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Modelling Learner's Perception of Blended Learning in a Developing Country

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Abstract: The purpose of this research was to understand the factors (collaboration, instructor involvement, nature of course, self-learning and internet experience) that influence learner's perception on blended learning. A total of 200 completed questionnaires were considered usable for this study. Structural equation modelling (SEM) using AMOS 23 was used to test the developed model. The findings show that all the five hypotheses were supported. Of the five predictors used in this study showed a positive effect on the perception of blended learning. The most influential predictor of Learner Perception was Collaboration followed by Instructor Involvement and Self-Learning which shows that the users of blended learning very much driven to use by the facilitation of Collaboration, Self-Learning and more Instructor Involvement in the course. In conclusion, this study is very beneficial to the education sector especially to those who are involved in learning and delivering blended courses. The findings in this study will definitely help the Ministry of Education and Higher Learning Institutions (HLIs) to gain better insight of the key factors that contribute to the perception on blended learning in order to gain competitive advantage in the learning hub.

Keywords: *blended learning, theory of transactional distance, perception, collaboration, instructor involvement, nature of course, self-learning, internet experience*

Introduction

The Malaysia Education Blueprint 2015-2025 (2015), highlighted the need of turning the country into a developed nation by 2020. As such, education is a major contributor to the development of the nation's social and economic status. The nature and quality of higher education need to be expanded and increased by blending in innovativeness and creativity which moves Malaysia into a modern labor market.

The education blueprint puts in place the need to foster globalized online learning Indeed, with the advancement of the internet entrance in Malaysia, it permits more extensive access to greater quality content, improve teaching and learning quality, lower the cost of delivery, and lead expertise to the global community. Internet and communication technology advancement are transforming the education platform into an innovation teaching and learning. The advancement of technology specifically in education has raised the concern for a more hybrid method of learning. The combination of both the traditional approach with tech-powered e-learning has transformed the learning environment in HLIs towards blended learning.

Although blended learning in Malaysian Higher Learning Institutions (HLIs) is still new, it marks the first foray of Malaysian public universities into MOOCs. Many HLIs like Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM), Universiti Teknologi MARA (UiTM) and Universiti Malaysia Sarawak (UNIMAS) have adapted technology into their learning and teaching method by incorporating the MOOCs concept since September 2014.

In tandem with the blueprint, numerous HLIs in Malaysia have begun to embrace and implement blended learning as a source of adaptable teaching and learning process. Most public universities as of now have some kind of strategic plan for implementing pure electronic university, which replaces traditional classroom learning (Raja Maznah, 2004). Infact the Ministary of Eduction encouraging and supporting universities to incorpora -learning into the Malaysian education system. This is needed to meet the growing expectation and demand for higher quality learning experience. To this point, the government has supported the challenge of online learning by setting up various virtual universities like ~~the~~

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Universiti Tun Abd Razak (UNITAR) in 1998 and the Open University of Malaysia (OUM) in 2000. Furthermore, Multimedia University was also established in 1999 to support the MSC projects in Cyberjaya (Muhammad Rais Abdul Karim and Yusup Hashim, 2004). (this one…hanging)

Thus, the purpose of this study is to ~~study~~ examine the factors that influence learner's perception of blended learning. The possible contribution of this study varies from different perspectives. The intuitions of higher learning will discover the potential benefit of technology in teaching and learning thus, bringing the learning process into an innovative experience in the 21st century. Furthermore, students who were under the blended learning approach will be leaders in the future with innovative and creative skills. This in return will tranformas the countries human resource into a modern labour. In short, by understanding the perception of learner's under the blended learning approach, the study will l provide a better platform for policy makers~~,~~ ~~—~~to enhance the learning and teaching process.

Past researchers have acknowledge the challenges of incorporating blended learning into the Malaysian education system (Ling, Rahman, Ariffin, Leong & Hamzah, 2011), by For instance, in a globalized era, technologies are changing rapidly and difficult to keep track of the constant technology change and innovation. Infect, Kim, Bonk and Oh (2008) mentioned that rapid ~~fast~~ change ~~ing~~ in technology environment is one of the major challenges in implementing blended learning~~.~~ ~~—~~In addition, maintaining and keeping up with the latest hardware and software could a demand task for IHLs . Besides, the system that supports the blended learning mode needs to be upgraded frequently to meet the drastic change so that more functions will be made available to provide a more user friendly setting to users.

In addition to the challenges above, standardizing the blended learning courses among universities is another challenge. This cannot be done without the continuous commitment from the government, learners, instructors and other parties. If they are not committed enough, the attempt of bringing the Malaysia's education system to a higher level will not be a success. To accomplish the vision, the country will need to keep up with the present changes in ICT development as they play a vital role in the advancement of blended learning system in Malaysia. Hence, blended learning course planners may need to look at all these elements when designing a more solid course structure in the future to reach the goals of Malaysia's higher learning training system. In line with the purpose of this study and the research questions above, the objectives of this research is to study the effect collaboration, instructor involvement, nature of course, self-learning, internet experience and learner's perception of blended learning.

Literature Review

Theory of Transactional Distance

In defining The Theory of Transactional Distance, Moore (1993) proposed that transactional distance is not restricted in terms of cognitive space, but somewhat it is an instructional approach including the gap of learners and teachers by time and place. Moore added that geographic distance, communication and conformity, course design and the degree of self-learning of the learner (Moore & Kearsly, 2005; Simonson et al., 2006; Moore, 1997) were among the important components that affect the result of the process of teaching and learning at a distance (Huang, 2002). These components were then grouped into variables that were stated in the theory, which consists of dialogue (interaction), structure, and learner autonomy. This theory is a useful and appropriate framework, as a number of studies had utilized this theory to investigate distance education (Albion, 2008). This theory covers all the different approaches that are now being utilized in higher education, namely face-to-face, blended, or fully online.

Dialogue is referred to the interchange of speech and response between instructor and a student when one provides guideline and the other react in return. In spite communications are essential for the formation of dialogue, interactions are not synonymous with dialogue that is indicated as a positive association "which is purposeful, constructive and appreciated by each party" (Moore, 1993, p. 24). On the other hand, structure involves "the inflexibility or adaptability of the course, its goals, teaching plans, and evaluation measures" (Moore, 1993, p. 26). It is the degree to which an educational program can meet the learning demands of each student. The identification and manipulation of these two variables are the focal elements in minimizing transactional distance. Nonetheless, these

components should not be overemphasized at the expense of the learner. Moore (1993, p. 31) acknowledges that the third variable of transactional distance, learner autonomy, is basically "the student rather than the teachers who determine the objectives, the learning events and the assessment result of the learning program".

Blended Learning

What is blended learning? Sharma (2010) similarly suggested blended learning as the mixing of two teaching modes, a blending of two pedagogical approaches, or the merging of two technological tools. In addition, blended learning is the combination of the advantages of both traditional learning method and e-learning (He, 2004). Nevertheless, the most widely accepted definition of blended learning is expressed as "the blend of conventional ways of teaching and online instructing" (Bliuc et al., 2007, p.233).

Collaboration and perception of blended learning

Collaboration is a form of learner and learner interaction, one of the sub-component of the Transactional Distance Theory. According to Bernard, Rubalcava and St-Pierre (2000), this form of shared learning has been considered as an effective method, in both traditional and distance learning environments. Collaboration involves "mutual understanding of participants in a coordinated effort to resolve problems together" (Dillenbourg *et al*. 1996; Roschelle and Teasley, 1995). This means that collaboration is an environment in which learners communicate with one another to work out problems. There have been increasing interest toward collaboration, particularly in the aspect of distance learning.

According to Moore (1997), the interaction between learners was identified as a valuable means of distance education in the 1980's. Interaction among learners can take many forms. Collaboration is one of the mode that supports learning, especially in an online and distance environment. Research shows that there is a significant correlation between students' perceived learning and communication with peers (Swan, 2003). Therefore, the following hypothesis is developed:

H1: Collaboration will have a positive effect on learner's perception of blended learning.

Instructor involvement and perception blended learning

An instructor is described as someone who encourages students to actively participate in discussions, provides feedbacks on learners' task and their development regularly, and regard them as individuals. Similarly, in a study by Sher (2009), student-instructor communication involves the process of delivering knowledge, motivating students, and providing feedbacks. The capability to ask questions, to exchange opinions with a learner, or to hold differing viewpoints are all key learning activities in a learner-instructor interaction (Picciano, 2002). The instructor regularly takes focal point of the audience in a traditional classroom context, while in a Web-based environment, the teacher becomes more of a coordinator (Gutierrez, 2000). Restauri et al. (2001) also proposed that the absence of the instructors' physical existence did not influence students' achievement because it is perceived that students are more willing and eager to engage and take part in an online course than in a traditional classroom.

Instructor presence was discovered to be a critical factor in a blended learning context. In a study of students' satisfaction level towards their interaction with instructors, they preferred to have a face-to-face interaction although the outcome resulted that there students showed a high level of satisfaction and they recognized the value of the efforts that instructors provided (Matheos, Macdoland, McLean, Luterbach, Baidoun, & Nakashhian, 2007). Hence, the following hypothesis is developed:

H2: Instructor's involvement will have a positive effect on learner's perception of blended learning.

Nature of course and perception on blended learning

Just like in a traditional classroom setting, the integration of course content and assessment measures in a blended learning environment are critical to enhance the learning outcomes and satisfaction for both instructor and students. That is to say the objectives of the course should be aligned with the distribution of content and the assessment method (Blumberg, 2009). Objectives are the main thrust, which list out the outcomes of students that they should acquire at the end of a course, which are then determined by the evaluation measures and methods.

Nature of course can also be described as the degree to which a course can suit the individual learners' needs (Moore, 1997). Different courses require different levels and categories of knowledge, particularly in terms of abstract and imperative knowledge (Blumberg, 2009). In an online learning context, acquiring such knowledge presents an exceptional test. A research that studied on the influence of course design factors on students' perception of learning found major similarities between clarity, consistency and simplicity of course structure and students' perceived learning (Swan, 2003), suggesting that nature of course is related to learner's perception of blended learning. The following hypothesis is developed:

H3: Nature of course will have a positive effect on learner's perception of blended learning.

Self-learning and perception on blended learning

There are many ways to define self-learning. Many researchers argued that self-directed learning is part of learner autonomy. This term describes the situation in which the learner is fully responsible for all the learning decisions and is also independent in preparing the learning materials (Dickinson, 1987). In a full autonomy, instructor or an institution is not involved. In addition, self-directed learning has been agreed by most researchers that it is vital to student success in e-learning environments (Simonson, Smaldino & Zvacek, 2002; Moore & Kearsly, 2004). Thus, facilitating student autonomy need to be considered when designing blending learning context.

Moore's interpretation of autonomy is the different capacities of learners in constructing their own determination of their own choices in regards to their learning process (Moore & Kearsley, 2005). In a research by Calvin (2005), she summarized that neither both Chen and Willits (1998), nor Huang (2002) studied on how learner's ability to be autonomous affect knowledge understanding learned in a Web-based program. However, Calvin noted that there is a major correlation between self-learning and fulfillment of perceived learning. Thus, the following hypothesis is developed:

H4: Self-learning will have a positive effect on learner's perception of blended learning.

Internet experience and perception on blended learning

Internet experience is another important element of success for online learners (Schrum & Hong, 2002). With the Internet, students are able to explore for educational information that are additional to conventional textbooks or course notes. Tsai and Tsai (2003) expressed that students with better internet experience are likely to present more excellent information seeking strategies. With the support of the Internet in a blended learning surrounding, it was reasonable that learners' performance of information seeking enhanced, recognized the importance of the task and are likely to utilize the Internet regularly (Saito & Miwa, 2007). More interestingly, students not only perceived higher ability and knowledge, but also turned out to be more involved in teamwork in Internet-based courses (Lee & Tsai, 2011).

It was found that internet experience has a major effect on learners' understanding of blended learning (Koohang & Durante, 2003). In the research, undergraduates who had greater internet engagement resulted in a higher and better perception of the blended learning course. According to Koohang and Weiss (2003), internet experience was a major factor for the design and the usability of Web-based courseware. In other words, the Internet will influence learning. Research has acknowledged that experience with technology in general affects user acceptance of the technology, for instance the Internet. (Koohang, 1989). Besides, learners who have less experience with the internet depend more on face-to-face learning and show discomfort during online learning (Lynch & Dembo, 2004). Thus, the following hypothesis is developed:

H5: Internet experience will have a positive effect on learner's perception of blended learning.

Methodology

This study is conducted using an online questionnaire survey, whereby the purpose is based on quantitative method. A convenience sampling technique is used to conduct the survey for this research. Data will be collected from students who are pursuing their studies in Malaysian higher learning institutions (HLI's). The questions were adapted from several previous researches to measure the variables of this study. The instrument developed by Walker and Fraser (2005) was used to measure collaboration, instructor involvement and self-learning. Measurement items used for nature of course, internet experience and perception on blended learning were adapted from Laanpere (2005), Shih (2004) and Buzzetto-More (2008)

respectively. The survey questionnaires used a 5-point Likert scale. A total of 200 questionnaires were considered usable.

Results

Structural Equation Modeling (SEM) analysis using AMOS 23 was used to estimate the measurement and structural model for quality and fit.

Measurement Model

For the measurement we followed the suggestion of Hair et al. (2010) by testing construct reliability, convergent validity, and discriminant validity. For a good model fit, the Chi-square normalized by degrees of freedom (χ^2/df) should not exceed 3, goodness of fit index (GFI) should exceed 0.9, adjusted goodness of fit index (AGFI) should exceed 0.8, Tucker-Lewis index (TLI) should exceed 0.9, comparative fit index (CFI) should exceed 0.9 and root mean squared error (RMSEA) should not exceed 0.08. The results showed that the χ^2/df was 1.518, GFI = 0.899, AGFI = 0.860, CFI = 0.951, TLI = 0.939 and RMSEA = 0.053 suggesting adequate model fit.

Fornell and Larcker (1981) suggested that if all indicator loadings exceed 0.7 and the average variance extracted (AVE) for each construct exceeds 0.5 then we can conclude that convergent validity has been established. As shown in Table 1, most item loadings exceeded 0.7 and we can see that the AVE is higher than 0.5. It was also suggested that satisfactory discriminant validity is established when the AVE of a particular construct is greater than the correlation shared by that particular construct with other constructs in the model (Fornell & Larcker, 1981). As can be seen in Table 2 all the square root of the AVE are higher than the correlations as such we can conclude that the construct validity of the scales are good.

Table 1 *Convergent Validity*

Construct	Item	Loadings	CR	AVE
Collaboration	C2	0.712	0.766	0.523
	C3	0.805		
	C4	0.644		
Internet Experience	IE1	0.669	0.846	0.580
	IE2	0.773		
	IE3	0.799		
	IE4	0.799		
Instructor Involvement	IS2	0.806	0.785	0.550
	IS3	0.735		
	IS4	0.678		
Nature of Course	N2	0.733	0.776	0.536
	N3	0.745		
	N4	0.718		
Learner's Perception	P1	0.772	0.809	0.585
	P2	0.811		
	P3	0.709		
Self-Learning	S1	0.669	0.763	0.521
	S2	0.827		
	S3	0.656		

Note: Items C1, IS1, N1 and S4 were deleted due to low loadings**Table**

Table 2 *Discriminant Validity*

Construct	1	2	3	4	5	6
1. Internet Experience	**0.762**					
2. Collaboration	0.549	**0.723**				
3. Instructor Involvement	0.310	0.513	**0.742**			
4. Nature of Course	0.506	0.538	0.568	**0.732**		
5. Self-Learning	0.542	0.573	0.531	0.557	**0.722**	
6. Learners Perception	0.576	0.676	0.645	0.666	0.682	**0.765**

Note: Values on the diagonal (bolded) are square root of the AVE while the off-diagonals are correlations

Structural Model

First we looked at the structural model fit and the results showed that χ^2/df was 1.518, GFI = 0.899, AGFI = 0.860, CFI = 0.951, TLI = 0.939 and RMSEA = 0.053 suggesting adequate model fit. Kline (2016) suggests that as a conservative rule of thumb, Mardia's coefficient of g > 10.0 suggest a problem and g > 20.0 indicate a more serious one. As the Mardia's coefficient was 123.343 (t = 29.614, p< 0.01) that suggests that data was not normally distributed thus we used bootstrapping to correct the standard errors (Noor Hazlina & Ramayah, 2012). As shown in Table 3 Collaboration (β = 0.295, t = 2.200, p< 0.05), Instructor Involvement (β = 0.277, t = 2.484, p< 0.01), Nature of the course (β = 0.201, t = 1.929, p< 0.05), Self-Learning (β = 0.261, t = 2.149, p< 0.05) and Internet Experience (β = 0.126, t = 1.632, p< 0.1) were positively related to Learner Perception. All the variables explained an R^2 of 0.688, which shows that they explained 68.8% of the variation in Learner Perception. Thus H1, H2, H3, H4 and H5 of our study were supported. The most influential predictor of Learner Perception was Collaboration followed by Instructor Involvement and Self-Learning which shows that the users of blended learning very much driven to use by the facilitation of Collaboration, Self-Learning and more Instructor Involvement in the course.

Table 3*Hypothesis Testing*

Hypothesis	Relationship	Unstd. Beta	Std. Beta	Error	t-value	Decision
H1	Collaboration → Learner's Perception	0.295	0.230	0.154	2.200**	upported
H2	uctor Involvement → Learner's Perception	0.277	0.247	0.147	2.484***	Supported
H3	Nature → Learner's Perception	0.201	0.201	0.144	1.929**	Supported
H4	Self-Learning → Learner's Perception	0.261	0.226	0.183	2.149***	Supported
H5	ernet Experience → Learner's Perception	0.126	0.148	0.077	1.632*	Supported

***p< 0.01, **p< 0.05, *p< 0.1

Discussion and Conclusion

Based on the research findings, instructor involvement has a positive relationship with learner's perception on blended learning (B = 0.245). This shows that instructor involvement is a critical factor in a blended learning context, which is supported by Matheos, Macdoland, McLean, Luterbach, Baidoun, & Nakashhian (2007). The perception of a learner towards blended learning courses are determined to which extent an instructor interacts with them, as it is believed that the instructor presence facilitates learning and increases their performance.

The positive relationship between nature of course (B = 0.185) and perception on blended learning was supported. This indicates that the blended learning course suit the individual learners' needs. Not only that, the blended learning course materials need to be relevant and consistent so that the teaching is clearly presented to the students. When the materials were designed at an appropriate level, this will positively influence the learner's perception on blended learning. This relationship was found significant by Swan (2003) which concluded that there is no differences for learners whether the courses are delivered face-to face or blended.

The result showed a significant and positive relationship between self-learning (B = 0.260, p = 0.000) and perception on blended learning. This relationship indicates that the learners were capable of controlling and making decisions in regards to

their leaning process. Besides that, facilitating student autonomy need to be considered when designing blending learning courses. Self-learning has been agreed by most researchers that it is vital for student success in e-learning environments. This is consistent with the previous studies by Calvin (2005), Chen and Willits (1998) and Huang (2002) that reported positive relationship between self-learning and the perception on blended learning.

Based on the research findings, internet experience has a positive relationship with learner's perception on blended learning (B = 0.130). This shows that internet experience is another predictor to perception on blended learning. With the Internet, students are able to explore for educational information that are additional to conventional textbooks or course notes. The learners were able to improve their tasks performance, productivity and effectiveness when using the Internet in blended learning courses. This finding is supported by the previous studies like Lynch and Dembo (2004) and Koohang and Durante (2003) which reported that internet experience has a major effect on learners' understanding of blended learning.

Thus, H1 to H5 is supported with a model equation of:

Perception of blended learning = -0.275 + 0.245 Collaboration + 0.245 Instructor Involvement + 0.185 Nature of Course + 0.260 Self-learning + 0.130 Internet Experience + error ($\mathcal{E}$)

The findings obtained from this study will be able to help those who are involved in designing their plans and delivering blended courses that appeals to all learners. With that, HLIs in Malaysia will be able to compete effectively to be one of the most advanced learning hub in the world. The findings of this research were interpreted and generalized within a sample of 187, which was considered small. Thus, the sample may not truly represent the perception of all learners in Higher Learning Institutions (HLIs) in Malaysia. Future research should consider a larger and diverse sample drawn from each university in the country. This is to ensure that more precise result could be obtained which can represent every HLIs in Malaysia. Furthermore, this study only focused on the five factors that influence the learner's perception on blended learning. It is also important to examine the perception on blended learning from a different or broader perspective. Other factors such as students' learning styles or characteristics may also be used as potential constructs in future research. Finally, Poon (2004) suggested that future research should consider longitudinal study to determine the causal relationship between the studied variables. This will offer a more precise observation because a longitudinal research can be repeated over a period of time.

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