Computer Self-Efficacy and Computer Anxiety: The Effects on Technology Acceptance in Implementing Flipped Learning Approach

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ABSTRACT

The technology acceptance model was initially constructed to explain the behavioural intention in adopting and utilising an information system. The model has been widely used to investigate the level of technological innovation adoption, particularly in computers and information systems. This study investigates the effects of computer self-efficacy and computer anxiety on the ESL lecturers' technology acceptance adapting flipped learning approach. 206 Malaysian ESL public university lecturers participated in this study. Structural equation modelling (SEM) was used to analyse the data on the effects of computer self-efficacy and computer anxiety on ESL lecturers' decisions about whether or not to integrate flipped learning in their teaching and learning. The findings show that Malaysian ESL lecturers are not stressed about handling new technology (software or hardware) and possess high computer self-efficacy. This result could help lecturers and stakeholders adapt and integrate flipped learning into teaching and learning.

Keywords: Technology Acceptance, Flipped Learning, Unified Theory of Technology Acceptance And Use of Technology (UTAUT), Technology-Enhanced Education, ESL, Higher Education, Life-Long Learning, 21st Century of Education.

INTRODUCTION

Online learning has been implemented in Malaysia, typically through the Internet. It has widened the accessibility of education and improved teaching and learning using technologies (Rahman et al., 2022). In line with this development, the Ministry of Education, Malaysia, has strategically taken a step ahead by introducing the Malaysia Education Blueprint (2013), which contains 11 operational shifts in achieving the vision of the Malaysian education system. The 7th shift highlights the importance of Information and Communication Technology (ICT). Meanwhile, the ICT based-learning is called Globalised Online Learning (GOL) and is highlighted in the Malaysia Education Blueprint for Higher Education (2015-2025) in the 9th Shift section. Globalised Online Learning (GOL) would enable Malaysia to achieve access, quality and efficiency in higher education. Therefore, to tackle the needs of 21st-century education, technology must be incorporated into instruction, concepts, contents and approaches to teaching and learning (Yeop et al., 2019). In addition, blended learning is also incorporated in this shift or initiative to enhance the quality of teaching and learning. Communication between local and international students can be initiated, providing a meaningful learning environment.

In fulfilling the needs of 21st-century education, Massive Online Open Courses or MOOCs, blended learning and digital technology have been integrated into the Malaysian higher education system. In September 2014, the first-year undergraduate students from four universities: Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM), Universiti Technology MARA (UiTM) and Universiti Malaysia Sarawak (UNIMAS), took compulsory courses using the Massive Online Open Courses (MOOCs) concept. It was significant to our country as it brought students from universities all over Malaysia together on a single platform (Malaysia Education Blueprint, 2015).

Major Concern

Traditionally, the expectation for success in teacher-centric classrooms is very high, where lecturers have the power to design and deliver instructions. This is a way of teaching and learning in the 20th-century pedagogical orientation. However, these days, students' academic success depends on their critical thinking and reasoning skills, technology and research information literacy, communication and collaboration. Hence, teacher-centredness is no longer considered (Bellanca & Brandt, 2010; Darling-Hammond, 2010; Schrum & Levin, 2009; Wagner, 2008; Zmuda, 2010). Previous studies indicate that students nowadays prefer a student-centred learning method with adult assistance (Choy & Delahaye, 2003; Wellen Reiter et al., 2010; Wagner, 2012; Zmuda, 2010).

As there is little research on the integration of education, flipped learning and technology acceptance, it is all to understand the acceptance of new technology to the success and effectiveness of the flipped learning integration with English language teaching. An institution should consider understanding the flipped learning acceptance before investing funds in implementing flipped learning into a compulsory method. Other factors should consider in learning; for example, lecturers' perceptions and interests in using flipped learning approach. On the other hand, universities should also know lecturers' intentions in using flipped learning.

In developing classroom lectures through videos or podcasts, an instructor may face impediments in the flipped classroom, such as time-constraint and lack of energy (Herreid & Schiller, 2013). Albeit the differences between flipped classrooms and digital instruction, most of the flipped classrooms utilise this approach to allocate more class time to promote active learning engagement. To ease the flipping process of the classroom and minimise the efforts needed in creating videos, the instructor can access various online databases of instructional videos, such as Khan Academy and similar resource sites for classroom use (Bergmann & Sams, 2012; Khan, 2011). One can access the additional online database sources to implement the assessments for mastery learning or find suggestions for classroom activities and peer instruction concept tests (Fagen et al., 2002). There are a few additional challenges the faculty are facing-shift with a flipped classroom model (Aronson et al., 2013). Several concerns on initial course redesign have been identified through their research. The faculty needs additional time and effort to form their courses into a flipped model. The faculty may be teaching many courses at different locations and may have other formal duties that may hinder the required initial effort.

There are various studies investigating gender differences in technology acceptance. However, those studies are limited (Mahmood & Swanberg, 2001). Earle (2002) proposed the concept of wholeness in technology integration. For example, in teaching using technology, pedagogy and content are the key elements in teaching and learning. However, the pedagogical skill to incorporate technology in teaching and learning is crucial in accomplishing the concept of wholeness. Simply using technology to teach is not considered incorporating technology. Educators need to be creative in putting and incorporating technology into teaching. Williams (2003) mentioned technology integration is not only to be supported in instructional tools; it is essential to incorporate technology in learning activities too. Many other factors influence technology integration, such as educational level and experience, educators' gender and age, experience in technology and attitude towards technology (Schiller 2003). However, in comparison between males and females, it is found that female educators use less technology than male educators. Female educators have limited access to technology, have a lower level of interest in technology, and lack skills in technology (Kay, 2006; Volman & van Eck, 2001; Wozney et al.,2006).

Gender differences have been studied in a variety of areas. Okazaki and Santos (2012) used Structural Modelling Analysis (SEM) and found significant differences between males and females. In perceived usefulness, males have stronger attitudes compared to females. In Taiwan, Ong and Lai (2006) found out that females prefer the importance of the ease of use of e-learning while males prefer the perceived usefulness. Islam et al. (2011) mentioned that females face technical barriers to understanding e-learning in Malaysia.

Meanwhile, in Singapore, Liaw and Huang (2011) concluded that male students have a positive attitude towards e-learning compared to female students. Milis et al. (2008) found that females think the new system is complicated compared to males. This contradicts a case in Malaysia by Raman et al. (2014), where the use of Moodle was investigated. They found no significant relationship between gender and performance expectancy, effort expectancy, and social influence towards behavioural intention. There was a similar case in Nigeria where

Egbo et al. (2011) mentioned that female students are more predetermined to use ICT than male students. Meanwhile, in India, there is no gender difference in students" attitudes towards e-learning (Suri & Sharm, 2013).

Technology Acceptance Model

Many advancements and modifications have been made in predicting user acceptance of new technology over the last decade (Rahman et al., 2019). Scientists have investigated the impact of attitudes toward user behaviour since 1918 (Al-Qeisi, 2009). Many technology acceptance models have been established ever since (Rahman et al., 2021). However, Technology Acceptance Model (TAM) by Davis et al. (1989) is relatively inclusive, and it is the most influential model because it has several empirical pieces of evidence (Althunibat et al., 2012).

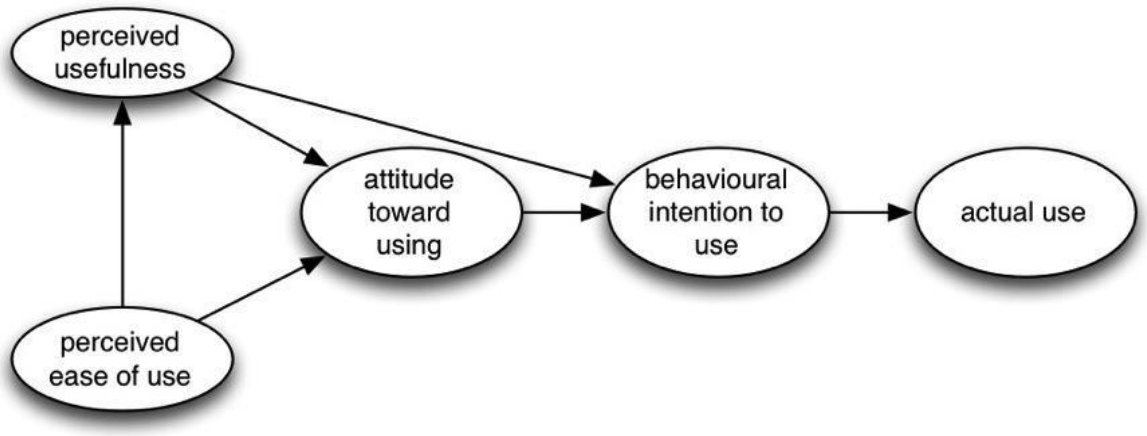

Figure 1 Technology Acceptance Model (Davis et al., 1989)

The two main factors in TAM are perceived usefulness and ease of use. These two factors are the determinants in predicting the attitude towards using a specific system or technology and determining the behavioural intention in using the technology. It also generates the actual use of behaviour (Davis et al., 1989). The technology acceptance model has been applied in various studies and fields, including business, library sciences, and medicine.

Table 1 The extended variables of the technology acceptance model

No	Model	Extended Variables
1.	Technology Acceptance Model (Hu et al., 2003)	Job Relevance, Compatibility, Computer Self-Efficacy & Subjective Norms.
2.	A Model Developed by Wu et al. (2008)	Perceived Fit & Computer Self-Efficacy.
3.	Proposed Model (Inan & Lowther, 2010)	Overall Support, Technical Support, Computer Availability, Computer Proficiency, & Teachers' Readiness.
4.	Pre-Service Educators' Use of Technology for Student-Centered Learning (Chen, 2010)	Context, Training, Value & Efficacy
5.	Adapted Technology Acceptance Model (Holden & Rada, 2011)	Technology Self-Efficacy
6.	Modified Technology Acceptance Model (Phua et al., 2012)	Perceived Enjoyment.
7.	Integrated Model (Teo & Schaik, 2012)	Self-Efficacy, Facilitating Conditions, Subjective Norm

8.	A Model Developed by Moses et al. (2013)	Attitude toward Laptop Use
9.	The Proposed Model by (Tarhini et al., 2016)	Quality of Work Life, Social Norm
10.	The Extended Model (Gyamfi, 2016)	Pedagogical Beliefs
11.	Extended technology acceptance model for learning management systems by (Fearnley & Amora, 2020)	System Quality, Actual Use
12.	A Framework for Students' Acceptance of AR by (Ping & Liu, 2020)	Perceived Enjoyment
13.	The Propose Conceptual Model by (Fauzi et al., 2021)	Price Value

Table 1 shows the extended variables from eight different studies that adapted Technology Acceptance Model into newly modified ones. The most frequent variable used by the eight researchers is self-efficacy (including computer self-efficacy, technology self-efficacy, and efficacy). The second one is facilitating conditions (including training, computer availability, and overall and technical support). The others are subjective norms, teachers' readiness, perceived fit, perceived enjoyment, context, and value. More research on technology acceptance models has been done for the past five years, and more extended models can be found looking at the different perspectives. The extended variables are the quality of work-life, social norms, pedagogical beliefs, system quality, actual use, perceived enjoyment, and price value. The findings of various extended variables show that Technology Acceptance Model is a versatile model that can be adopted and adapted regardless of the sample, population, or field. It can be adapted as long as the main focus of the study is to look for any technology acceptance towards a new technological-based approach or pedagogies or acceptance towards the existing ones.

Aims And Hypotheses

This study intended to examine the effects of computer self-efficacy and computer anxiety on the ESL lecturers' technology acceptance in adapting flipped learning approach. This study also examines the moderation effect between male and female lecturers on computer self-efficacy and anxiety. Thus, The research hypotheses of this study are as follows:

H_1: Computer self-efficacy does not significantly affect the ESL lecturers' technology acceptance in adapting flipped learning approach.

H_2: Computer anxiety does not significantly affect the ESL lecturers' technology acceptance in adapting flipped learning approach.

H_3: Gender (male) does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach.

H_4: Gender (female) does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach.

H_5: Gender (male) does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach.

H_6: Gender (female) does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach.

METHODOLOGY

This research used a quantitative approach. In this study, the researchers investigated whether computer self-efficacy and computer anxiety significantly affect ESL lecturers' technology acceptance. In answering the research objective, four public universities were chosen for this study. Cluster sampling was used to select

universities, as it is the most time- and cost-efficient probability design for large geographical areas. A larger sample size can be used to increase the accessibility of the sample group members. In clustering the sample, the researchers categorised all universities under their region as a sampling frame.

Additionally, each cluster was then numbered 1 up to 19. Lastly, cluster sampling was chosen using systematic random sampling, and each university represents the sample of this study. Since this study covers large and different geographical areas, only one university was selected from each region. The target populations of this study were ESL lecturers from selected universities: Universiti Utara Malaysia, Universiti Kebangsaan Malaysia, Universiti Teknikal Melaka and University Malaysia Pahang. In this study, the ESL lecturers from each university were selected according to their faculty or department. After the universities had been decided, all selected ESL lecturers were involved in this survey.

Unidimensionality, Convergent Validity and Reliability

Unidimensionality is achieved when all measuring items have acceptable factor loadings for the respective latent construct (Zainudin, 2014). To ensure the unidimensionality of a measurement model, any item with a low factor loading should be deleted. The CFA method can assess the unidimensionality, Validity and Reliability of a latent construct (Zainudin, 2014). The convergent validity could be verified by computing every construct's Average Variance Extracted (AVE). The Composite Reliability (CR) indicates a latent construct's reliability and internal consistency. The value of AVE should be 0.5 or higher for this validity to be achieved, while a value of CR > 0.7 is required to achieve composite reliability for a construct (Hair et al., 2006).

Table 2 CFA results for computer self-efficacy

Construct	Item	Factor Loading	AVE (above 0.5)	CR (above 0.6)
Computer Self-Efficacy (CSE)	I feel confident in understanding terms relating to computer software	0.770		
	I feel confident in handling data storage correctly.	0.759		
	I feel confident in learning advanced skills within a specific programme (software)	0.904		
	I feel confident in using the computer to analyse number data	0.774		
	I feel confident in writing simple programmes for the computer.	0.762		
	I feel confident in describing the function of computer hardware	0.876	0.941	0.960
	I feel confident in understanding the 3 stages of data processing: input, processing, output.	0.906		
	I feel confident in getting help for problems in the computer system.	0.880		
	I feel confident in storing software correctly.	0.868		
	I feel confident in explaining why a programme (software) will or will not run on a given computer.	0.836		
	I feel confident in troubleshooting computer problems	0.739		

The Average Variance Extracted (AVE), factor loading and Composite Reliabilities (CR) are presented in Table 2. As the table above shows, all factor loadings are greater than 0.6, ranging from 0.739 to 0.906. The Average Variance Extracted also shows a value of more than 0.5 (AVE=0.941). This satisfied that convergent validity has been established. Meanwhile, the Composite Reliabilities of the Computer Self-Efficacy (CSE) construct have a value higher than 0.60 (CR=0.960), indicating adequate internal consistency.

Table 3 CFA results for computer anxiety

Construct	Item	Factor Loading	AVE (above 0.5)	CR (above 0.6)
Computer Anxiety (CA)	I have a difficulty in understanding the technical aspects of computers.	0.905		
	It scares me to think that I could cause the computer to destroy a large amount of information by hitting the wrong key.	0.824	0.777	0.933
	I hesitate to use a computer for fear of making mistakes that I cannot correct.	0.927		
	You have to be a genius to understand all the special keys contained on most computer terminals.	0.867		

The Average Variance Extracted (AVE), factor loading and Composite Reliabilities (CR) are presented in Table 3. As the table above shows, all factor loadings are greater than 0.6, ranging from 0.824 to 0.927. The Average Variance Extracted also shows a value of more than 0.5 (AVE=0.777). This satisfied that convergent validity has been established. Meanwhile, the Composite Reliabilities of the Computer Anxiety (CA) construct has a value higher than 0.60 (CR=0.933), indicating adequate internal consistency.

Convergent Validity and Reliability

Evidence of convergent validity can be achieved in two ways; the first way is through the achievement of criteria, and the second is through the model comparison test. In the SEM / PLS approach, a measurement has met convergent validity when it meets several conditions (Hair et al., 2010; Koo et al., 2009). i) Has a minimum indicator or item reliability of 0.5; ii) Has composite reliability higher than 0.7; iii) The average of variance extracted (AVE) is at least 0.5.

Table 4 Convergent validity and reliability

Construct	AVE	Cronbach's Alpha
Computer Self-Efficacy	0.941	0.956
Computer Anxiety	0.777	0.932

The summary of the average variance extracted is presented in Table 4. As the table shows, all AVE values are greater than 0.5, with almost all values above 0.70, demonstrating convergent validity. This study satisfied these criteria; hence convergent validity has been established. The reliability test is mainly carried out to diagnose the consistency of the scales of each construct. Cronbach's alpha is used to measure the coefficient scale for reliability, and generally, a value of 0.7 and above is accepted. The table above shows that all variables in this study have a Cronbach's Alpha value above 0.90, which suggests the scale used is highly reliable.

FINDINGS

H_1: Computer self-efficacy does not significantly affect the ESL lecturers' technology acceptance

in adapting flipped learning approach.

Construct			Coefficients		P	Result
			Unstandardised	Standardised		
ATT	←	CSE	-0.029	-0.026	0.607	Not Significant

The table above shows that computer self-efficacy does not significantly affect the ESL lecturers' technology acceptance in implementing flipped learning approach (β = - 0.026, p-value > 0.05). Thus, hypothesis H_1 was supported.

H_2: Computer anxiety does not significantly affect the ESL lecturers' technology acceptance in adapting flipped learning approach.

Construct			Coefficients		P	Result
			Unstandardised	Standardised		
ATT	←	CA	0.021	0.025	0.482	Not Significant

The table above shows that computer anxiety does not significantly affect the ESL lecturers' technology acceptance in implementing flipped learning approach (β = 0.025, p-value > 0.05). Thus, hypothesis H_2 was supported.

H_3: Gender (male) does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach.

	Constrained Model	Unconstrained Model	Chi-Square Difference	Result on Moderation	Result on Hypothesis
Chi-Square	955.150	952.131	3.019	Not Significant	
DF	357	356	1		
H_3	Gender (male) does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach.				Failed to reject

The moderation test is insignificant since the difference in the Chi-Square value between the constrained and unconstrained models is less than 3.84. Thus, the researcher concludes that moderation does not occur on that path. Gender does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach (DF = 3.019 < 3.84); in other words, moderation does not occur on that path. The test of the moderation hypothesis found that the moderator variable "respondents' gender" does not moderate the causal effects of computer self-efficacy on attitude.

H_4: Gender (female) does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach.

	Constrained Model	Unconstrained Model	Chi-Square Difference	Result on Moderation	Result on Hypothesis
Chi-Square	965.519	963.296	2.223	Not Significant	
DF	357	356	1		

H_4	Gender (female) does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach.	Failed to reject

The moderation test is insignificant since the difference in the Chi-Square value between the constrained and unconstrained models is less than 3.84. Thus, the researcher concludes that moderation does not occur on that path. Gender does not moderate the relationship between computer self-efficacy and ESL lecturers' technology acceptance in adapting flipped learning approach (DF = 2.223 < 3.84); in other words, moderation does not occur on that path.

H_5: Gender (male) does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach.

	Constrained Model	**Unconstrained Model**	**Chi-Square Difference**	**Result on Moderation**	**Result on Hypothesis**
Chi-Square	954.533	952.131	0.141	Not Significant	
DF	357	356	1		
H_5	Gender (male) does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach.				Failed to reject

The moderation test is insignificant since the difference in the Chi-Square value between the constrained and unconstrained models is less than 3.84. Thus, the researcher concludes that moderation does not occur on that path. Gender does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach (DF = 0.141 < 3.84); in other words, moderation does not occur on that path. The test of hypothesis for moderation that has been carried out found that the moderator variable "respondents' gender" does not moderate the causal effects of computer anxiety on attitude.

H_6: Gender (female) does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach.

	Constrained Model	**Unconstrained Model**	**Chi-Square Difference**	**Result on Moderation**	**Result on Hypothesis**
Chi-Square	964.521	963.296	1.225	Not Significant	
DF	357	356	1		
H_6	Gender (female) does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach.				Failed to reject

The moderation test is insignificant since the difference in the Chi-Square value between the constrained and unconstrained models is less than 3.84. Thus, the researcher concludes that moderation does not occur on that path. Gender does not moderate the relationship between computer anxiety and ESL lecturers' technology acceptance in adapting flipped learning approach (DF = 1.225 < 3.84); in other words, moderation does not occur on that path.

DISCUSSION

In evaluating the relationship, the result shows that the null hypothesis has been accepted. Results from Structural Equation Modelling (SEM) revealed that the p-value for the regression path coefficient (attitude←computer self-

efficacy) was 0.607, indicating that the null hypothesis was rejected. This shows there is no significant relationship between computer self-efficacy and attitude. Computer self-efficacy is a judgment of one's ability to use technology to accomplish a particular job or task. Computer self-efficacy is hypothesised to be one of the important factors in Malaysian ESL lecturers' technology acceptance in implementing flipped learning. However, the result of this study shows otherwise. Computer self-efficacy has no significant relationship with Malaysian ESL lecturers' technology acceptance towards flipped learning. This result is similar to John's (2015) and Sheng et al. (2003) study.

Contradictory to the result of this study, a few studies show that computer self-efficacy is a strong predictor in integrating technology (Inan & Lowther, 2010; Wu et al., 2008). Several other studies show a significant relationship between computer self-efficacy and users' attitudes towards integrating flipped learning. Conlon and Simpson (2003), Cuban (2001) and Watson (2001) found many studies that show the educator's resistance to using TPACK is probably due to technology-illiterate. The respondents also claimed that using technology is time-consuming. Users possessing higher computer self-efficacy resulted in a higher confidence level in managing computer software and hardware (Agarwal & Karahanna, 2000; Delcourt & Kinzie, 1993; Fagan et al., 2004; Sam et al., 2005; Teo & Koh, 2010; Woods 1999). Since many results show a strong relationship between computer self-efficacy and technology acceptance, it is best believed that computer self-efficacy is a strong predictor in determining the users' attitude towards technology. Therefore, it is suggested that more studies are needed to explore the role of computer self-efficacy in influencing Malaysian ESL lecturers' acceptance towards flipped learning.

In analysing the relationship between computer anxiety and Malaysian ESL lecturers' acceptance towards flipped learning, the result shows that the null hypothesis has been accepted. Results from Structural Equation Modelling (SEM) revealed that the p-value for the regression path coefficient (attitude←computer anxiety) was 0.482, indicating that the null hypothesis failed to be rejected. This shows that there is no significant relationship between computer anxiety and acceptance. Computer anxiety signifies anxious or emotional reactions when presenting a behaviour. In integrating technology into higher education, researchers have proposed that high computer self-efficacy and low computer anxiety are a few of the important factors (Busch, 1995). This study shows that computer anxiety does not influence ESL lecturers' acceptance towards flipped learning. The survey responses show that ESL lecturers have no difficulties managing basic computer skills, such as interpreting computer printouts. However, they might have challenges managing the technical parts of integrating new software. This result is similar to a study by Jon (2015) that computer anxiety is found to be insignificant with the acceptance of technology.

However, this result contradicts the previous studies that implementing technology could succeed for participants with little or no computer anxiety. The previous studies confirmed that computer anxiety is a significant factor in determining the users' acceptance towards technology (Agbatogun, 2010; Drundel & Lightbody, 1994; Fagan et al., 2003; Hackbarth et al., 2003; He & Freeman, 2010; Raaij & Schepers, 2008; Thatcher & Perrewe, 2012; Y. J. Kim et al., 2009). Even though the result from this study shows that computer anxiety is not significant and a large number of previous studies have proved that computer anxiety is a strong predictor towards the users' acceptance of using technology, it is believed that this trend is due to several factors. The factors could be varied, for example, the nature of the settings, the number of participants that took part in this study, the age of the respondents, their educational background, and the technology exposure the participants have had. In conclusion, it is best believed that a lower level of computer anxiety could influence one's acceptance towards technology. Hence, it is suggested that more studies are needed to examine the role of computer anxiety, especially in integrating technology into education and predicting attitudes and intentions in using flipped learning.

Gender differences among ESL lecturers were investigated regarding their acceptance towards flipped learning. The overall result shows that gender has little effect. From the result, it can be assumed that female lecturers have a stronger attitude towards flipped learning, especially when they know or know its benefits and get moral and technical support from friends and authorities. This result is similar to a few studies that found gender has little or almost no differences in incorporating technology in teaching and learning (Raman et al., 2014; Suri & Sharm, 2013; Kay, 2006; Norris et al., 2003). The result of this study is also similar to Oz (2015), where the application of TPACK shows that female lecturers have greater development in accepting technology compared to male lecturers.

In addition, the result is also similar to the findings of Ong and Lai (2006) and Egbo et al. (2011), where female lecturers prefer the benefits and importance of ease of use compared to male lecturers. However, the result contradicts a few studies that found that male lecturers have greater attitudes than female lecturers. They claimed that male lecturers have stronger attitudes, higher ability, are more open towards new technology and possess higher scores in mastering technology; compared to female lecturers who face technical barriers, think technology is complicated, take longer time to accept and to get used to new technology, have limited access to technology, have a lower level of enthusiasm and interest, and lack of skills (Islam et al., 2011; Liaw & Huang, 2011; Milis et al., 2008; Volman & van Eck, 2001; Wozney et al., 2006; Broos, 2005; Houtz & Gupta, 2001; Venkatesh & Morri,s 2002; Anderson et al., 2008).

Implications

Several implications can be drawn from this study. Methodologically, the reported results of this study are inconsistent with the previous research that also used technology acceptance models. It may be due to the different data analysis techniques, population, country, and culture. This study employed Structural Equation Modelling (SEM) and tested relationships between variables. This study has potential pedagogical implications for flipped learning. The framework used in this study can help decision-makers implement or improve the existing flipped learning in Malaysian universities. It helps academicians and administrators understand the determinants or predictors of flipped learning acceptance; thus, they can incorporate these factors in designing, implementing, and improving phases. They can focus their resources on the strongest area with the most influential effect on flipped learning. They might want to consider the weak areas by improving and modifying them.

On the other hand, flipped learning could provide a whole new learning style. It is also can reinforce ESL/EFL learning as technology stimulates flexibility and customizability and, at the same time, omits the stereotype that teaching English is difficult. As flipped learning also promotes autonomous learning, students can learn at their own pace and time. Hence, the need for ESL lecturers to always aid and guide ESL learners can be eluded.

CONCLUSION

From the policy perspective, it is believed that flipped learning should be introduced to private universities, polytechnics, community colleges, college universities, and schools. Policy-makers can consider the flexibility of evaluation and the infrastructure in obliging the learning environment. For example, the 14 weeks of a lecture can be divided into 8 weeks of flipped orientation classes and the next 6 weeks for evaluation and assessments. Institutions should have basic technology elements such as smart television, laptop or iPad in a flipped classroom environment. To demonstrate the usage of this technology, for instance, a classroom could be equipped with lightweight tables so students can easily move around, sit in a group, and ease their mobility to meet the purpose of the particular lesson. Policy-makers can also decide how to train lecturers to use flipped learning effectively to enhance the learning of ESL. They can provide technological-based training so lecturers can apply it in their classrooms.

Lecturers can also join selected training courses such as the Apple Teacher program, where they can learn to utilise the applications in the iPad or Macbook and create interesting and active learning for their lessons. Thus, there is a need to create an execution strategy to warrant the success of the implementation. It is vital to note that the choice and the utilisation of technology depend on the learners' and educators' needs. Technology, by any chance, could support teaching and learning activities, according to individual preferences, from time to time. This flipped learning approach being introduced may not be accepted well by lecturers. Thousands of technologies can be integrated. Nonetheless, there is much to be studied, especially their acceptance of technology, the implications, and the future style of teaching and learning.

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Conflict of Interest

There is no conflict of interest.

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