and intellectual development. However, how can we know whether interaction has affected learning, especially in social learning environments (Facebook)? Does using authentic tasks in Facebook guarantee meaningful interaction? A lot of factors that contribute to the successfulness in design a meaningful interaction in social learning environment by using authentic tasks. The success depends on the way the task is presented, the scaffolding strategies instructors apply, the learners' interests and motivation, and so on. Unexpected factors may appear and some expected results are not always predictable when an online environment is designed around authentic task. Therefore, to increase meaningful interaction and to design and apply better interaction activities in Facebook, the interaction processes need to be analysed and understood in terms of learning.

There are different approaches to content analysis that can portrayed the richness of the student written interaction in online learning environments. Content analysis is a generic name for a variety of textual analyses that typically involves comparing, contrasting, and categorizing a set of data (Siti Nazleen, 2015). The unit of analysis is of various length spanning sentences, paragraphs, pages, even

whole texts (Perkin and Murphy, 2006). Several researchers have developed models and tools to facilitate the analysis of the   data representing online interaction (Perkins and Murphy, 2006; Murphy, 2004; Campos, 2004; Garrison, Anderson, and Archer (2001); Fahy, Crawford, and Ally (2001); Hara, Bonk and Angeli (2000); Kanuka and Anderson (1998); Bullen (1997); Gunawardena, Lowe, and Anderson, 1997; Newman, Web and Cochrane, 1995; Henri, 1992). Table 1 shows the variety of ways to analyze written online interaction.

TABLE 1: INTERACTION ANALYSIS MODEL

Researchers	Unit of Analysis	Analysis Model
Henri (1992)	Thematic	Five level analytical model including participative, social, interactive, cognitive and metacognitive dimensions
Newman, Web and Cochrane (1995)	Thematic	Ten phase of analysis which are relevance, importance, novelty, outside knowledge, ambiguities, linking ideas, justification, critical assessment, practical utility and breadth of understanding
Gunawardena *et. al.,* (1997)	Message	Five phase of analysis which are evolution of negotiation leading to the co-construction of knowledge: Sharing/comparing information, Discovery and exploration of dissonance, Negotiation of meaning/Co-construction of knowledge, Testing and modification of proposed synthesis, Phrasing of agreement, statement, and application of the newly constructed meaning
Bullen (1997)	Thematic	Four phase of analysis which are clarification, assessing evidence, making and judging inferences, and using appropriate strategies and tactics
Kanuka and Anderson (1998) Anderson		Message Using the model of Gunawardena, Low and complemented with discourse analysis
Hara, Bonk and Angeli (2000)	Paragraph	Using the model of Henri method
Fahy, Crawford, and Ally (2001)	Sentence	Develop a tool named TAT (Transcripts Analysis Tool) which are questioning, statements and supports, reflections, scaffolding and engaging, and references
Garrison, Anderson, and Archer (2001)	Message	Developing an inquiry model, which focuseson cognitive presence, which include the phase of triggering event, exploration, integration and resolution.
Campos (2004)	Sentence	Discourse analysis method referred to asecological constructivist perspective
Murphy (2004)	Message	Five phase of analysis which are recognize, understand, analyse, evaluate and create
Perkins and Murphy (2006)		Thematic Four phase of analysis which are clarification, assessment, inference and strategies

Source: adapted and modified from Siti Nazleen (2015)

The most appropriate analysis model can be chosen from the models listed in Table 1 or developed new based on a specific learning situation or research purpose. However, the important elements of meaningful interaction as mentioned before should be look over during the analysis process regardless of the approach taken in order to increase learning and meaningful interaction. Based on the results, we will hopefully begin to understand clearly the nature of interaction and learning processes it enables. Based on this understanding, we can better manage and facilitate the interaction process as well as design meaningful interaction in online learning environments.

5. CONCLUSION

As a conclusion, this concept paper present the guideline for designing meaningful interaction in Facebook. It is undeniably that interaction in online learning are important to ensure the effectiveness of students' success in online learning. Therefore, the theory and principle selected to be applied in real study to investigate the effectiveness of the design. Meaningful interaction should include responding, negotiating internally and socially, arguing against points, adding to evolving ideas, and offering alternative perspectives with one another while solving some authentic tasks (Jonassen *et al.*, 1995; Lapadat, 2002; Lave and Wenger, 1991; Vrasidas, 2000; Vygotsky, 1978). This can be accomplished, with the use of authentic activities in online learning environments (Herrington *et al.*, 2004). In addition, the need for understanding and assessing the meaningfulness of online interaction through careful analysis also been discussed. Therefore, in order to increase the learning effects of online interaction, firstly is to understand clearly the nature of interaction within the framework of social constructivist learning theory. Once we gain a better understanding, we should be able to design meaningful interaction that can influence the success of online learning within social learning environments (Facebook).

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