Introduction

Technology is growing rapidly and affecting every aspects of our lives from communicating to lifestyle; education is no exception as well (Yemma 2015). The 21st century education pushes educators and stakeholders to explore the best initiative in providing students with meaningful learning in the classroom. Yeop (2019) suggests that in tackling the needs of the 21st century education, the integration of technology is a must and it should be incorporated in the syllabus, instructions and the teaching and learning approach. Our education system has changed immensely to cater the needs and challenges of 21st century education. The Ministry of Education Malaysia has initiated the ICT based-learning called Globalized Online Learning (GOL) and highlighted in the Malaysia Education Blueprint for Higher Education (2015-2025) and declared in the 9th Shift division. In this powerful technological era, educators have to succumb to the greater demands especially from students' preferences that parallel with rapid changes of new technologies (Jones 2016). Flipped learning is one of the newest versions of technology-based learning and fl ipped learning is a one part of the blended learning. Staker & Horn (2012) explain that there are four elements in blended learning elements which are rotation model, fl ex model, self-blend model and enriched-virtual model.

Figure 1 shows the blended learning model by Staker & Horn (2012). Flipped learning is a one of the elements under the rotation model. If blended learning incorporates half of the learning online and another half in class, fl ipped learning is slightly different. The foundation of fl ipped learning

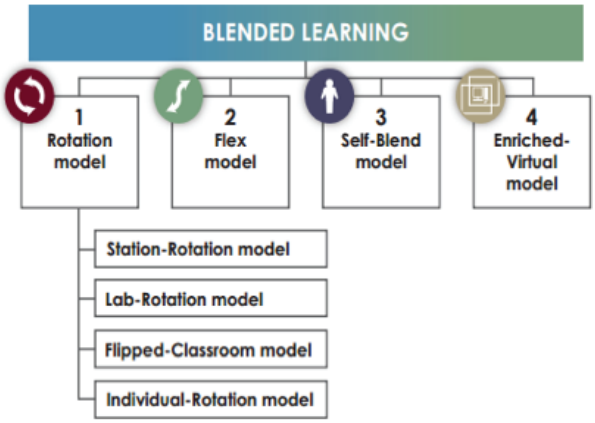

FIGURE 1. Blended Learning Model (Staker & Horn 2012)

is that the content of knowledge is given before the class time. Meanwhile, during face to face session, students are expected to do related activities to deepen their understanding towards the knowledge that they have learned on their own at home. In-class activities emphasize the cooperative learning and problem solving as well as the knowledge retention (Kaur et al. 2017).

Flipped Learning

Aaron Sams and Jonathan Bergmann – as in Sams & Bergmann (2013) – pioneered fl ipped learning in the year of 2007 when their students missed too many classes for basketball games, trainings and tournaments. Teachers had to repeat the important lessons for them as they missed the crucial contents (Hamdan et al. 2013a). They fi gured out a better solution by recording the lectures using screen-casting software during spring of 2007. They had a creative idea by recording instructions and use class time for meaningful activities such as questioning and answering session. Flipped learning has gained its popularity ever since (Sams & Bergmann 2013). The main determination of applying fl ipped learning is to expand the face-to-face time between teachers and students in the classroom. In the traditional classroom, many instructors use the classroom to do the lecture and not controlling the activities with the students. However, Sams and Bergmann (2013) suggest that teachers should spend the face-to-face time with students by applying the higher level of Bloom's Taxonomy; and that the lower level of Bloom's Taxonomy should be pushed outside of the classroom. That seems to provide a lot of obligations for teachers. However, fl ipped learning is not a one-size-fi ts-all approach. It can be used in many different situations. A lesson can also be fl ipped or not to be fl ipped depending on the requirement and the objectives of the session itself.

There are two signifi cant keys in fl ipped learning approach according to Howitt & Pegrum (2015). The fi rst key is students' fl exibility to change at their own pace as they work out of the class. They can also watch different videos that appropriate with their levels and interest. This could help with distinction, personalization of learning as well as promotes student self-learning. The second one is, when students are well equipped before class, students are attentive and prepared for in class lessons. Class times are meant for discussion, collaborative

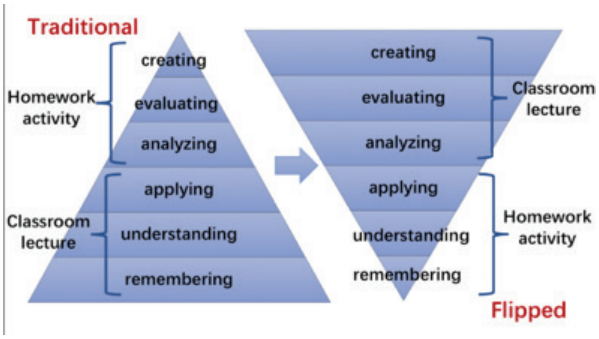

FIGURE 2. The Bloom's Taxonomy; Traditional Model vs Flipped Model

review, interaction and hands-on activities. Hence, the higher order skills can be employed in class with the help of peers and teachers. As supported by Vygotsky (1978), meaningful learning takes place when students correspond actively with teachers and peers, participate actively in the learning development. In the other hand, teacher could put further attentiveness to those who are struggling and need for extra help in learning. It can be summarized that it is not only videos or materials that important, but it is how they support the overall learning approach (Tucker 2012). This approach is not only assimilating constructivism theory, but transformative learning theories is also related with the constructivism within this methodology (Bergmann & Sams 2012). In order to incorporate reflection and action learning, instructors should provide more chances for students to apply new information (Taylor 2013).

The best way to define flipped learning features is by the F-L-I-P model (Hamdan et al. 2013b). Figure 3 shows the four pillars of flipped learning approach.

The first pillar, Flexible Environment or F characterises the variety of learning modes that can be applied inside and outside the classroom. This permits students to learn on their own way and on

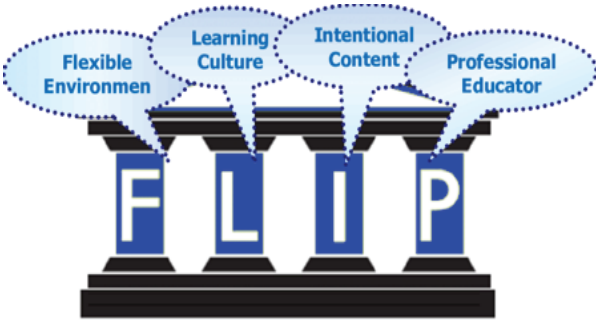

FIGURE 3. Pillars of Flipped Learning

their own speed. The second pillar, Learning Culture or L signifies the learner-centred approach, where in class time is meant for discovering in depth of particular topics and producing rich learning opportunities. Thus, students involved in active knowledge construction and gained important learning. This is contrast to the conventional teacher-centred where the teacher is the main source of information. The third pillar is I, or Intentional Content. Flipped learning instructors or educators always consider on how this model could benefit students to develop conceptual understanding and the procedural fluency. Instructors or educators regulate what they want to teach, and which supplies should they use so that students can discover on their own. Instructors or educators should embrace student-centred approach, active learning approaches, depending on the subject matter and grade level. The last pillar is the Professional Educator or P. It embodies the role of a professional educator. Educators must observe their students, give response, and evaluate their work. They must also be contemplative in their practice, always improvise their commands, accept disparagement, and able to control chaos in their classrooms. Even though educators play less noticeably roles in flipped classrooms, they remain the most important ingredient that allows flipped learning to happen. Chen et al. (2014) support that in flipped learning, educators play even more critical role compared to the traditional classroom.

As part of the blended learning, flipped learning is a reverse approach of the traditional lecture and it is frequently regarded with the integration of the technology. Since flipped learning is a teaching approach, it allows educators to be creative in executing the lesson (Jia 2017). Flipped learning also is expected to be a major approach in the higher education institutions in these five years as it is practicing active learning (Johnson et al. 2016). While students learn through problem-solving, active and creative activities, flipped learning cultivates students' capability in critical thinking skills (Zainuddin & Perera 2019).

There are benefits and downsides in every initiative. So does the flipped learning. However, if flipped learning is used correctly, the benefits are enormous. In this 21st century students are well equipped with gadgets. It is rarely situation to see a student without a gadget nowadays (Defour 2013). They grow up with the Internet and social media. Bergmann and Sams (2012) say that students were being excited to flipped learning only for the

first few weeks, more than that; they reacted like nothing is new. Hence, they concluded that students could easily accept the new instructional shift in the classroom. Since students nowadays are very fond with technology, there is a need to teach the students in creative ways, having the immediate and continuous feedback to acknowledge their efforts and provide with necessary information (Long 2016).

Another benefit of flipped learning is the face-to-face time spent with teachers and peers. Flipped learning offers more time for feedback between teachers and students and better interactions between teachers and students (Goodwin & Miller 2013). Bergmann (2011) adds that by using flipped learning, he could talk to every student, every day like he has never done before in his previous 20 years of teaching. Fulton (2012) adds that students have the opportunity to learn at their own pace. If they absent, they still receive the same instructions as their peers did. Compared to the in-class lecture, students cannot stop the teachers or ask them to repeat the necessary information. Let alone if the student is shy. He or she will just keep quiet for the rest of the class (Springen 2013). It is a bonus for teachers too since teachers do not have to repeat themselves in class. By having the activities in the classroom, teacher will be able to trace students' difficulties and interest. Therefore, teachers can make adjustment in the curriculum to meet the students' needs (Fulton 2012b). Nevertheless, according to Driscoll & Petty (2013), students are practicing autonomous learning with the help of the technology.

Flipped learning classroom promotes the good learning vibes to both teachers and students. Flipped learning resulted in high level collaborative work, in-depth discussion, and better interaction with teachers and peers mainly because students are well prepared for the lecture (Clark 2015). The good environment also could help students in promoting their problem-solving skills as well as revising their own knowledge structure (Jia 2017). In addition, flipped learning enables students to make their own decision and creates more chances in collaborative learning with teachers and peers (Hill 2006).

Flipped learning on the whole is focusing on the practice of student-centred learning rather than teacher-centred learning. This will allow students to be dynamic and personal (Munir et al 2018). In student-centred learning practice, students have more responsibility to learn compared to the teacher-centred learning practice, teachers have more responsibility to transfer and deliver the knowledge. Students should be more aware of their roles in deepening their own knowledge rather than waiting for teachers to spoon-feed them (Khalil et al 2017). Moreover, this practice could enrich students' motivation level.

One of the reasons teachers implement flipped learning is because it provides collaborative learning between students (Roach 2014). Two heads are definitely better than one. A study from Jung et al (2002) shows that students rate collaborative learning as the highest outcome, and they enjoyed the learning environment. The result also states that by having the collaborative learning, students can enhance their confidence level and practice critical thinking skills. Bergmann and Sams (2012) explain that by having flipped learning, teachers are able to enhance their teaching skills and developing interesting teaching materials. Mehring (2014) found out in his study that Japanese students are expressing their thoughts more in the flipped classroom compared to the traditional classroom. Fulton (2012) also adds that teachers can share and exchange teaching materials with the other teachers and they can evaluate each other's' materials in order to make sure it meets the purpose of the lesson.

Technology Acceptance Models

Over the last decade, advancement has been made to explain and predict user acceptance of information technology regardless the field of studies. Individual's behaviour has been investigated by scientists in 1918-1970 through the impact of attitude (Al-Qeisi 2009). Attitude has either direct or indirect effect towards one's behaviour and it might develop by multidimensional or unidimensional factors. It is crucial to understand the development of technology acceptance model to see how the model has been growing and improvising in order to cater researchers' needs. There are various models of technology acceptance however this study employs only Technology Acceptance Model 3 (Venkatesh & Bala 2008).

This study uses two of the four anchors of Technology Acceptance Model 3 (TAM 3) in understanding the relationship between computer self-efficacy and computer anxiety towards Malaysian ESL lecturers' attitude in incorporating flipped learning approach.

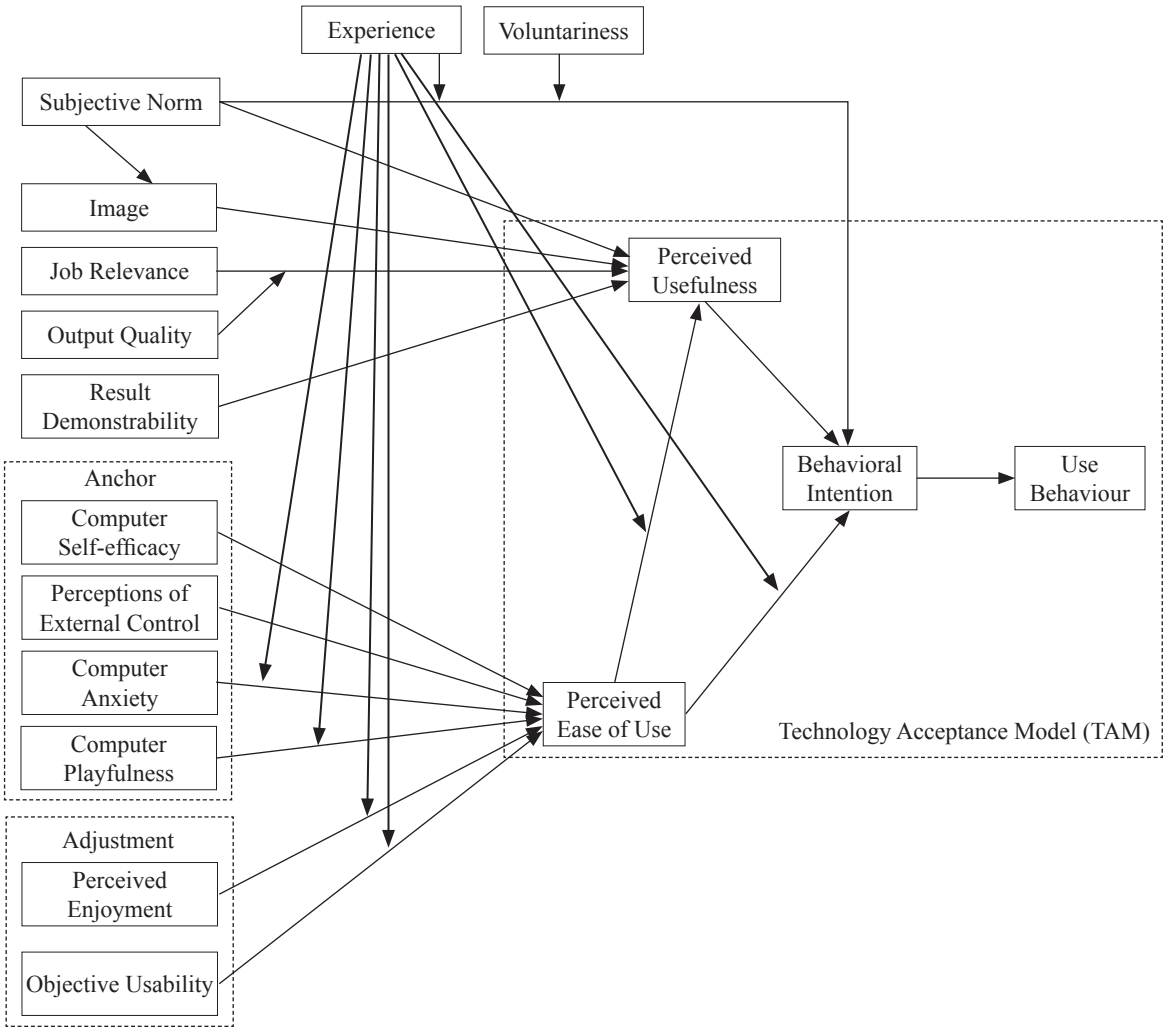

FIGURE 4. Technology Acceptance Model 3 (TAM3) (Venkatesh & Bala 2008)

Computer Self-Efficacy

Computer self-efficacy is defined as judgment of one's capability to practise a technology to complete a particular job or task. Computer self-efficacy is part of self-efficacy. Wood and Bandura (1989) describe self-efficacy as belief in one's capability to assemble the motivation, cognitive possessions and certain movements to supply for the requests. The higher people professed their self-efficacy, the longer they tolerate their effort in presenting a task (Bandura 1986). However, Delcourt & Kinzie (1993) states that computer self-efficacy relates to the degree to which computer users are self-assured in handling computer as well as the capability to understand and employ the computers skills. High level of computer self-efficacy will result in higher confident level in managing computer software and hardware. Moreover, those who develop lower computer self-efficacy will have difficulties in using computers. In addition, Agarwal et al. (2000) found that there are two types of computer self-efficacy which are general and task specific self-efficacy. General self-efficacy is a verdict of one's capability in managing computers over typical areas of information, while task specific means a specific duty in a particular setting within a computer.

Sam et al. (2005) propose that computer self-efficacy is a part of essential factors in learning and mastering computer skills. Possessing high computer self-efficacy is vital to use technology (Busch 1995). In their study, they also claim that students who develop some experience in running computer may lead them to judge the computer related courses are easy. However, those with lower level of confidence might accomplish inadequately in computer-based assignments. This is why computer self-efficacy is needed to be reviewed to see the significant relationship between lecturers' attitude towards flipped learning and lecturers'

computer self-efficacy. A study found by Fagan et al. (2003) confirm that computer experience has significant correlation with computer self-efficacy and computer anxiety. Teo and Koh (2010) sustenance the findings that those who have high level of computer self-efficacy are more probable to accomplish the task productively. Moreover, Woods (1990) mentions that teachers with high computer self-efficacy are anticipated to incorporate technology in classrooms. Teachers' belief on their computer self-efficacy is the core motivation in determining whether they will get profit from operating computer in teaching and learning. He also states that many fresh teachers are more skilled in handling computers that the experienced co-workers.

Computer Anxiety

There is no certain definition of computer anxiety. Term such as fear, distress, uncomfortable, phobia can be interchangeably indicating anxiety (Sangi & Bagheri 2016). McNamara & Deane (1995) says when someone is being triggered whilst using a computer, it could lead him or her to psychological distress. Computer anxiety is defined as signs of worried or emotional responses when it comes to presenting a behaviour. Herdman (1983) and Chua, Chen, & Wong (1999) also defined computer anxiety as a terror of using computers (or technology) or fearing the possibility of using one. However, it is dissimilar from negative attitude towards computers that necessitate beliefs and feelings about computers rather than one's emotional reaction towards managing computers (Heinssen et al. 1987).

Computer anxiety is portrayed as an effective response, an emotional fear of potential negative consequences such as damaging the equipment or looking foolish. From an information processing perception, the negative judgments related with high anxiety weaken cognitive resources from task employment. Having lower computer anxiety is one of the essential aspects to use technology (Busch 1995). Hence the execution of participants with advanced computer anxiety might be worse than those with slight or no computer anxiety (Kim et al. 2009). Computer anxiety has direct and indirect effect to learners in becoming knowledgeable users of computer (Agbatogun 2010). Durndell and Lightbody (1994) found out that anxiety fallouts from little experience of computers. The more exposure, the less anxiety someone will likely to get. In this study, computer anxiety has direct relationship with Malaysian ESL lecturers' attitude towards flipped learning.

In the 21st century education, students are expected to be provided with student-centred teaching and learning, therefore ICT was developed in aiding teaching and learning (Saad et al. 2013). However, in integrating technology in teaching and learning, it has its own drawbacks and it could affect students' achievement as well as the mismatch between educators' ways of teaching and students' learning styles. (He 2016). By understanding the issues and drawbacks from integrating technology in teaching and learning, it is hoped to investigate the determinants that affecting Malaysian ESL lecturers' in adapting flipped learning in the classroom. There are many technology acceptance models done in integrating technology in education however there is little research on the integration of flipped learning and TAM 3 (Inan & Lowther 2010). It is crucial to see the computer self-efficacy and computer anxiety as the determinants in predicting lecturers' attitude in adapting flipped learning. In addition, there are many other important factors, nonetheless these two predictors are merely a little part of it. Therefore, the objectives of the study are to investigate: 1) the relationship between computer self-efficacy and Malaysian ESL lecturers' attitude in adapting flipped learning, 2) the relationship between computer anxiety and Malaysian ESL lecturers' attitude in adapting flipped learning.

Methodology

This research uses quantitative approach and survey is used to collect data. This study investigates whether computer self-efficacy and computer anxiety have any significant relationship towards Malaysian English as a Second Language (ESL) lecturers' attitude in implementing flipped learning approach.

There are 19 public universities in Malaysia; however, only four universities are selected, and 206 ESL lecturers responded to this online survey. Four universities were chosen using the cluster sampling technique as it is the most time and cost-efficient sampling (Sekaran & Bougie 2013). In collecting the data, a consent letter was attached with the online survey. A representative of each university was appointed to forward the online questionnaire to all of the ESL lecturers within his/her faculty.

The questionnaire was adapted from Sam et al. (2005). The content and face validity of the instrument was validated by one English lecturer and two experts of educational technology. Meanwhile, reliability test was conducted to determine the Cronbach's Alpha value for each item in computer anxiety and computer self-efficacy questionnaires. The average Cronbach's Alpha obtained for items in computer self-efficacy was 0.971, and average Cronbach's Alpha obtained for items in computer anxiety was 0.695. In the final instruments, all 29 items in computer self-efficacy are accepted as the Cronbach's Alpha value meets the requirement of a high reliability coefficient (DeVellis 1991); however, for computer anxiety, 11 items were dropped in the final instrument as the Cronbach's Alpha value did not meet the requirement of a high reliability coefficient, which is higher than 0.70 (DeVellis 1991).

Last but not least, in analysing the data, three sets of statistical analyses were employed which are confirmatory factor analysis (CFA), goodness of fit indices, and structural equation modelling (SEM).

Findings and Discussion

The Average Variance Extracted (AVE), factor loading and Composite Reliabilities (CR) are presented in Table 1. As stated from table above, all factor loadings are greater than 0.6, ranging from 0.824 to 0.927. The Average Variance Extracted also shows a value more than 0.5 (AVE = 0.777). This fulfilled that convergent validity was reputable. Meanwhile, Composite Reliabilities of Computer Anxiety (CA) construct has a value higher than 0.60 (CR = 0.933), signifying satisfactory internal constancy.

The Average Variance Extracted (AVE), factor loading and Composite Reliabilities (CR) are presented in Table 2. As seen from table above, all factor loadings are greater than 0.6, reaching from 0.739 to 0.906. The Average Variance Extracted also displays a value more than 0.5 (AVE = 0.941). This fulfilled that convergent validity was reputable. Meanwhile, Composite Reliabilities of Computer Self-Efficacy (CSE) construct has a value higher than 0.60 (CR = 0.960), demonstrating satisfactory internal constancy.

Table 3 shows the fit indices indicate the good model fit after numerous items have been discarded. The chi-square/df ratio is 2.791 (recommended < 3.0), and the Comparative Fit Index (CFI) is 0.907, which is more than 0.90. Value 0.90 is required in order to approve that misspecified models are not accepted (Hu & Bentler 1999). The Root Mean Square Error of Approximation (RMSEA) is 0.093 (recommended < 0.10) which measured as indication of good fit (MacCallum et al. 1996).

In understanding the computer self-efficacy and computer anxiety effect on Malaysian ESL lecturers' attitude in adapting flipped learning approach, the hypotheses of this study were tested and the hypotheses as well as the results are as follow:

H1: Computer anxiety has a significant effect on the Malaysian ESL lecturers' attitude in adapting flipped learning.

Table 4 shows that computer anxiety does not have any significant effect on Malaysian ESL lecturers' attitude in implementing flipped learning approach as (β = –0.025, p-value > 0.05). Thus, the alternative hypothesis was rejected. In analysing the relationship between computer anxiety and Malaysian ESL lecturers' attitude in adapting flipped learning, result shows the negative data, which is not significant. It can be concluded that computer anxiety is not a predictor in determining

TABLE 1. Confirmatory factor analysis (CFA) results for computer anxiety

Construct	Item	Factor Loading	AVE (above 0.5)	CR (above 0.6)
Computer Anxiety (CA)	I have difficulty in understanding the technical aspects of computers.	0.905	0.777	0.933
	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		
	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		

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 program (software)	0.904		
	I feel confident in using the computer to analyse number data	0.774		
	I feel confident in writing simple programs 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 program (software) will or will not run on a given computer.	0.836		
	I feel confident in troubleshooting computer problems	0.739		

TABLE 3. Summary of fit statistics for final measurement model

Name of Index Category	Name of Index	Index Value	Level of Acceptance	Comments
Absolute Fit	RMSEA	0.093	RMSEA 0.05 to 0.10 acceptable	The required level is achieved
Incremental Fit	CFI	0.907	CFI > 0.90	The required level is achieved
Parsimonious Fit	ChiSq/df	2.791	Chisq/df < 3.0	The required level is achieved

TABLE 4. The Coefficient Value for computer anxiety

Construct	Coefficients		P	Result
	Unstandardized	Standardized		
ATT ← CA	0.021	0.025	0.482	Not Significant

lecturers' attitude in implementing flipped learning. This result differs from previous results which computer anxiety plays a significant role in adapting technology (Venkatesh et al. 2003). From this study, result indicates that some of the lecturers might struggle in handling technical parts of adapting and understanding new software. However, having low level of anxiety is necessity to incorporate technology (Busch, 1995). In addition, this study is similar to a finding found by John (2015) which computer anxiety does not influence users in adapting technology.

H2: Computer self-efficacy has a significant effect on the Malaysian ESL lecturers' attitude in adapting flipped learning.

Table 5 shows that computer self-efficacy does not have any significant effect on Malaysia ESL lecturers' attitude in implementing flipped learning approach as (β = -0.026, p-value > 0.05). Hence, the alternative hypothesis was rejected. As proposed by Busch (1995), *computer self-efficacy* and *computer anxiety* are two important factors in integrating technology. On the contrary, results from

TABLE 5. The coefficients value for computer self-efficacy

Construct	Coefficients		P	Result
	Unstandardized	Standardized		
ATT ← CSE	–0.029	–0.026	0.607	Not Significant

this study shows the contrast idea whereby computer self-efficacy and computer anxiety are not the significant predictor in influencing ESL lecturers to adapt flipped learning approach. On the other hand, a few studies revealed that computer self-efficacy and computer anxiety are strong predictors in adapting technology (Inan & Lowther 2010; Wu, Chang & Guo 2008). Even though this study is hypothesized that both computer self-efficacy and computer anxiety are the strong predictors in adapting flipped learning, the structural equation modelling show the p-value for regression path coefficient were 0.607 and 0.482, indicating that the alternative hypotheses are failed to be accepted.

Conclusion

In conclusion, computer self-efficacy and computer anxiety do not have any significant relationship with Malaysian ESL lecturers' attitude in adapting flipped learning approach in the classroom. According to responses, ESL lecturers have no problems in managing basic computer skills. It shows that low anxiety level lead to high intention in adapting technology (John 2015). Based on the results, few implications were drawn. As for the theoretical implication, it can be seen that computer self-efficacy and computer anxiety are not the strong predictors in determining the Malaysian ESL' lecturers' attitude in adapting flipped learning. In methodological implication, this study has utilised TAM 3 and empirical data was gained. Even though the results contradicted with the past research, it still can be used with some modifications of samples or settings in order to get better results. Pedagogical implication from this study is indeed an important aspect to be highlighted in order to help educators in determining the strong predictors. By knowing the strong predictors, it could help educators to employ or improvise certain aspects in applying flipped learning especially in handling computer-related tasks, software, or any internet-based applications to be used in the classroom. Last but not least, for the policy perspective, flipped learning should be integrated in all universities, colleges and schools. Policy makers could consider in training the educators in using flipped learning especially in handling technology in enhancing the ESL teaching and learning. They can also take into consideration in providing better environment in adapting technology into education especially in the second language learning.

This study is hoped to give insights to educators and stakeholders and give benefits to students especially in enhancing students' critical thinking skills by adapting technology in teaching in learning. In addition, it is suggested to have more studies especially on these two predictors; computer self-efficacy and computer anxiety as researcher has very limited number of respondents. Larger sampling perhaps could be resulted in different result. Since this study is conducted in public universities, more studies could be done to private universities, polytechnics, college universities as well as community colleges all over Malaysia.

References

Agarwal, R. & Karahanna, E. 2000. "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage," MIS Quarterly (24:4), pp. 665-694.

Agbatogun, A.O. 2012. Exploring the efficacy of student response system in a Sub-Saharan African country: A sociocultural perspective. Journal of Information Technology Education, 11.

Ajzen, I. 1991. The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes* 5(2): 179-211.

Al-Qeisi, K.I. 2009. Analyzing the Use of UTAUT Model in Explaining an Online Behaviour: Internet Banking Adoption.

Bandura, A. 1986. *Social Foundations Of Thought And Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bergmann, J. 2011. Flipped classroom offers new learning path. *Electronic Education Report* 18(23): 1-3.

Bergmann, J. & Sams, A. 2012. *Flip Your Classroom: Reach Every Student in Every Class Every Day*. Washington, DC: ISTE; and Alexandria, VA: ASCD

Busch, T. 1995. Gender differences in self-efficacy and attitudes toward computers. *Journal of Educational Computing Research* 12: 147-158.

Chen, Y., Wang, Y., Kinshuk, & Chen, N.-S. 2014. Is FLIP enough? Or should we use the Flipped model instead? *Computers & Education* 79: 16-27.

Chua, S. L., Chen, D. & Wong, A. F. L. 1999. Computer anxiety and its correlates: A meta-analysis. *Computers in Human Behaviour* 15: 609-623.

Clark, K. R. 2015. The effects of the flipped model of instruction on student engagement and performance in the secondary mathematics classroom. *Journal of Educators Online* 12(1): 91-115.

Clark, K. R. 2015. The effects of the flipped model of instruction on student.

Davis, F. D. 1989. Perceived Usefulness, Perceived Ease of Use, And User Acceptance of Information Technology. MIS Quarterly. 13(3): 319-340.

Defour, M. 2013. "Flipped Classrooms" Spreading in Wisconsin. Community College Week, 25(16), 10.

Delcourt, M.A.B. & Kinzie, M.B. 1993. Computer technologies in teacher education: The measurement of attitudes and self-efficacy. *Journal of Research and Development in Education* 27(1): 35-41.

DeVellis, R. 1991. *Scale Development: Theory and Applications*. Newbury Park, CA: Sage Publications.

Driscoll III, T. & Petty, K. 2013. Student-driven education with flipped learning and 20-time. In Practical applications and experiences in K-20 blended learning environments (pp. 120-135).

Durndell, A. & Lightbody, P. 1993. Gender and computing: Change over time? *Computers in Education* 21: 331-336.

Fagan, M.H., Neill, S. & Wooldridge, B.R. 2003. An empirical investigation into the relationship between computer self-efficacy, anxiety, experience, support and usage. *Journal of Computer Information Systems* 44(2): 95-104.

Fulton, K. 2012. The flipped classroom: Transforming education at Byron High School. A Minnesota high school with severe budget constraints enlisted YouTube in its successful effort to boost math competency scores. *The Journal (Technological Horizons in Education)* 39(3): 18.

Goodwin, B. & Miller, K. 2013. Evidence on Flipped Classrooms is Still Coming in. *Educational Leadership* 70(6).

Hamdan, N., McKnight, P. E., McKnight, K. & Arfstrom, K. M. 2013a. a review of flipped learning.

Hamdan, N., McKnight, P., McKnight, K. & Arfstrom, K. M. 2013b. The Flipped Learning Model: A White Paper Based On The Literature Review Titled A Review of Flipped Learning.

Heinssen, R. K., Glass, C. R., & Knight, L. A. 1987. Assessing computer anxiety: Development and validation of the computer anxiety rating scale. *Computers in Human Behavior* 3: 49-59.

Herdman, P. C. 1983. High tech anxiety. *Management Focus* 30(3): 29-31.

Hill, J.R. 2006. Flexible learning environments: Leveraging the affordances of flexible delivery and flexible learning. *Innovative Higher Education* 31(3): 187-197. Retrieved April 1, 2019. https://www.learntechlib.org/p/100105/.

Howitt, C. & Pegrum, M. 2015. Implementing a flipped classroom approach in postgraduate education: An unexpected journey into pedagogical redesign. *Australasian Journal of Educational Technology* 31(4): 458-469.

Inan, F.A. & Lowther, D.L. 2010. Factors Affecting Technology Integration in K-12 Classrooms: A Path Model. *Education Tech Research Dev* 58: 137-154.

Jia, Z. 2017. To Flip or Not? Deciding on Whether to Use a Flipped Classroom Approach with of Higher-Level Second Language Students. University of Victoria.

Johnson, L., S. Adams Becker, M. Cummins, V. Estrada, A. Freeman & C. Hall. 2016. NMC Horizon Report: 2016 Higher. Education ed. Texas: Austin.

Jones, M. 2016. A Case study of blended learning in higher education in Malaysia: Flipped, flopped or forgotten? *Teaching Education* (June): 132-137.

Jung, I., Choi, S., Lim, C. & Leem, J. 2002. Effects of different types of interaction on learning achievement, satisfaction and participation in web-based instruction. *Innovations in Education and Teaching International* 39(2): 153-162.

Kaur, C., Singh, S., Mei, T. P. & Abdullah, M. S. 2017. ESL Learners' Perspectives on the Use of Picture Series in Teaching Guided Writing (December).

Kettle, M. 2013. Flipped physics. *Physics Education* 48(5): 593.

Khalil, R., Rania, M., & Fahim, S. S. 2017. Assessment as a learning tool in a flipped English language classroom in higher education. *Arab World English Journal* 7(4): 4-19.

Kim, Y. J., Chun, J. U. & Song, J. 2009. Investigating the role of attitude in technology acceptance from an attitude strength perspective. *International Journal of Information Management* 29(1): 67-77.

King, W.R., & He, J. 2006. A Meta-Analysis of the Technology Acceptance Model. *Information & Management* 43: 740-755.

Kwan Lo, C. & Foon Hew, K. 2017. Using first principles of instruction to design secondary school mathematics flipped classroom: The findings of two exploratory studies. *Educational Technology & Society* 20(1): 222-236.

Liu, X. 2010. Empirical testing of a theoretical extension of the technology acceptance model: An exploratory study of educational wikis. *Communication Education* 59(1): 52-69.

Long, T., Logan, J. & Waugh, M. 2016. Students' perceptions of the value of using videos as a pre-class

learning experience in the flipped classroom. *Tech Trends* 60(3): 245-252.

Malaysia, M. of E. 2015. *Malaysia Education Blueprint 2013-2025 (Higher Education)*. Kementerian Pendidikan Malaysia.

McNamara, M., & Deane, D. 1995. Self- assessment activities toward autonomy in language learning. *TESOL Journal* 5: 18-23.

Mehring, J. G. 2014. An exploratory study of the lived experiences of Japanese undergraduate EFL students in the flipped classroom. *ProQuest Dissertations and Theses*: 147.

Munir, M. T., Baroutian, S., Young, B. R. & Carter, S. 2018. Flipped classroom with cooperative learning as a cornerstone. *Education for Chemical Engineers* 23: 25-33.

Psychological Processes. Cambridge: Harvard University Press.

Roach, T. 2014. Student perceptions toward flipped learning: New methods to increase interaction and active learning in economics. *International Review of Economics Education* 17: 74-84.

Saad, N. S. M., Md Yunus, M. & Embi, M. A. 2013. The intersection between out-of-class language learning strategies and in-class activities. *Advances in Language and Literary Studies* 4(2): 132-140.

Sam, H. K., Othman, A. E. A. & Nordin, Z. S. 2005. Computer self-efficacy, computer anxiety, and attitudes toward the Internet: A study among undergraduates in Unimas. *Educational Technology and Society* 8(4): 205-219. doi:10.2307/jeductechsoci.8.4.205

Sams, A. & Bergmann, J. 2013. Flip your students' learning. *Technology-Rich Learning* 70(6): 16-20.

Sekaran, U. & Bougie, R. 2013. *Research Methods for Business: A Skill-Building Approach*. 6th Edition. New York: Wiley.

Shin, D. H. 2009. An empirical investigation of a modified technology acceptance model of IPTV. *Behaviour and Information Technology* 28(4): 361-372.

Spacey, R., Goulding, A. & Murray, I. 2004. Exploring the attitudes of public library staff to the internet using the TAM. *Journal of Documentation* 60(5): 550-564.

Springen, K. 2013. Flipped. *School Library Journal* 59(4): 23.

Staker, B. H. & Horn, M. B. 2012. Classifying K-12 Blended Learning. Learning, (May).

Sugar, W., Crawley, F. & Fine, B. 2004. Examining teachers' decisions to adopt new technology. *Educational Technology and Society* 7(4): 201-213.

Surej John. 2015. The integration of information technology in higher education: A study of faculty's attitude towards IT adoption in the teaching process. *Contaduria y Administracion* 60(September): 230-252.

Taiwo, A. A. & Downe, A. G. 2013. The theory of user acceptance and use of technology (UTAUT): a meta-analytic review of empirical findings. *Journal of Theoretical and Applied Information Technology* 49(1): 48-58.

Taylor, S. S., & Statler, M. 2013. Material matters: Increasing emotional engagement in learning. *Journal of Management Education* XX(X): 1-22. doi: 10.1177/1052562913489976.

Teo, T., & Koh, J. H. L. 2010. Assessing the dimensionality of computer self-efficacy among pre service teachers in Singapore: a structural equation modelling approach. *Int. J. Educ. Dev. Using Information Communication Technology* 6(3): 7-18.

Tucker, B. 2012. The flipped classroom. Online instruction at home frees class time for learning. *Education Next* Winter 2012.

Venkatesh, V. & Davis. 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science* 46: 186-204.

Venkatesh, V., Davis, F. D., And Morris, M. G. 2007. Dead or alive? The development, trajectory and future of technology adoption research. *Journal of the Association for Information Systems* 8(4): 268-286.

Venkatesh, V., James, Y. L. Thong & Xin, Xu 2012. Consumer acceptance and use of information technology: Extending the unified theory. *MIS Quarterly* 36(1): 157-178.

Venkatesh, V., Morris, M.G., Davis, F.D., And Davis, G.B. 2003. User acceptance of information technology: Toward a unified view. *MIS Quarterly* 27: 425-478.

Vygotsky, L. S., & Cole, M. 1978. Mind In Society: The Development of Higher.

Wood, R. E., Bandura, A. & Bailey, T. 1990. Mechanisms governing organizational performance in complex decision-making environments. *Organizational Behavior and Human Decision Processes* 46: 181-201.

Wood, R. & Bandura, A. 1989. Impact of conceptions of ability on self-regulatory mechanism and complex decision making. *Journal of Personality and Social Psychology* 56(3): 407-415.

Wu, W., Chang, H. & Guo, C. 2008. An empirical assessment of science educators' intentions toward technology integration. JI. *Computers in Mathematics and Science Teaching* 27(4): 499-520.

Yemma, D. M. 2015. *Impacting Learning for 21st Century Students: A Phenomenological Study of Higher Education Faculty Utilizing A Flipped Learning Approach*. Robert Morris University.

Yeop, M. A. 2019. Implementation of ICT policy (blended learning approach): Investigating factors of behavioural Intention and Use Behaviour 12(1): 767-782.

Yuen, A. H. K. & Ma, W. W. K. 2008. Exploring teacher acceptance of e-learning technology. *Asia- Pacific Journal of Teacher Education* 36(3): 229-243.
Zainuddin, Z. & Perera, C. J. 2019. Exploring students' competence, autonomy and relatedness in the flipped classroom pedagogical model. *Journal of Further and Higher Education* 43(1): 115-126.

Siti Fatimah Abd. Rahman
Faculty of Education
Universiti Kebangsaan Malaysia
Emel: p76056@siswa.ukm.edu.my

Melor Md Yunus
Faculty of Education
Universiti Kebangsaan Malaysia
Emel: melor@ukm.edu.my

Harwati Hashim
Faculty of Education
Universiti Kebangsaan Malaysia
Emel: harwati@ukm.edu.my

*Corresponding author, email:
p76056@siswa.ukm.edu.my

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