Examining Community of Inquiry Model in Influencing E-learning Usage among Female Students

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ABSTRACT

This study explores the relationship between online social games and the e-learning usage by investigating the impact of social and cognitive presence on e-learning usage among female students through playing online social games. The use of online social games tools is noticed to be high among female students. Meanwhile, an e-learning environment that has the features of social network tools such as games has great potential to innovate and stimulate the continual usage of e-learning among students, by fostering social interaction and knowledge sharing among the students, especially among female students to be able to facilitate social interaction, since female students are more comfortable sharing ideas among their peers. The findings of this study revealed that, cognitive presence has positive significant impact on e-learning usage. Meanwhile, social presence does not have a significant impact on e-learning usage.

Keywords: Social Presence, Cognitive Presence, Online Social Games
JEL Classification: D83

1. INTRODUCTION

E-learning is an important online tool that can be used to achieve quality of learning and teaching among students in higher education (Jovanovic, 2013). It is capable of providing platform that can change the learning and teaching system from traditional to a new pedagogy structure (Josephine and Jennifer, 2013; Hicks, 2011). It is being designed to promote efficient communication among teachers and students through sharing of courseware as well as discussions related to academics and class activities but not social interactions and problem solving (Rodrigues et al., 2011; Essam and Al-Ammary, 2013; Mahmood et al., 2013a). These factors contribute to the lack of the ability of e-learning to stimulate students' attention towards continual usage and as such it is inefficient in most academic environments (Rodrigues et al., 2011; Mahmood et al., 2013b).

Researchers' findings in information system, such as Arunachalam (2014); Rodrigues et al. (2011), concluded that the impact of e-learning especially among female students of higher education is insignificant. The studies found that this is due to the lack of social presence and cognitive ability that affect the rate of use of

e-learning among students, especially the female ones because it is seen as teachers-centered (Hoic-Bozic et al., 2009; Rodrigues et al., 2011; Mahmood et al., 2013a). Studies have referred to this lack of social interaction and cognitive ability as the main cause of the low level of usage of e-learning among students, especially the female ones (Arunachalam, 2014; Mihaela et al., 2011; Rodrigues et al., 2011).

Meanwhile, in contrary, some studies reiterated that female students play more of online social games nowadays because, it provide them with the opportunity to interact in online community by cognitively implementing ideas that can be useful in problem solving (Cunha et al., 2008; Garrison, 2011). These features make online social games attractive to female students, by giving them the opportunity to share ideas and knowledge when engaged in games in the online community.

In the same light, Charles et al. (2009) affirmed that students' involvement is paramount to the success of e-learning, although the level of students' usage of e-learning is often insignificant. The reasons for the insignificant level of students usage of e-learning are said to be lack of enticing learning materials and environment,

hence, lack of social presence. The study argued that little studies have delved into enhancing the usage of e-learning applications among female students by considering the attributes of digital games.

Therefore, this study proposes to examine the determining roles of social presence and cognitive presence in the usage of online social game for e-learning among female students. Thus, to establish how the use of online social game can have positive influence on e-learning usage of female students to continuing using e-learning for both academics and social benefits. To this end, the study intend to consider the assumptions of community of inquiry model which highlights two important constructs that provide theoretical details for consideration in this study.

Meanwhile, it is worthy of note that community of inquiry model is yet to be applied in the context of online social games for e-learning usage (Anderson, 2008; Garrison, 2011; Roither, 2012). This study also explored this opportunity to implement community of inquiry model as the theory and provided deeper understanding of the implication of possible relationship between online social games and e-learning.

2. LITERATURE REVIEW

2.1. Benefits in the Adopting of E-learning

Electronic learning systems were initiated to enhance interaction between learners and educators and the entire educational systems (Jovanovic, 2013). Fundamentally, e-learning is a tool for enhancing connection and interaction between learners and educators regardless of geographical locations especially students that are from rural areas with little or no access of learning materials and facilities (Kaplan and Haenlein, 2010). It is a fundamental fact that, dwellers of rural areas have limited access to learning facilities and learning materials. The challenges of students living in rural area include lack or limited availability of teachers and educators.

Conceptually, e-learning is entailed with myriad of applications such as; web-based learning, virtual classroom, computer-based learning, and digital collaboration that assists in the transfer of skill and knowledge (Lena and Marlene, 2013). Content is delivered through internet, audio or video tape, intranet/extranet, CD-ROM and satellite TV. Moreover, e-learning involves the assessment and evaluation of students and their activities in a real time unlike the traditional learning style. This shows that learning in an online environment assists in achieving the educational objectives by the students. Meanwhile, researchers have argued that one of the main limitations to e-learning is the lack of ability to stimulate its continual usage, especially among students (Rodrigues et al., 2011). This is part of the reason why most today's forms of e-learning focused only on enhancing collaboration and communication between students and teachers alone (Hoic-Bozic et al., 2009).

Thus, the significance evolution of Internets and information technology provide means to enhance information sharing among students (Bauerova and Sein-Echaluce, 2007). This development

could be used to aid e-learning process in stimulating the attention of the students towards achieving better academic process. One of such technology nowadays is the emergence of various types of online social games that can be used in different location (Mahama, 2012). Online social games are mostly used by students to create social interactions. The use is mostly significant among females student that use them to enhance interaction among their peers (Hoic-Bozic et al., 2009). Hence, if this technology is used in the platform of e-learning, may cater for the limitation identified and as such the use of e-learning might significantly improve, especially among female participants in the academic sphere.

2.2. Playing Online Social Games

Traditional games are now becoming online social games (Ahmad et al., 2011). This is due to the difficulties usually encountered through the face to face games and which has affected the objectives of creating the traditional games. Therefore, games like bridge, chess, and go are now played online by millions of gamers. Other online social games, such as FarmVille and Cafe World, are already exploiting the characteristics of the social network to improve and grow online communities. This invariably affects the learning skills of the participants (Bader and Zotter, 2012).

Furthermore, one of the popular social game that have a long history allowing families and friends to spend time with each other is board games and conventional card (Ben et al., 2010; Dumitrica, 2011). Although, digital games have been viewed as an isolated and anti-social activities (Hicks, 2011; Mihaela et al., 2011), but recently this view has changed due to that, the social aspects of digital games is gaining more emphasis. Researchers have stressed that there is now change of focus in the academic research as well as games industry (Mihaela et al., 2011). This is evident from the increase popularity of the massive multiplayer online games such as World of Warcraft, games played in social network media such as Facebook and party games like SingStar.

In addition, FarmVille game could routinely gives high-level (expert) players new items while at the same time broadcasting game play achievements through the social links (Powell et al., 2010). User behavior, online social network and play style analysis are not new research subjects, but the study of social gaming communities provides a new environment of application with the potential to influence millions of lives (Szell and Thurner, 2010). Furthermore, a good understanding of online social networks, which are large-scale Internet-based applications, may shape the way individual maneuver the large-scale socio technical systems (Wei et al., 2010).

As opposed to many other social networks which are based on friendship and cooperation among participants, gaming social networks may grow because an adversarial context (Xu et al., 2011). Based on this, gamers may be motivated to be active longer than they would in a traditional social network. Researchers have shown that the adversarial context present in games always leads to two additional pro-social emotions; happy social embarrassment (being happy for getting embarrassed in front of friends) and vicarious pride (being happy for the success of your students).

This complements the pro-social emotions found in traditional social networks, such as admiration, compassion, and devotion (Susan and Bradley, 2010).

However, studying online social gaming may lead from complementary results to many of the classic social network studies.

2.3. Social Presence and E-learning Usage

Social presence is learners' ability to project themselves as real persons in an online community (Garrison et al., 2000). Social presence concerns how learners use their full personality to communicate with others in a sociable and emotional manner over the electronic medium. There have been numerous findings from previous studies (such as; Picciano, 2002; Lee and Faulkner, 2010; Iahad et al., 2004; Oliver and Omari, 2001) on the relationship between social presence and usage and experiences of learners on e-learning applications.

Picciano (2002) reported that the social presence in an online course stipulated learners' performance during their course assignments and examinations. The study asserted that, social presence is positively and significantly impactful on students' performance in written assignments. Social presence was strong because students had to participate in the weekly online discussions, which encouraged students to identify with and learn from other students. By contrast, social presence did not relate to the examination.

Essam and Al-Ammary (2013), the study sample is comprised of postgraduate students enrolled in the Arab Open University, Kingdom of Bahrain. One hundred and fifty surveys were distributed both in person and as a web survey. Results show that motivation is the main factor that has the most significant impact on using e-learning. Meanwhile, among other motivating factors, social interactions were found to be a strong significant factor in influencing the usage of e-learning among postgraduate students. Another study conducted by Richardson and Swan (2003) affirmed that learners' perceived social presence is significantly related to perceived learning experience and satisfaction from using e-learning packages.

Lee and Faulkner (2010) illustrated in another study where the community of enquiry model was adopted and expanded to study the experience of postgraduate students in using e-learning application. Their study affirmed that, social presence especially in terms of process and structure has significant effect on e-learning usage experience.

Rovai (2002) added that, the social presence is such a determining factor to the extent that learners can abandon e-learning for the main purpose of lack of social presence. Hence, this implies that, in order to enhance impressive usage of e-learning among student, a strong sense of community must be created in the e-learning environment. The presence of social presence in other words is believed to stimulate satisfaction, increase usage and ensure continues usage of e-learning among students (Lee and Faulkner, 2010).

2.4. Cognitive Presence and E-learning Usage

According to Garrison et al. (2000), cognitive presence explains learners meaning and learning acquisitions in a social learning environment. Understanding and learning in a social milieu does not happen in a vacuum, rather it happens through process which involves initially understanding the problem, followed by communicating the problem to others, then meaning are constructed from the communications and finally problem can be solved in consensus. There have been quite a number of previous studies that examine the impact of cognitive presence on e-learning usage and experience.

Lee and Faulkner (2010) reported that, cognitive presence is a significant factor to e-learning experience. Also, Oriogun (2003) affirms that learning in a social platform happens through social nexus and connections. In other words, learners acquire knowledge and meaning by interacting and exchanging ideas within networks. Support for the influence of cognitive presence on e-learning experience also come from a focus group that suggests effective e-learning takes place when students collaborative via online projects.

The findings of Kanuka and Garrison (2004) affirmed that effective learning takes place in an e-learning environment because of the collaborative and interactive nature of the platform. Such collaborative projects encourage students to critique each others' solutions and think creatively when building a consensus-based solution, thereby leading to higher-order learning.

3. COMMUNITY OF INQUIRY MODEL

The model emphasized that learners interact in a community and should not be denied the responsibility to learn on their own. In a manner to provide a philosophical view of fundamental elements that can impact the usage of any online educational tool, Garrison et al. (2000) identified three basic elements which analyze the features that must be present in any online social service.

The first is the social presence which was referred to as the ability for participants using online educational tool to project themselves socially and interact as real individuals of a particular learning community through the medium of communication being used. The second is the cognitive presence which states the extent to which learners should be able to construct and confirm meaning through sustained interaction, reflection and discourse in a critical community. The third is teaching presence that relates to how the design and organization of online educational tool should facilitate discourse and direction of cognitive and social processes mainly for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (Garrison, 2011).

Therefore, since the challenge is to understand how the emerging educational tools can create learning environments that can facilitate development of social interactions and higher-order cognitive abilities in which teaching and learning process can be adequately enhanced. The use of these concepts to explain the impact of online social game on e-learning platform may enhance our understanding of what online social game is intended

to achieve in e-learning environment towards enhancing its usage especially among female students. Garrison and Anderson (2003) asserted that the community of inquiry model provides significant insights and methodological solutions for studying e-learning experiences of using online platforms (Figure 1).

4. RESEARCH FRAMEWORK

The conceptual framework proposed in this study is an indication of the study hypothesized relationship between the variables understudied in this study. Hence, the impact of online social game on e-learning usage using the constructs of community of inquiry mode. The effect of gamifying the learning process has been explicitly indicated. Hence, since, little attention was paid to the specific implication of online social game in improving the usage of e-learning especially on female students. This study explores the relationship between online social game and the e-learning usage by investigating the impact of social presence and cognitive presence on e-learning usage. Thus, Figure 2 depicts the conceptual framework proposed in this study.

The hypotheses based on the research framework, is as presented below.
H1: Social presence in online social games has positive impact on the usage of e-learning among female students.
H2: Cognitive presence in online social games has positive impact on the usage of e-learning among female students.
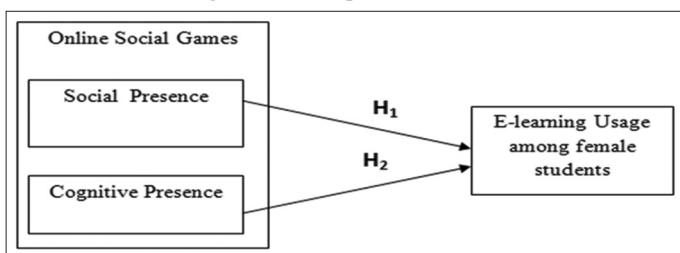
5. METHODOLOGY

This study intends to engage 80 female students from school of computing, Universiti Utara Malaysia (UUM), who were randomly

Figure 1: Community of inquiry model framework
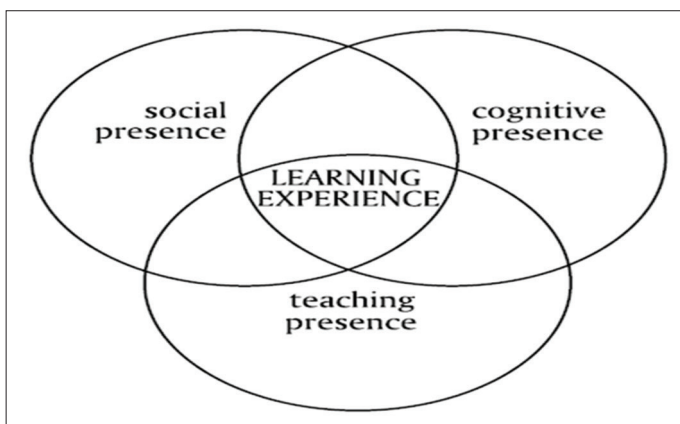
Source: Swan et al. (2008)

Figure 2: Conceptual framework

selected to participate in the controlled laboratory experiment due to their familiarity to the use of online social game and e-learning. The selection of sampling was done through convenience method. Considering the fact that this study employs an experimental research design, the respondents were met in their classrooms. The lecturers were consented. Both the lecturer and the student were informed about the research objective. The participants were first given an ample time to play FarmVille2 in the laboratory and subsequently a survey questionnaire was distributed for their response based on their experience.

6. FINDINGS

The result of the multiple regression analysis in this study as shown in Table 1 shows that R^2 for this model is fit ($R^2=0.490$), therefore, 49% of the variance in e-learning usage is explained by the independent variables (social presence and cognitive presence), 51% explain by other factors.

Furthermore, the result of the analysis as shown in Table 2 revealed a statistical significant relationship between social presence, cognitive presence and e-learning usage. The equation of the multiple regression analysis ($F_{(2, 77)}=24.320$, $P<0.05$), which indicates that the model is statistically significant as suggested by Hair et al., (2010).

From the coefficients part of Table 3, it is revealed that, the social presence has insignificant impact on the usage e-learning among female students, this is because the significance value of $P=0.429$. However, the beta value ($b=0.082$) indicates that the direction of this impact is positive. Such result means that for each unit increase in the social, there is an expected increase of 0.082 in the e-learning usage ($t=0.795$). Thus, this hypothesis is not supported. In addition, from the coefficients part of Table 3, the beta value ($b=0.369$) and significance value of $P=0.003$, it is revealed that, the cognitive presence has a significantly positive impact on the e-learning usage among female students. This means that for each unit increase in the cognitive presence, there is an expected increase of 0.369 in e-learning usage ($t=3.113$). Accordingly, this hypothesis is supported.

7. DISCUSSION AND CONCLUSION

The findings of this study revealed that the social presence attributes of online social games have no influential impact on the usage of e-learning usage among female students. This is because the social games are for playing, enjoyment and entertainment while in other hand, e-learning are for learning and teaching. In addition, students have limited time to engage in Gamification or social interactions in the course of using e-learning for learning purposes. The inconsistency in the invitation and acceptance of friendship and interaction in online social games. For example, there instances whereby, gamers could not make effective interactions with other friends on social game platforms. This finding of this study is contrary to previous studies such as; Lee and Faulkner (2010), Picciano (2002); Rovai (2002). These studies unanimously posited that, social presence is an important factor in motivating student participation, engagement and usage of

Table 1: Regression analysis for structure readiness

Model	R	R²	Adjusted R²	Standard error of the estimate	Change statistics				
					R² change	F change	df1	df2	Significant F change
1	0.700[a]	0.490	0.470	0.44724	0.490	24.320	2	77	0.000

Table 2: ANOVA

Model	Sum of squares	df	Mean square	F	Significant
1					
Regression	14.594	2	4.865	24.320	0.000[b]
Residual	15.202	77	0.200		
Total	29.795	79			

Table 3: Coefficient of the regression

Model	Unstandardized coefficients		Standardized coefficients	T	Significant
	B	Standard error	Beta		
1					
(Constant)	0.296	0.375		0.790	0.432
Social presence	0.084	0.106	0.082	0.795	0.429
Cognitive presence	0.472	0.152	0.369	3.113	0.003

e-learning application. The finding of this study is discerning, in the sense that it affirms that the social presence in online social games is not a motivating factor to learning. In addition, According to the findings presented, cognitive presence attributes on online social games have positive and significant impact on e-learning usage among female students.

The implication of this finding is that cognitive presence is an important motivating factor to the usage of e-learning among female students. Garrison et al. (2000), Oriogun (2003), Lee and Faulkner (2010), Kanuka and Garrison (2004) consistently induced that cognitive features are impactful to usage of e-learning. In the case of online social games, cognitive attributes entails solving problems, facing challenges and overcoming obstacles. These sort of cognitively inclined activities should be incorporated in e-learning environments, as it has be proven to be among the significant factors that motivate, attract and influence the use of e-learning among female students. The significance of cognitive presence of online social games on e-learning usage can be justified with the fact that the cognitive activities of online social games are academically inclined. Playing games has to do with challenges and solving problems, these kinds of activities are similar to that of cognitive activates of doing tests, examinations and online task. Hence, if more of the activities are incorporated into e-learning applications, female students will be more motivated to use and adopt e-learning.

8. LIMITATIONS AND FUTURE RESEARCH

This study has limitations. Invariably, time and resources are the two major constraints of this study. Due to the fact that, this study is an experimental study, and data collection in an experimental research is often considered as one of the most expensive and time costly research design. Finally, the researcher could not explore a probabilistic sampling technique for selecting larger sampling size from different sampling locations. The researcher delimit the place

of data collection on UUM and also only on female postgraduate and undergraduate students in UUM.

Base on the limitations discussed in the above section, This study has recommendation for future researchers, firstly, researchers are implored to use a longitudinal data of time horizon at which data from this similar study will be collected over a long period of time, in order to discern the long-term impact of online social game attributes on the usage of e-learning. Secondly, future researchers are recommended to consider expanding the scope of this study by selecting bigger and generalizable sample size. Finally, researchers should also consider using other e-learning theories such collaborative learning theory to understanding the students' motivation of e-learning usage.

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