Pedagogical Framework of Students – Instructors Interaction in Virtual World

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Abstract—**Blended learning is a platform used to learn in both online and traditional way of learning. It has been popular in tertiary education. It enhances the students learning outcome and provides flexibility for instructors and learners in term of time and distance. Although it has many advantages, blended learning lacks of understanding the students - instructor's interactions and how these interactions would affect the students' learning performance. This research aims to discuss the existing pedagogical aspects that would be suitable to form the basis of assessing the students–instructors interaction in Second Life. This research provides a beneficial insights and opportunity to many educators to improve education as well as enhancing the collaborations among students.**

Index Terms—**Instructors Interaction; Blended Learning; Pedagogical Framework; Virtual World.**

I. INTRODUCTION

Blended learning is a combination of online learning and face-to-face learning, which extend the contact hours to enhance the learning experience. One of the purposes of using blended learning is for students to adapt in both online and face-to-face session and be able to be connected anytime and anywhere without facing time and place constraints [1]. Therefore, this allows students to fully utilize their time to optimize their learning.

One of the platforms used for blended learning is Second Life. It is one of the popular virtual world platforms in online learning. It has been used widely to increase students' interest in learning. Students in Second Life are representing themselves via avatar; which is a representation of them in a three-dimensional form. These avatars could interact with each other in the virtual world which therefore replicates the real world interactions through the implementations of the digital multimedia environment [2]. The avatars are created by the students themselves and the ability to manipulate the avatar encourages creativity among students [3].

Second Life is one of the platforms for efficient teaching and learning. In Second Life, role-playing is used and this allows the students to do things they want in a fun way through virtual learning environment [4].

The use of avatars in Second Life resulted to the ability of having interactions between the instructors and students during the learning sessions. Further details on the interactions between the students and instructors are discussed in the next section.

A. Background

Second Life has been used widely as a platform for education, entertainment, digital game and business. Wang and Braman in [5] demonstrate that the learners gain motivation in learning as well as enjoyment when applying Second Life in their learning.

Second Life provides videos, animations and audios to be used by users as their interaction tools [6]. These features provide an opportunity for educational area to adapt this platform into blended learning. Second Life also provides the opportunity of having interactive group discussions. Second Life provides a scenario where the learners can feel the sense of being part of the group or class, similar to the face-to-face communications in a physical class [6, 7]. This advantage leads to an attractive environment in learning activities [8]. The sense of being part in the group also leads to students being able to earn feedback directly from the instructors. This can lead to an increase in the student's effort in improving their learning performance [9].

Social interactions among students is also one of the features that are available in Second Life using avatars. Several avatars can engage synchronously and this affects the student's feelings in Second Life [10]. Interactions among avatars also create a deep understanding of the lessons taught in the class. Apart from the interactions among the students, the interaction between the students and instructors are also available in Second Life. Students can discuss and talk to the instructors using different mechanism such as text and audio messages. This interactions contribute to a more interactive and engaging class,

Having instructor's involvement in blended learning is also important as it influenced to the students' learning success [11]. According to Akkoyunlu and Soylu in [12], students tend to interact with the instructors as a way to gain knowledge about the courses taught in the class. The presence of instructors may give a certain effect to students in learning process such as being aware with the task given by the instructors and increase motivations among them in learning.

One way of having students and instructors interaction in Second Life is via discussion. In Second Life the feedback received by the students during discussions are almost immediate compared to blended learning sessions conducted in a portal based form (i.e., discussions boards, chat rooms). Although this replicates the scenario in a traditional face-to-face classroom, there exists a difference between the

interactions that occur in Second Life and the traditional classroom. In the traditional classroom, feedback or emotion can be easily identified through body language and facial expressions whereas in blended learning, students received feedback through text or audio messages without looking at the facial expressions of the instructors.

Although interactions is widely discussed in Second Life, one aspect that is less explored is the education pedagogical aspects that are not only focusing on the interactions between the instructors and the students, but also on the effects of the interactions to the students' learning performance. This knowledge is useful as it provides a valuable insight for instructors to understand and adapt the suitable interactions approach to improve the students' learning performance.

B. Research Aims

This paper aims to i) review and discuss the available pedagogical theories and framework in education and ii) select the suitable one to be used as the basis of assessing the interactions among the students and the instructors.

II. PEDAGOGICAL THEORIES AND FRAMEWORK

Pedagogical framework can be defined as a method that acts as a reference for educators to reflect their classroom practice which is necessary to improve learning session and students learning performance. The pedagogical frameworks discussed in this section are related to the virtual world in education, which are: Constructivism Theory, Social Constructivism Theory, Social Learning Theory, Community of Inquiry (COI) framework and Presence Pedagogy (P2) framework.

A. Constructivism Theory

Constructivism theory is defined as the ability of students to develop their own understanding based on the knowledge they learned [13], which may also include problem solving [14]. The understanding can be perceived if the students are actively engaged with their learning [15]. The students could also develop their own knowledge based on their personal experience and interpretation [16]. All these suggest that students are able to create their own understanding of a lesson based on the prior knowledge gained through their own active experience and their interpretation about the knowledge. The experience the students gained from collaborative communication is one of the factors that contribute to a meaningful knowledge [17]. The term 'collaboration' has already suggested that the presence of other people such as the interactions among students may produce a worthwhile and meaningful knowledge.

B. Social Constructivism Theory

Social constructivism theory suggests that the sense of community produces an effective learning environment [18]. Social nature is where students create their own knowledge based on the previous knowledge through the interactions in group [19]. This interactions could be either through the instructors' guidance or collaboration with other students [14].

C. Social Learning Theory

Social learning theory is a study about creating a behavior by experiencing or observing the behaviours of others [20]. Human could not learn for themselves [4], therefore an observation is needed as part of the learning process in life. The learning processes are [17]:

1. Observational Learning: Before a new activity begins, one will observe others behavior, especially on their ability. The observation will influence the outcome of the activity [21].
2. Imitation: Imitation happens after the observation. It is meant to improve the ability or behaviour by starting to expect the outcome or consequences of own action. This demonstrates how observation can influence the expectation of an outcome. [21].
3. Behaviour modeling: This stage presents how students begin to adopt or perform the real behaviour or action refer to the imitation, before producing the real outcome [4, 21].

One can learn and acquire many desired outcome or behaviour by observing others' action without having to perform any trial and error action to construct the desired outcome or behavior [20]. Furthermore, through observing, one can improve and adapt certain changes to the real outcome

D. Community of Inquiry (COI) Framework

Community of Inquiry (COI) framework (Figure 1) is designed to improve educational experience through the interaction of three elements which are cognitive presence, social presence and teacher presence [17].This framework provides a solution to the complexity of learning [22]. These elements consist of categories and each category has indicators to represent each element in order to measure the educational experience level, as defined as:

1. Cognitive Presence: Ability to create own understanding by maintaining a meaningful communication.
2. Social Presence: Showing their characteristics to others in the community thus presenting themselves.
3. Teacher Presence: Facilitation and direction of learning facilitate by instructors that will influence a meaningful and valuable educational experience.
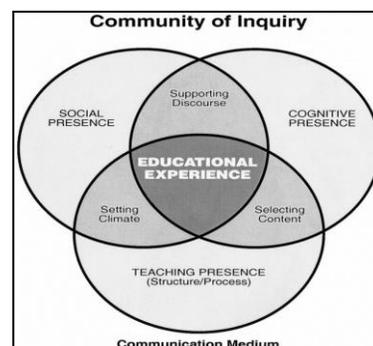
Figure 1: Elements of an Educational Experience

The important element of the framework in order to improve the level of education experience is cognitive presence. The cognitive presence is closely related to social presence. This is

because the users need to socialise with others in the group in order to maintain their understanding through communications. Besides that, this will increase the rate of sharing knowledge among students' and encourage them to generate ideas to make learning more innovative and interesting.

Teacher presence also plays an important element, where this presence is related to the instructors since they are the one who facilitate students in learning. Students need someone to refer to in solving their problems during learning session. Teaching presence act as a catalyst to generate social presence, thus, cognitive presence could also be created. This framework is useful to emerge technology into education [23].

E. *Presence Pedagogy (P2) Framework*

Presence pedagogy is a set of skills and ability in helping others learn in virtual world. It is a collection of techniques to assist learning [18].

Collaboration sometimes resulted to a frustration among students especially when large numbers of faculty members are trying to collaborate but each of them has different perspectives and teaching philosophy. This leads to an outcome that may not meet the requirements of each faculty. Presence pedagogy (P2) framework introduces collaboration in a form of new perspective that will cater for different views of the students and instructors. It contains the principles and practice applied by Presence pedagogy (Table 1).

III. RESULTS AND DISCUSSIONS

Among constructivism theory, social constructivism theory and social learning theory, the social learning theory is considered as the suitable theory for this research as this theory demonstrates the factors that include both students and instructors' where it includes the students' perceptions of blended learning and the effects of having instructors' involvement in blended learning. It is suitable as it provides insight for instructors to improve communications with the students and therefore improving the students' perceptions towards them. This could be done by observing the behaviour of the instructors that could lead to a positive perception towards the instructors. This observation would be useful for the instructors as it could be adapted into the learning environment as an approach to make the learning more valuable to the students.

Apart from the pedagogical theory, a framework is also needed as a basis of the theory implementation. The framework discussed in this paper are Community of Inquiry (COI) and Presence Pedagogy (P2) framework, where both are used widely in Second Life on blended learning approach. Among these two, Presence Pedagogy (P2) framework is specifically used for learning in virtual environment widely however this framework does not really focus on the interaction between the instructors and students.

As for the Community of Inquiry (COI) framework, the three elements of presence in this framework are strongly related to the presence of both instructors and students, making it more suitable for this research. It provides a platform to understand the educational experience of the students through their perceptions towards instructors. This

framework focuses on improving learning by encouraging interaction between the users and collaboration in learning. This framework also focus on students who are able to interact and learn from other instructors from other courses and therefore allowing learning to be conducted anytime with the presence of others who can guide them anytime, wherever they need a help in learning. This framework gives an opportunity for instructors to utilise the virtual world environment in appropriate and effectives facilitation to support growth and learning of their students [24]. Therefore this made the COI a suitable framework for this research.

IV. CONCLUSIONS AND FUTURE WORK

The social learning theory and Community of Inquiry (COI) framework are the selected pedagogical framework that would be used as the basis of measuring the interaction between the students and the instructors during the learning session, including assessing the students' learning performance.

The next step in this research is to conduct an experiment that uses Second Life as the medium of blended learning between the students and instructors. The experiment would focus on the three elements of Community of Inquiry (COI) framework: cognitive, social and teacher presence.

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Table 1
Presence Pedagogy Principle and Practice

P2 principle	P2 practice
Ask question and correct misconceptions	Interaction with faculty and students
	Both peers and "experts" serve as catalyst to promote explicit learning
Stimulate background knowledge and expertise	Activities that require sharing of personal and professional experiences
	Recognition of background knowledge and expertise
	Acknowledgement of and engagement in a Community of Practice
	Cross-course, cross-cohort, cross-program and cross department interactions.
Capitalize on the presence of others	Activities that promote cross-course, cross-cohort, cross-program and cross department interactions.
	Naming convention to identify student cohort, program and nationality
	Share faculty responsibility of supporting students across programs
Facilitate interactions and encourage community	Team teaching
	Naming convention to identify faculty and staff
	Interdisciplinary lesson/unit planning
	Activities to capitalize on notion of Distributed Cognition
	Interdisciplinary Community of Practice
	Text and voice tools for interaction
Support distributed cognition	Multiple manifestations of Presence
	Creation of Open space in which students and faculty of various backgrounds and levels of expertise can interact
	Expertise shared by students and faculty
Share tools and resources	Students and faculty identification of relevant tools and resources
	Availability of tools and resources in shares space open to all students
Encourage exploration and discovery	Engagement in authentic activity
	Creation of open, resource rich environment
	Activities that promote exploration of shared tools and knowledge base
Delineate context and goals	Authentic action-oriented projects and assignment that have personal meaning and relevance for the students
	Visual cues to facilitate organization of an accessibility to tools and resource
	Use of avatars and metaphors
Foster reflective and practice	Periodic assignments requiring ongoing and guided reflection
	The "So What?" question
	Frequent public representations
Utilize technology to achieve and disseminate results	Activities that require utilization of in-world tools and resources
	Persistent presence of a living curriculum
	Multiple presentations across programs, cohort, courses and section