Editor's Note: Blended learning provides numerous advantages for students and teachers by combining face-to-face classroom and distance learning.

The construct of factors acceptance and use of blended learning for teachers in Malaysia

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Abstract

This paper will discuss determining construction, formation of the factors of acceptance and use of the Blended Learning approach among teachers. The determining construction for the teacher's acceptance and use were identified through literature review and semi-structured interviews. The writing of this paper is to discuss in detail the determining constructs that make up the factors of acceptance and use of Blended Learning approach among teachers based on previous models for the learning environment of schools in Malaysia.

The results of this study are expected to give a complete picture regarding constructs that make up the factors of acceptance and use among teachers and improve overall understanding of the individual's acceptance of the Blended Learning approach. This understanding is also expected to guide implementation policies to create an effective Blended Learning environment for Malaysian education settings.

Keywords: Blended learning, teacher acceptance, blended learning's constructs

Introduction

Our lives are increasingly dependent on technology: all aspects of social life, economics, politics, culture and education are very dependent on technology. Kong et al. (2014) and Agostinho, Bennett, Lockyer, and Harper (2011), agree that the development of computer technology is very dynamic and futuristic. Parallel to the development of hardware and software, improvisation to the nature of the technology itself produces tools and techniques to meet the needs of contemporary life of the 21st century. Reformation to effective nature of technology, especially web-based technology, has increased the use of this technology by leaps and bounds. This has opened an opportunity for educators to find ways to use technology to create learning environments that meet the needs of a variety of learning styles and consequently produce meaningful learning. According to reports from Shamsuddin (n.d.) and Kern & Rubin (2012), the use of technology in teaching and learning is a must and inevitable. Through learning approach and the use of appropriate technology, it should be able to produce a learning environment that is more interesting and meaningful.

Many studies have shown that the use of technology in the learning process can attract, motivate, focus, facilitate leaning and develop positive attitudes towards learning (Abdelmalak, 2015; Alwehaibi, 2015; Henrie, Halverson, & Graham, 2015; Hwang, Sung, & Chang, 2016). Mohd Azli and Abdul Latif (2012) advocate a diversity of methods and technologies for implementing educational activities stimulate the positive acceptance of students to the learning process and contribute to the achievement of specified learning outcomes. Next, the integration of web technology in the learning process can also improve learning effectiveness (Briggs, 2014; Cheung & Slavin, 2013; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012). Based on this situation, there should be innovation and transformation of learning approaches practiced by school teachers. Among these is the innovative practice of Blended Learning.

Parallel to these changing demands, the Ministry of Education (MOE) has taken proactive steps in drafting changes in the education system through the Malaysia Education Blueprint (MEB). This clearly shows the government's efforts to leverage information and comunication technologies (ICT) to improve the quality of student learning. The MOE has introduced a virtual platform which is known as a-Frog Virtual Learning Environment (VLE Frog). Frog VLE is a cloud-based platform aims to provide flexible and mobile a virtual learning environment.

The Frog LE learning environment contains the properties of virtual learning, on-line content, collaboration, assessment and online reference materials, a characteristic of Blended Learning approach (Carman, 2005). Cimermanová (2013), supported by stating, Blended Learning is assessed as an instructional strategy as it is made possible through an effective medium combination of virtual learning environment (VLE) and face-to-face teacher-student interaction and students in the classroom. Wayne (2012) explains, the learning environment arising from mixing these approaches has been accepted and recognized as an instructional strategy known as a blended learning approach.

Blended Learning

What is Blended Learning? Blended Learning has been defined and redefined in many previous studies, but none has given a complete picture regarding what contributes to the formation of Blended Learning and how Blended Learning components are blended together to achieve cohesion as expected. Brief summaries explained that, most parties have accepted that Blended Learning combines face-to-face instruction and online-mediated instruction (Briggs, 2014; Graham, 2006; Wong, Tatnall, & Burgess, 2014).

Singh (2003) explains, Blended Learning is the combination of learning and effective delivery method serves to support meaningful learning process of students. Mohamed Amin, Norazah, & Ebrahim (2014) explain there are four ways to define Blended Learning, namely i) a combination of diversification of web-based technology in the learning process, ii) a combination of pedagogical approaches learning, iii) the mix of instructional technology and learning face-to-face and iv) instructional technology blends with students learning tasks. According to Zaharah, Saedah, Ghazali, & Nur Hasbuna (2015), Blended Learning is a mixture of conventional learning model and online learning. It is hoped that students will be individually involved and active in the learning process so as to identify appropriate methods of self-directed learning. Teachers play a role as mediator, facilitator, and friend to produce a meaningful and supportive learning environment. Blended Learning is believed to become a catalyst or enhancement of conventional learning through current technological innovations. The concept of Blended Learning is shown in Figure 1.

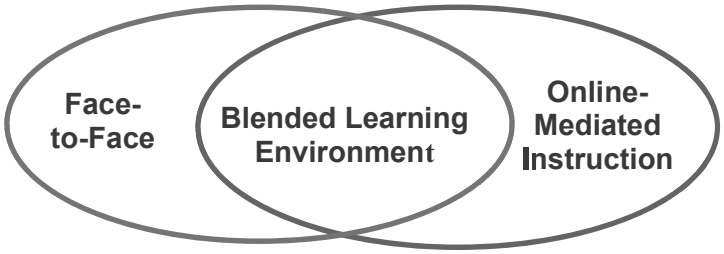

Figure 1 Concept of Blended Learning

It can be concluded that, Blended Learning is a process of learning founded by the successful combination of components including: multiple methods of delivery, compliance to learning models and accommodating the individual learning styles. This process is conducted in an interactive learning environment to focus and achieve learning objectives (Mohd Azli, Wong, & Noraini, 2016).

Acceptance Model

Huang, Ma, and Zhang (2008), Isman et al. (2012), Mohamed Amin et al. (2014), and Nuanmeesri (2014), agreed that the main component of the Blended Learning approach is based on the use of technology. Therefore, this study will refer to the prior theoretical conception of the model in an effort to identify, define and construct a teacher recruitment factor for a Blended Learning approach in schools.

Empirically, theoretical model of individual acceptance to technology is formulated through a detailed study related to perceptions, beliefs, attitudes of individuals, external influences, and feedback on what drives the behavior of individuals to receive and use the technology to achieve learning. Davis, (1989), identified *'Perceived ease of use'* and *'perceived usefulness'* as the key determinant of the technology acceptance. In the Technology Acceptance Model (TAM) adapted from the Theory of Reasoned Action Model (TRA), he defined *'Perceived ease of use'* as *"the degree to which a person believes that using a particular system would be free of physical and mental effort"*, while *'perceived usefulness'* is *"the degree to which a person believes that using a particular system would enhance his/her job performance".*

Both definitions of these properties have become a solid construct and form the basis of almost all of the latest acceptance model technologies. Models receptions such as *Theory of Reasoned Action*-TRA (Fishbein & Ajzen, 1975), *Technology Acceptance Model*-TAM (Davis, Bagozzi, & Warshaw, 1989), *Theory of Planned Behavior*-TPB (Ajzen, 1991), C-TAM-TPB (Taylor & Todd, 1995), and *Unified Theory of Acceptance and Use of Technology* - UTAUT (Venkatesh, Morris, Davis, & Davis, 2003) are referred to as a theoretical basis in many empirical studies related to the individual acceptance of the current technologies. However, Khechine, Lakhal, Pascot, and Bytha (2014) explains that, UTAUT model is a more comprehensive acceptance model; including constructional component of individuals and organizations as well as giving a better explanation relevant to an individual's intention to use technology (individual acceptance of technology), compared to previous models of acceptance.

Through literature review, theoretical model of acceptance has been through verification and strengthening process, expansion of advanced construct and improvised explanation of technology acceptance parallel with latest technological development's timeline. Venkatesh, Thong, and Xu (2012), concluded that the UTAUT model is the latest and most comprehensive model of acceptance in assessing individual's acceptance to technology because this model is developed through the expansion and consolidation based on previous models of acceptance using relevant theories to motivation and attitudes towards technology. This statement proves that the model UTAUT is the latest acceptance model that will provide a more thorough and integrated description of the individual's acceptance to the use of technology. Development and interaction between model-acceptance theories based on a timeline is shown in Figure 2.

Research objective

In general, this study aims to identify factors that influence the teacher's acceptance and use in successful implementation of the Blended Learning approach in schools. However, due to the limited scope of the discussion, this study will focus on identifying the constructs that make up the factors of acceptance and the teacher's usage for the successful implementation of the Blended Learning approach.

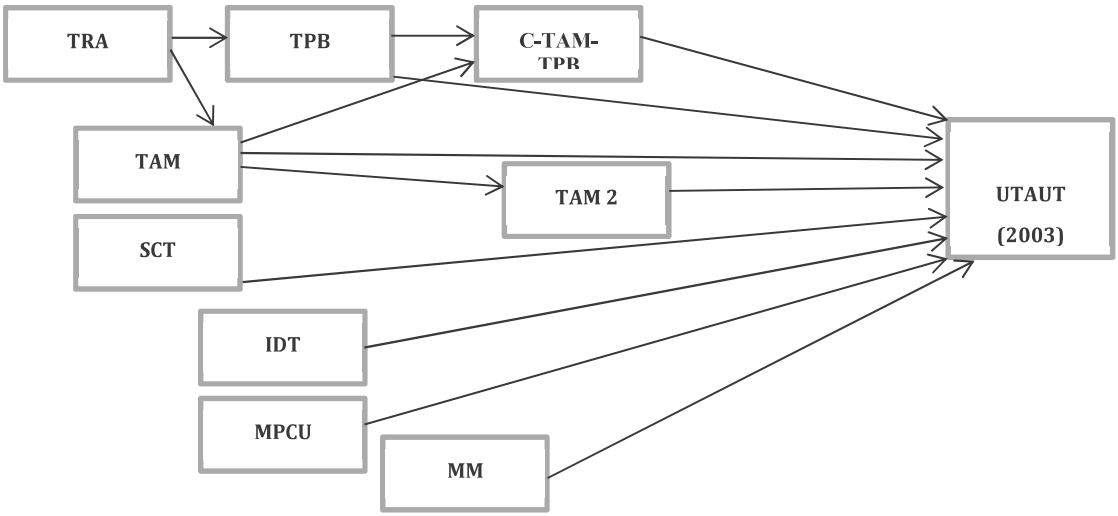

Figure 2 Development and interaction between the model-theory acceptance according to the timeline

The findings in the paper are expected to give a clearer picture of the constructs that determine the factors of acceptance and use by teachers. This paper seeks to be a catalyst for a common understanding regarding the acceptance and use of Blended Learning approach among teachers in Malaysia and thus provides guidance to policy makers to formulate policy changes for the successful implementation of Blended Learning approach.

Research method

It is recognized that "Blended Learning" is a term that is relatively new in the Malaysian education system and the learning approach is still an obscure practice in schools. Hence, the writing of this paper was carried out within a limited scope and with relatively limited resources. The content analysis was used for the formulation of cross-references between the findings of a literature review of studies and the previous empirical theory model with the findings from semi-structured interviews with focus groups. Thus, the findings of this paper are limited to a formula based on the settings of the local education system.

Determining construct for acceptance factor

Based on the literature on the construct of theoretical acceptance model of previous technology, the researchers were able to construct an initial draft outlines for teacher recruitment factor of Blended Learning approach. Next, the construct is extracted and determined through a literature review of previous empirical studies as well as a brief survey, semi-structured interviews with focus groups. Panel of focus groups involved were from the group of academic teachers, VLE Frog young teachers, Frog VLE school administration teachers, school administrators, teachers, trainers and officials Frog VLE program coordinator. Creswell (2012) explains that this method is the best method in the process of identifying constructs of the study before it is tested for validity of the item, which is part of the process of building and testing the instrument. This method has been widely used by researchers, in order to determine the construct for the purpose of establishing the factors or variables of the study (Şad, 2012; Wong, Teo, & Goh, 2014).

In Table 1, the key findings of the theme-construct through feedback and semi-structured interviews were obtained during interviews with focus groups.

Table 1

Thematic summary through feedback and semi-structured interviews

Interview Questions	Feedback	Construct-Theme
What do you understand of the blended learning approach?	Never heard of blended learning. Use mixed teaching methods	Understanding of a blended learning approach
What do you understand with learning using Frog VLE in your classroom?	Using a computer and Frog website in the process of teaching and learning. Students use computers during the learning process. Students access learning materials via computer from web Frog. Teachers can upload and share learning materials in web Frog. Students and teachers can interact through web Frog. Students can answer questions/quizzes via web Frog.	Understanding of the Frog VLE
What are your views on the Frog VLE?	Good, fun for students. Good, a lot of new information. Good, can develop new skills. Good but kind of hard to use. Good but looks like it will delay efforts to complete the syllabus.	Teacher's general perception. Performance Expectancy (PE)
How does the implementation and introduction Frog VLE made by the MOE influence teachers decision to use or not?	Do not understand the purpose/ concept of Frog VLE. Not interested. Unclear of the objectives. Unsure of how to use. Difficult to use because of lack of technological resources (computers and Internet access). Yes and good, will try to make it a success because it has a lot of advantages/advantages/benefits	Performance Expectancy (PE) Effort Expectancy (EE) Facilitating Conditions (FC) Teacher Efficacy (TE)
Your expectations of Frog VLE advantages?	Time saving – able to achieve the learning objectives quickly and easily. Many students can use. Easy to access websites. Encourages students to learn - fun and easy to understand content subjects. Easy exploration of knowledge by students, without limit and from a variety of sources. Students are able to implement / follow the process of learning from / to home.	Performance Expectancy (PE) Effort Expectancy (EE) Blended Learning's attribute
Your expectation of Frog VLE weaknesses?	ICT facilities uncertain. Difficult to implement without support or assistance. Cannot be implemented	Performance Expectancy (PE) Effort Expectancy (EE)
Can you explain, whether there is or not advantages of using Frog VLE platform in the learning process? / What is your opinion about the advantages of Frog VLE when used in the learning process?	Do not see any advantages when using Frog VLE. Students enjoy and explore information / new knowledge. Students and teachers can get new skills. Teachers are more innovative.	Performance Expectancy (PE) Effort Expectancy (EE) Teacher Efficacy (TE) Behavioral Intention (BI) Use Behavior (UB)
Can you explain are there any weaknesses in using Frog VLE platform in the learning process in the classroom? a. What is your opinion - why is it difficult to use Frog VLE in the learning process?	Time is wasted to handle the technology hardware. Students often misuse technology. Students focus often interrupted / diverted and abused. Difficult to manage the learning process - students often misuse the ICT facilities.	Effort Expectancy (EE) Performance Expectancy (PE) Teacher Efficacy (TE) Behavioral Intention (BI) Use Behavior (UB)

Does the school have adequate facilities to carry out the Frog VLE in the learning process?	Inadequate facilities - computers and internet coverage is not comprehensive in the school (computer lab only). Yes, but difficult to practice during the learning process (don't know how to use). Always have internet issues- slow web login into Frog. Always fighting over a computer lab with other teachers	Facilitating Conditions (FC) Effort Expectancy (EE) Blended Learning's attribute
Are teachers using Frog VLE in the learning process? Why?	Don't use it because do not know how to. No because it is difficult to use. No because always face difficulty to access Frog website. Yes because I am into ICT. Yes because the students have fun. Yes because of the initiative/support/directive from the administrator. Yes but always behind time to complete syllabus.	Behavioral Intention (BI) Use Behavior (UB) Teacher Efficacy (TE) Facilitating Conditions (FC) Effort Expectancy (EE) Efikasi Guru (TE)
Can you tell me your experience in the process of using blended learning approach?/ Can you tell me your teaching experience using Frog VLE in class? (difficult/easy/fun/fear)?	Difficult. Not fun. Always unable to finish syllabus/ objective not accomplished. Fun but inadequate time.	Effort Expectancy (EE) Performance Expectancy (PE) Behavioral Intention (BI) Use Behavior (UB)
Do you face problems during the teaching execution using Frog VLE? a. If yes, could you describe your experience?	The use of computer facilities is always clashed. Internet connection is slow. I don't know how to use the functions in Frog VLE. Problems related to technology (internet and computer) always disrupt learning process.	Facilitating Conditions (FC) Teacher Efficacy (TE) Behavioral Intention (BI) Use Behavior (UB) Keadaan Kemudahan (FC)
In your opinion, is Frog VLE able to fulfill learning needs of the students? a. How?	Yes, it builds ICT skills. Students have fun and motivated. Variety of information resources.	Teacher Efficacy (TE) Effort Expectancy (EE) Performance Expectancy (PE) Blended Learning's attribute
In your opinion, what are the obstacles to using Frog VLE in the learning process?	Technology resources in school. The functions in Frog VLE is difficult to comprehend. Aim on the use is unclear. Teacher's skill (no training/ inadequate) Teacher's motivation/drive. Support/ directive from the administration party. Inadequate guidance and training for the teacher.	Facilitating Conditions (FC) Teacher Efficacy (TE) Social Influence (SI)
What is your suggestion on how to improve/encourage the use of Frog VLE in the learning process?	Training and exposure to ICT literacy skills to teachers. Training and practice using Frog VLE. Strong support and encouragement from a third party (friend, school culture and administrators). Awards to teachers who practice the use Frog VLE in the learning process. ICT facilities are adequate. Strong internet connection. Easy reference. Frog VLE web function should be more user-friendly. Should have more Frog VLE functions (goals). Parents need to be exposed with the importance of Frog VLE and their role in providing ICT facilities in the house for student use.	Teacher Efficacy (TE) Facilitating Conditions (FC) Social Influence (SI) Performance Expectancy (PE) Effort Expectancy (EE)

From the findings from interviews and literature on previous empirical studies and cross-references of previous theoretical acceptance model, the researchers have been able to list the proposed constructs that determine the factors of teacher's acceptance to Blended Learning.

Below is the list of the proposed constructs and matching with the prior original source of a model or theory reception (see Table 2).

Table 2

Constructs of Teacher's acceptance of Blended Learning and Corresponding Original Source of the previous acceptance Model-theory

Constructs	Sub- Constructs	Model-theory	References
Performance Expectancy (PE)	*Performance Expectancy* *Perceived usefulness* *Extrinsic motivation* *Job-fit* *Relative advantage* *Outcome expectation*	UTAUT; TAM/TAM2/C-TAM-TPB; MM; MPCU; IDT; SCT.	Davis, Bagozzi, & Warshaw (1989), Venkatesh et al. (2003), Rogers (1983), Bandura (1989)
Effort Expectancy (EE)	*Effort expectancy* *Perceived ease of use* *Complexity*	UTAUT; TAM/TAM2; MPCU/IDT.	Davis, Bagozzi, & Warshaw (1989), Venkatesh et al. (2003)
Social Influence (SI)	*Social influence* *Subjective norm* *Social factors Influencing*	UTAUT; TRA, TPB, TAM2, C-TAM-TPB; MPCU.	Ajzen (1991) Venkatesh et al. (2003)
Facilitating Conditions (FC)	*Facilitating conditions* *Perceived behavioral control* *Compatibility* *Perceived Control*	UTAUT, MPCU; C-TAM-TPB; IDT; TPB.	Thompson et al. (1991), Taylor & Todd (1995), Venkatesh et al. (2003)
Teacher Efficacy (TE)	*Attitude Toward Computer Use* *Self-Efficacy*	TRA, TAM; SCT, C-TAM-TPB.	Davis, Bagozzi, & Warshaw (1989), Compeau & Higgins (1995), Thompson et al. (1991)
Behavioral Intention (BI)	*Behavioral Intention* *Intention to Perform Behavior*	TRA, TAM, TAM2, C-TAM-TPB, UTAUT; TPB.	Davis, Bagozzi, & Warshaw (1989), Taylor & Todd (1995), Venkatesh et al. (2003)
Use Behavior (UB)	*Use Behavioral* *Usage* *Behavior*	TRA, TAM, TAM2, C-TAM-TPB, UTAUT; SCT; TPB.	Davis, Bagozzi, & Warshaw (1989), Venkatesh et al. (2003)

Table 3 lists determinants and definitions of each proposed teacher acceptance constructs for Malaysian educational setting.

Table 3

Determinant and definitions of teacher's acceptance factor of Blended Learning

Construct	Determinants	Definition
Performance Expectancy (PE)	Construct is extracted and determined based on Blended Learning attributed and six prior model/theory of acceptance construction; *Performance Expectancy (UTAUT)*, *Perceived usefulness (TAM), Extrinsic motivation (MM), Job-fit (MPCU), Relative advantage (IDT)* dan *Outcome expectation (SCT).*	Defined as to how far the level of individual's trust in the use or execution of Blended Learning approach will aid them in achieving the decided learning objective (expected effectiveness)
Effort Expectancy (EE)	Construct is extracted and determined based on Blended Learning attributed and four prior model/theory of acceptance construction; *Effort expectancy (UTAUT), Perceived ease of use (TAM)* dan *Complexity (MPCU).*	Defined as to how far an individual's trust to the accessibility or execution ability of the Blended Learning approach.
Social Influence (SI)	This construction is determined by previous construction; *Social influence (UTAUT), Subjective norm (TAM2/TRA)* dan *Social factors Influencing (MPCU).*	Social Influence (SI) refers to the level of individual's assumption on how important other people believe that they should use or execute the Blended Learning approach.