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What Influence Teachers' Satisfaction Towards E-Learning? A Synthesis of the Literature

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Abstract: The e-learning system being used in the Malaysian schools is known as the Frog Virtual Learning Environment (VLE). The availability of the system has allowed for blended learning to take place. However, there is an obvious gap between the enthusiasm of the Ministry and results of the some studies carried out that have shown a poor uptake of the Frog VLE in schools. Levels of adoption of the VLE by the teachers have been disappointing. This paper investigates factors that are critical in influencing satisfaction towards the Frog VLE. As satisfaction influences continuation of future usage intention and behaviour, it makes sense for policymakers and relevant stakeholders to know and understand factors that could bring about teachers' satisfaction.

Keywords: satisfaction, teachers, virtual learning environment

1. Introduction

A comprehensive review of the education system in Malaysia found that despite the massive expenditure on the Smart School; an ICT project which started in 1999 and completed in 2010, 80 percent of the teachers used ICT less than an hour per week (as cited in Ministry of Education, 2012). Even when ICT was used, it was limited to word processing applications. The review process preceded the formation of the Malaysian Education Blueprint (MEB). This Blueprint is a document that provides the vision of the education system which the country needs and deserves. It suggests 11 strategic and operational shifts in order to achieve the vision. One policy shifts stated in the MEB is to leverage on ICT in order to improve the learning quality across Malaysia. As a result 1BestariNet project was created in order to provide access to a single learning platform and a high-speed 4G internet connectivity to all 10,000 schools nationwide. All the schools in Malaysia have internet access and a learning platform via the 1BestariNet project. The learning platform provides a cloud- based virtual learning platform known as the Frog VLE, a United Kingdom's designed application created to ease lesson plan development, facilitate administrative tasks, and allow students to access learning resources.

Despite the enthusiasm, RM663 million spent on the 1BestariNet project, it is suffering from lack of usage (National Audit Department, 2013). There has not been corresponding increase of usage in technology among the teachers. The report revealed that usage of the FROG VLE by teachers, students and parents was between 0.01 percent and 4.69 percent. Daily utilisation of the VLE by teachers was found to be between 0.01 percent and 0.03 percent. This suggests that the VLE is hardly used by most teachers. Irfan Naufal Umar and Mohd Tarmizi Mohd Yusoff (2014) in their study highlighted Malaysian teachers as being highly competent in using the internet application for searching and sharing information, using the word processor, spreadsheet and slide presentation but they lacked the skills in doing the more advanced applications like producing graphics, animations and multimedia design. The biggest challenge to e-learning seems to be the lack of competent academics, whereby nearly two third of academic

members in the public universities have reported low motivation to incorporate e-learning tools in their teaching and learning (Adnan & Zamari, 2012).

Policy makers need to do away with the beliefs that by providing access to the e-learning, it would lead to major changes in the classroom teaching and learning. The presence of a new innovation despite its promises of greater benefits, does not automatically translate into actual usage. This proves that the cause of failure or lack of usage is still poorly understood.

2. End User Satisfaction

End-user satisfaction is a concept which suggests that an information system which meets the needs of its users will reinforce satisfaction towards the system. Satisfaction of users towards their information system is a potentially measurable and generally acceptable, surrogate for utility in decision making. End-user satisfaction does not only measure a system's success, it also looks at how users view their information system rather than the technical quality of the system. So no matter how good a system is, if users perceived it as poor, then it is considered poor. If the system does not provide the required needs, it will create dissatisfaction and forces the users to walk away from the system. Some findings from recent studies also indicated that users are rarely satisfied with the functionalities of new e- learning systems and are worried with the problems of integrating the system with other organisational systems (Russell, 2005). User dissatisfaction with newly introduced systems, mismatches between a new technology and existing work practices, underestimating technological complexity and inefficient end-users support are just some of the many issues raised concerning the e- learning (Bondarouk, 2006). Users' satisfaction towards their information system is a measurable and acceptable surrogate for utility in decision making instead of its technical quality (Bai, Law & Wen, 2008).

Users' satisfaction is not a new concept as many studies have been carried out in an effort to understand its antecedents and consequences. However, current studies are needed as situations and environment are fast changing. Now, we hardly find users who interact with service personnel, instead users are dealing directly with the technology adopted. So new findings are needed to find out what affect users' perceptions of quality and the values that they placed in their interactions with the technology in place. Factors that lead to satisfaction are often difficult to be isolated and recognized, due to their complex inter-relationships (Mahmood, Burn, Gemoets, & Jacquez, 2000). Despite that we still need to examine teachers and beliefs they hold about teaching, learning and technology. Integration of computers in the educational system will never be possible without reconciliation between teachers and computers. To encourage teachers to use computers, we need to study teachers and what make them use computers. Research into the factors that predicts satisfaction could shed light into what the teacher training division and management need to focus, what aspects matter most to their teachers in order to encourage continuous and increased participation and usage.

3. Research Method

A comprehensive search of satisfaction on eLearning literature from 2000 to the present was conducted by the author. Articles from journals, books and conferences relevant to the topic were identified and selected for this review using the following criteria. Key concepts from the studies were translated into the literature review.

4. Factors that lead to Satisfaction among Teachers

Teachers in general face various glitches and challenges as they learn to use and familiarize themselves with any new technological instructional activities in the classroom. System satisfaction is defined as a cognitive discrepancy between the feelings prior to and after the use of system; when users obtain a better feeling after using the system, they will be satisfied and be willing to continue to use the system (Doll & Torkzadeh,1991). When users' satisfaction falls short

of their expectations, psychologically, they will reject the system and will refrain from using it (Seddon,1997). Factors affecting end user satisfaction are of critical importance to researchers. It is important to recognize and discuss major determinants of satisfaction in order to be able to have a better understanding of the phenomenon. The predictors most widely studied and related to satisfaction among teachers are computer attitude, internet self-efficacy, computer anxiety, perceived usefulness, perceived ease of use, interaction, flexibility, school management support, training and internal ICT support. These ten factors are grouped under three headings. Teachers' characteristics include computer attitude, computer anxiety and internet self-efficacy, while learning management system characteristics will focus on perceived use, perceived ease of use, interaction and flexibility. Finally, If we expect to see growth in e-learning, in the Malaysian education landscape, then the intangible things like perception of the users; specifically the teachers are equally important as the infrastructure.

4.1. Organisational Characteristics

The responsibility of today's educational leaders is to identify, design and implement appropriate paradigms that are capable of using this mechanism to bring the vision as established in our Malaysian Blueprint to fruition. The importance of the interplay between the organisation and the adoption and implementation of new technology cannot be underestimated. Organisational support represents the degree to which employees perceive that their employers support their participation in the development activities and value their learning through supportive organisational policies such as skill-based pay systems and visible rewards. In accordance with the technology acceptance model, facilitating conditions like training and financial resources have been found to have a direct effect on perceived usefulness when using a system (Wang, Lin & Luarn, 2006). However, a study by Teo and Wong (2013), showed no direct influence of facilitating conditions (training, technical support, peer and organisational support) on satisfaction. Therefore, an understanding of organisational contributions to the success of technology innovation is important as it can better prepare educational leaders to embrace the responsibilities that are required of them.

4.1.1. School Management

Management in schools must create conditions in which educators can continue to grow and learn as professionals. Management support is the key factor in determining teachers' satisfaction towards LMS. Their opened approval, and clear identification of how LMS aligned with the school's vision, are just some of the examples of how management can encourage adoption. A number of past studies have revealed significant relationship between supportive learning environment and satisfaction (Joo, Joung & Son, 2014). The environment as dictated by the management in schools, are crucial, as it facilitates the diffusion process of an innovation. School administrators are seen as key in the implementation of e-learning environments in their schools. It is because through their leadership, provision of training, tools and support can be provided for their teachers. These are essential for a successful implementation. There is a consensus in the literature that management must define a clear strategy for any innovation that would be introduced in order to provide that vision of a common goal. A clear and a well-communicated strategy can help to avoid fragmented and small pockets of adoption (Stiles & Yorke, 2006). Therefore, lack of institutional support may hinder the widespread adoption.

4.1.2. Technical Support

Technical support is deemed essential in the use of a learning management system (Zhao & Bryant, 2006). Without having a quick technical support or knowledge, it may lead to problems and frustrations among the users. Troubleshooting skills are important if ICT is to be used as a reliable tool. Besides relying on technical support alone, teachers are also expected to be self-reliant and to take the initiatives to improve their capabilities. Technology support has been found to have great impact on educators' use of technology as it can boost technology use and acceptance, thus increase likelihood of ICT integration in the teaching and learning processes

(Sanchez & Hueros, 2010). Teachers need a reliable on-site technology support for their day-to-day use of ICT. The paper also found a significant relationship between technical support and professional development which suggests that technical personnel can help teachers to grow and develop their knowledge and skills as the integration process develops.

4.1.3. Training

End-users come replete with ingrained habits of feelings, thoughts and actions (Nelson & Cheney, 1987). To change through training, their normal habits have to be questioned first. Introduce other methods which allow users to experiment with new ways of behaving. Thus, if they find this new way to be more useful, chances are they will continue with this new behaviour. Therefore, trainings designed for end-users must consider their specific job performance's needs and job satisfaction. This must be taken care of before providing them with the most relevant and efficient system and training programmes that are appropriate in their context (Lee, Kim & Lee, 1995). A large amount of training and support for users are needed to help them to be comfortable with the new system and to train them to effectively use ICT in the classroom (UNESCO, 2014). Faculty members were not eager to integrate technology into their classes due to their technological incompetence. They need to be guided in order to overcome their own fears of technology. Knowledge and skills obtained from training, empower teachers to carry out their work effectively and efficiently and this will result in a positive effect on end-user computing satisfaction (Aggelidis & Chatzoglou, 2012).

4.2. Virtual Learning Environment Characteristics

Many studies on the use of VLE has focused on the relationship between VLE quality and satisfaction with the system as information and system quality have been shown to influence satisfaction (Bailey & Pearson, 1983; DeLone & McLean, 1992). Instructors' satisfaction towards the VLE may be impacted to a great extent by system quality. The more functionality and interactivity for example, the better will be its acceptance and utilization. As such, designers should continuously look for opportunities to further improve e-learning platform even those that have already been implemented. A number of characteristics of a system have been proposed and examined in prior studies.

4.2.1. Interaction

Interaction is the key to the continued use of an e-learning system (Pituch & Lee, 2006). Although there are a few studies that suggest otherwise, many other studies claimed it to be a key component of an effective online course (Arbaugh & Rau, 2007). In some studies which looked at student-student interaction, they claimed that interaction helped in creating a sense of community which is an important aspect for the teachers especially when having to learn and use a new innovation in their classrooms (Liu, Magjuka, Bonk & Lee, 2007). Collaboration resulted from interaction between students and instructor or between students through the email, bulletin board and the chat room on the VLE have been found to increase students' satisfaction (Lonn & Teasley, 2009). When students are involved in intellectual exchange with their fellow peers and instructor, they are given the opportunity to articulate their current understanding and refining that understanding after knowing what the others in their online community have in mind. A study which looked at three types of interaction; learner- content, learner-instructor and learner-learner were studied in an attempt to identify predictors of satisfaction in online education courses (Kuo, Walker, Schroder and Belland, 2014). It found learner- content and learner-instructor to be significant predictors of student satisfaction but learner-content was found to be the strongest predictor of the three.

4.2.2. Flexibility

Flexibility is also crucial in promoting satisfaction as it gives students that anytime anywhere access to course content (Selim, 2003). In e-learning context, flexibility in terms of time, location, instructional methods, participation and satisfaction are to be expected. Amongst others, it

eliminates physical barriers and awkwardness of the traditional face-to-face communication. Lu and Chiou (2010) conducted a study on the impact of contingent variables between four predictors and students' satisfaction with e-learning. They found three significant predictors of e-learning satisfaction, perceived flexibility is amongst them. In another study, Sun et. al. (2008) found flexibility is a strong indicator of student satisfaction. This is explained by the fact that many respondents were in continuing education; balancing job, family and work-related activities. Not constrained by time, space and location, students have a high degree of flexibility when enrolled in an e-learning course. Arbaugh (2000) examined factors related to student satisfaction with internet-based courses among students who were doing their graduate management in education. It also found that flexibility had a significant role in predicting satisfaction towards the courses. Flexibility-based advantages like any time and any where are important features for distance-learning mature students in this study.

4.2.3. Perceived Ease of Use

Perceived ease of use refers to the degree to which an individual believes that using a particular system would be free from physical and mental effort (Davis, 1989). It is often considered as a predictor of satisfaction (Aggelidis & Chatzoglou, 2012). The complexity of an information system will definitely hinder acceptance of the system. A study carried out by Teo and Wong (2013) to explore key drivers of e-learning satisfaction among student teachers and found six variables that influence e-learning satisfaction; satisfaction, instructor, perceived usefulness, perceived ease of use, course delivery and facilitating conditions. Analysis of findings confirmed the significant direct influence of perceived ease of use on satisfcation, and it is also has the strongest influence. As such, the researchers suggest e-learning conditions to be managed in such a manner that users need not use much effort to utilise the system. However, they also caution the interdependence of all the variables studied, which means no variable was independent of each other. Therefore, understanding of the key drivers of e-learning satisfaction is important as it will help stakeholders to further maintain or sustain the e-learning satisfaction.

4.3. Perceived Usefulness

Perceived usefulness is defined as the degree of improvement after adoption of a system. When users perceive e-learning to be useful in acquiring the desired skills and knowledge, they are more likely to use the system. Previous studies have shown that perceived usefulness has a positive usefulness on users' intention to use a particular system (Luan & Teo, 2009). It has also been shown to have a direct impact on satisfaction (Sun, Tsai, Finger, Chen & Yeh, 2008). A study has found teachers' behavioural beliefs positively predict the usefulness and ease in which the e-learning is used and they found perceived usefulness significantly influenced student teachers' satisfaction with e-learning (Kao & Tsai, 2009). A study looking at four variables believed to have an impact on website satisfaction and intention to re-use; information quality, system quality, perceived usefulness and social influence. They found perceived usefulness to be a significant predictor of website satisfaction (Schaupp, 2010). They suggest organisation to understand users' needs in order to design a website that would be considered relevant and useful. As they found satisfaction to be a significant predictor of intention to re-use, aligning website designs to users' needs is the most appropriate thing to do.

4.4. User Quality

Users form different perceptions of an e-learning system due to individual attributes. Individual characteristics have been found in previous studies to influence instructors' adoption of the learning system (Teo, 2009). There is a need to examine the opinions of the instructors and their beliefs as their beliefs will influence their technology integration practices (Ottenbreit-Leftwich et al., 2010). In this study, computer attitude, computer anxiety (Harrison & Rainer, 1996) and internet self-efficacy are posited as three factors that are expected to influence satisfaction towards e-learning.

4.4.1. Computer Attitude

Technology-push approaches must consider users' individual differences, personal characteristics, opinions and learning styles (Akkoyunlu & Yilmaz-Soylu, 2008). The attitude that end-users bring in dealing with the e-learning environment is an important factor (Albirini, 2006). Those who have positive attitudes toward technology are more comfortable in using it and thus, are prepared to overcome any challenges. Significance of attitude was derived from the proposition of attitude theorists, Fishbein & Azjen (1975) who claim that users' attitude towards the system that they are using play an important role in influencing their subsequent behaviour towards it. Attitude represents beliefs and feelings that they have towards something. The more positive they are towards the LMS, and they are not afraid of the challenges and complexity of using the system, the more satisfied they will be with the VLE. However, research also caution that attitude can either be changed through training (Pancer, George & Gebotys, 1992) or it can also be stable and unchanging. Igbaria and Nachman's (1990) study found significant relatiosnhip between attitude and user satisfaction. According to the Theory of Reasoned Action, an individual's attitude towards an object plays a important role in influencing his or her subsequent behaviour towards it. As such, we can conclude that teachers' attitude towards the Frog VLE is an important indicator of satisfaction.

4.4.2. 4.4.2 Internet Self-Efficacy

Self-efficacy reflects one's beliefs about the ability to perform certain tasks successfully (Bandura, 1977). Unless teachers believe that they are capable of implementing the innovation in the classroom, that innovation will remain intact and unused. Those who believe strongly in their own ability will persevere despite setbacks and will continue in spite of technical difficulties. It is a belief that one has towards one's own capabilities in performing a particular task (Compeau & Higgins, 1995). Success in using the technology will depend on users' ability to cope with technical difficulty and it is a testament of their confidence in using technology to engage in learning (Gunawardena, Linder- VanBerschot, LaPointe & Rao, 2010). Kuo and Tseng (2014) in his study of 221graduate and undergraduate students found that Internet Self Efficacy was not a significant predictor for student satisfaction although positive correlation between them was found. On the other hand, Gunawardena et al. (2010) examined factors that predict learner satisfaction and transfer of learning in an online educational programme at a multinational corporation. They found online self-efficacy to be the strongest predictor of learner satisfaction. Some other past studies have also found different roles of self-efficacy in an online learning like being the only statistically significant variable that predict learners' intent to participate in future web-based courses and to show acceptance of online education in high-tech companies among employees (Ong, Lai & Wang, 2004).

4.4.3. Computer Anxiety

Anxiety or fear of computers is described as a powerful and widespread psychological phenomenon (Igbaria & Parasuraman, 1989). Computer-related anxiety remains an important issue as the number of online courses have increased over the past few years. Fear and panic inflicted whenever one has to deal with the system will naturally hamper one's satisfaction level. According to Barbeite and Weiss (2004), anxiety is an emotional fear of potential negative outcomes. A study examining key factors that influence 82 instructors' satisfaction of LMS in blended learning found that amongst others, instructors' computer anxiety negatively impacts satisfaction of LMS. It also found that this variable was the key factor in influencing instructors' satisfaction of LMS. The study proposed for organisations to investigate the causes of computer anxiety in order to eliminate it if they want to improve the adoption of LMS in their organisations Al-Busaidi and Al-Shihi (2012).

5. Satisfaction Model

Figure 1. Factors that Predicts Satisfaction towards the Frog VLE

This paper proposed a model (Figure 1) in studying teachers' satisfaction towards the Frog VLE. This paper has identified critical factors that could ensure successful e-learning implementation through better uptake of the learning management system. These factors include user's or in this paper, the teacher's characteristics which include aspects like computer anxiety, computer attitude and internet self-efficacy; the Frog VLE's characteristics which involve aspects like interaction, flexibility, perceived usefulness, perceived ease of use and lastly the organisation's characteristics which focus on training, technical support and school management.

6. Conclusion

Still at its infancy stage of the web-enhanced learning environment in the Malaysian educational environment, more studies that look at teachers' satisfaction towards the Frog VLE is crucial because ultimately any educational change will depend upon what teachers think and do. Cuban (2001) observed that teachers will use technology based on their personal perspectives. As technology adoption lies within the teachers' goals and perceptions, teachers' satisfaction towards the Frog VLE will determine their continued usage. Implementation from top-down without considering their satisfaction will result in dissatisfaction. Social, psychological and learning management system do have a bearing on their satisfaction towards the FROG VLE. Consideration of these factors are necessary in order to ensure sustainability and scalability of the 1Bestari project.

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