Exploring Chinese EFL Teachers' Acceptance of Mobile-Assisted Language Learning (MALL)

Zengfang Lin, Ain Nadzimah Abdullah, and Arshad Abdul Samad

Abstract—**Mobile-Assisted Language Learning (MALL) has emerged as an important domain since mobile devices are widely used by the current generation of learners. This study emphasizes that the successful implementation of MALL for language education relies heavily on its acceptance by teachers. This study intends to investigate the acceptance of using MALL for teaching English among college EFL teachers in China. The Technology Acceptance Model (TAM), a frequently used model in technology acceptance studies for m-learning settings, was adopted in this study. A questionnaire survey was administered to collect data on teachers' demographic information and acceptance of MALL. The respondents were 30 in-service college-level EFL teachers from universities in Yunnan, China, and the data are analyzed using SPSS. Respondents' MALL acceptance level, their demographic variables associated with intentions to use MALL, and the relationship of Perceived Usefulness (PU), Perceived Ease of Use (PEU) with Behavioral Intention (BI) were investigated. The results suggested that Chinese EFL teachers have a rather high level of MALL acceptance. Their BI to use MALL differs according to the teaching experience. Both PU and PEU significantly influenced BI which further predicted the Actual Use (AU) of MALL. The findings of the study provide insights into the usefulness of TAM in predicting the acceptance of MALL among college EFL instructors and may assist in explaining the factors influencing their intentions to utilize mobile technology for language teaching.**

Index Terms—**EFL teachers, m-learning, mobile-assisted language learning (MALL), technology acceptance model (TAM).**

I. Introduction

Mobile devices, such as mobile phones and tablets, have become daily life essentials in the recent decade. Current mobile technology has enabled mobile devices' functions to go beyond calls and messages. The notion of mobile learning (m-learning) was proposed and considered an efficient method of digital learning, especially during the COVID-19 lockdown [1], [2].

Mobile technology has changed the landscape of language learning with various language learning apps, allowing language learners to learn without boundaries and time constraints [3], [4]. The use of mobile technology for English language learning can create "a more authentic, flexible, situated, collaborative and lifelong language learning environment (p. 171) [5]." Later, the notion of Mobile-Assisted Language Learning (MALL) was proposed as a subset of Computer-Assisted Language Learning (CALL) and m-learning. MALL refers to "the use of smartphones and other mobile technologies in language learning, especially in situations where portability and situated learning offer specific advantages (p. 1) [6]." MALL has been widely conceived as an influential research field in language learning contexts and studies looking into different aspects of MALL have increased in the recent decade [7].

Among these studies are studies on factors influencing mobile technology users' perceptions that have caught many researchers' attention [8]. Researchers (such as Ozdamli & Uzunboylu [9]; Liu, Tao & Cain [10]) argued that while most college language learners had positive attitudes towards MALL, many language teachers were undecided, apprehensive, and had misgivings about it. Researchers, Mittal and Alavi [5], have suggested that the successful implementation of MALL for language education relies heavily on EFL teachers and their acceptance. However, Chen and Jia [11] in their review of studies conducted in China disclosed that they tended to focus on students whereas studies on in-service EFL teachers' perceptions and acceptance of the use of MALL have been neglected. This study is an attempt at filling this research gap. The study also aims to offer an overview of in-service EFL teachers' acceptance of MALL during the COVID period to universities, teacher training sessions, and educational authorities in China to provide insights into future policy decisions related to mobile technology use in education.

Among various models and theories on technology acceptance, the Technology Acceptance Model (TAM), proposed by Davis in 1989 [12], has been proven to be the most frequently adopted model in understanding mobile technology acceptance in educational settings [8]. In the model, perceived usefulness and perceived ease of use can predict technology users' attitudes towards the technology and further impact their intention to use and the actual use of it [12].

In this study, the researcher intends to investigate Chinese EFL teachers' acceptance of MALL and the factors leading to the acceptance by using TAM. This paper will report on the findings from an exploratory study to answer the following questions:

1) What are the levels of Chinese college EFL teachers' acceptance of using MALL for teaching?
2) What are the associations of demographic variables with the intention to use MALL?
3) To what extent do perceived usefulness (PU) and perceived ease of use (PEU) influence Chinese EFL

Manuscript received February 21, 2022; revised April 13, 2022.

Zengfang Lin is with the School of Education, Taylor's University, Subang Jaya, Selangor, Malaysia, and School of Foreign Languages, Dali University, Dali, Yunnan, China (e-mail: lilolin@yeah.net).

Ain Nadzimah Abdullah and Arshad Abdul Samad are with the School of Education, Taylor's University, Subang Jaya, Selangor, Malaysia (e-mail: ainnadzimah.abdullah@taylors.edu.my, arshad.abdsamad@taylors.edu.my).

doi: 10.18178/ijiet.2022.12.11.1735

teachers' Behavioral Intention (BI) to use MALL for teaching, and how this influences the Actual Use (AU) of MALL?

II. Literature Review

The use of the mobile phone as a learning tool dates back to the use of cell phones. Later with the launch of smartphones, specifically the iPhone by Apple, opportunities for learning with little restrictions on time and location are created [13]. And mobile learning (m-learning), has been viewed as a novel concept of digital learning.

When talking about m-learning in the field of language education, Mobile-Assisted Language Learning (MALL) has caught researchers' attention and studies about it have grown over the past ten years [14]. Burston and Athanasiou [14] noticed that SMS and MMS used to be common in the early days of MAL; later iPods, e-dictionary, and MP3 Players took the stage. Now, the various affordances and apps solidify smartphones' role as the primary mobile device for language learning.

For the past ten years, the research topics of MALL such as improving speaking, pronunciation, listening, vocabulary skills, and users' perception and attitudes remain vibrant [15] among which the application and study of MALL on vocabulary and grammar are on the top of the topic list [6], [16].

Researchers have investigated the attitude towards MALL among EFL learners and instructors from different countries via surveys and they found that students hold rather positive attitudes towards MALL due to the speed, convenience, ease of use, and portability of mobile devices for language learning [17]. Teachers seem to prefer mobile devices for language education because of student motivation, ease of access, and various mobile apps, but some of them are still worried about the distraction and technical difficulties of mobile device use [17]. Results also showed that teachers perceived MALL to be useful and they have high intention to use it for EFL teaching, but they perceived the use of MALL not to be easy [17]. Many previous studies indicated English teachers hold moderately positive perceptions towards the use of MALL [18]-[23], even though the training time is short or there is no training about mobile technology use at all [21], [23]. Some teachers showed a positive attitude in the questionnaire but their preference for traditional teaching ways was observed in reality [22]. And most of the studies revealed the perceived challenges to the adoption of MALL from teachers' perspective, such as lacking mobile-technology knowledge, training, resources, etc [18], [21], [22]. Meanwhile, some studies found the resistance to the integration of mobile technology into the classroom from teachers [24] and they considered mobile education is still in its infancy [25].

Since the adoption of MALL in China is at the initial stage, the studies on MALL generally focused on theories, users' perceptions, and the effectiveness of MALL [26]. A few studies revealed EFL learners' positive attitude towards MALL [27], [28], and moderately positive perceptions from teacher groups in China [29]-[32] based on questionnaire surveys and interviews. The benefits of MALL for addressing the issue of unsatisfactory college English education in China have been mentioned by EFL teachers in terms of motivation, access to resources, and time-saving [31].

However, researchers like Liu, Tao, and Cai [10] noted the worries and concerns of Chinese EFL teachers. Some teachers worried about technical issues, such as the small screen and short battery life [33]; some were concerned about student issues such as learners' self-control and autonomous learning abilities [10]; some questioned its negative role in cheating in exams [34]. Reference [10] shows that EFL teachers hold a positive attitude towards the informal MALL after class, but their attitude changed to be negative about the MALL in the classroom, which proved teachers' concerns about students' behavior control and their own knowledge and skills.

Even though doubts and concerns remain, many researchers asserted the effectiveness and potential of MALL as a new language learning mode during the COVID-19 pandemic [1], [2], [35]. Mobile technology-enhanced teaching platform apps, such as DingTalk, have been frequently adopted during the COVID period for online education [36]. However, after the intensive technology use for educational purposes during the COVID-19 period, data about current Chinese in-service EFL teachers' acceptance of MALL are limited. There remains a paucity of evidence on the level of acceptance and the factors behind it.

III. Theoretical Background and Hypotheses Development

When looking into the theories about users' behavior regarding technology use, there are many different theories or models in the previous literature: Theory of Planned Behavior (TPB) [37], Technology Acceptance Model (TAM) [12], TAM 2 [38], TAM 3 [39], Unified Theory of Acceptance and Use of Technology (UTAUT) [40], UTAUT2 [41], etc. Given the fact that TAM 3 and UTAUT 2 are mainly developed for commerce contexts and the criticism about UTAUT being less parsimonious compared to TAM [42], TAM, the foundation theory of TAM and UTAUT families, is adopted as the theory for this study. Moreover, TAM was proved to be the most commonly used theory for m-learning adoption studies in the recent decade [8].

TAM was proposed by Davis [12] to understand the factors influencing technology users' acceptance and their actual use of technology. In TAM, as shown in Fig. 1, Perceived Usefulness (PU) and Perceived Ease of Use (PEU), are influenced by external variables which impact users' Attitude (AT) toward the technology use and further predict the Behavioral Intention (BI) to use and the actual use (AU). Perceived ease of use (PEU) can influence perceived usefulness (PU) which has a direct impact on behavioral intention (BI).

According to Davis [12], perceived usefulness (PU) means whether users perceive a certain technology to be useful for them; perceived ease of use (PEU) means whether users believe a certain technology to be easy and convenient to use for them. Many TAM-based studies have verified the

predictive roles of both perceived usefulness and perceived ease of use in understanding university teachers' acceptance of mobile technology use for teaching and learning [5], [29], [30]. Some researchers found there was no direct influence of PEU on BI to use mobile technology in education as indicated in the original TAM [43].

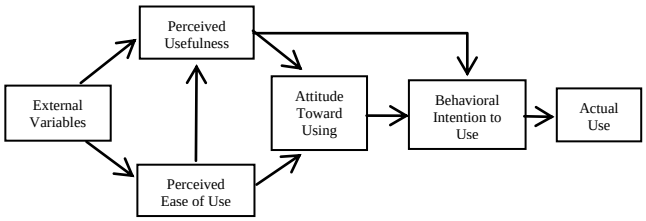


Fig. 1. Technology acceptance model (TAM).

The role of attitude (AT) has triggered a discussion in the TAM field. Some researchers hold that attitude (AT) is not very essential in technology use and suggest that it be removed [44]. This is supported by Teo's [45] study that proved that attitude does not present a huge difference in TAM. Thus, this paper implements the TAM without attitude.

Behavioral Intention (BI) to use can be understood as the users' readiness to use technology and the significant determinate of the Actual Use (AU) of it [12], [44]. It is a common factor in different technology acceptance theories.

Thus, four hypotheses are developed in this study (see Fig. 2):

H1: PU will positively affect BI to use MALL.

H2: PEU will positively affect BI to use MALL.

H3: PEU will positively affect PU.

H4: BI will positively affect the actual use of MALL.

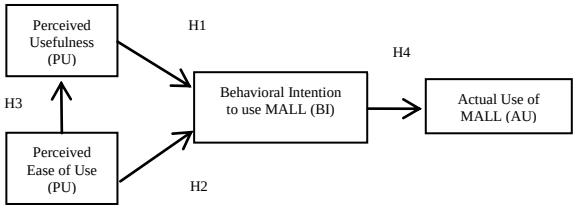


Fig. 2. Research hypotheses.

IV. Research Method

This exploratory study adopts a quantitative method by using an online questionnaire survey to collect data among college EFL teachers in Yunnan, China.

A. Participants

Since this is an exploratory study, a relatively small sample of 30 EFL teachers randomly selected from universities in Yunnan province, China participated in the survey held in October 2021. A summary of participants' demographic information is shown in Table I. The majority of the respondents were female (66.7%) while the male respondents constituted 33.3% of the total. 40% of participants fell in the 30-39 age group which is the largest group. The 40-49 (23.3%) and the above 50 age groups (26.7%) both made up 50% of the total respondents. Only 10% of the respondents were below 30 years of age. The majority (70%) of the EFL teachers in this study hold a master's degree while only 13.3% have a PhD and 16.7% have a first degree. Half of them (50%) were university lecturers and 39% were associate professors, therefore most of the respondents (89%) hold these two positions. Only 6.7% of the respondents hold the position of professor and 13.3% of them are teaching assistants. 83.3% of the teachers had experience using MALL to teach and out of this only 6.7% of the respondents had more than 5 years of experience using MALL, while 9% had only 2-5 years and 46.7% had less than 2 years. This proves that MALL adoption in China is still in its infancy.

TABLE I: Demographic Information of Respondents (Frequency and Percent)

Variable	Frequency	Percent%
Gender		
Male	10	33.3
Female	20	66.7
Age		
less than 30	3	10.0
30-39	12	40.0
40-49	7	23.3
more than 50	8	26.7
Degree		
Bachelor	5	16.7
Master	21	70.0
Doctoral	4	13.3
Academic Title		
Teaching Assistant	4	13.3
Lecturer	15	50.0
Associate Professor	9	30.0
Professor	2	6.7
Teaching experience with MALL		
Yes	25	83.3
No	5	16.7
MALL teaching experience		
Less than 2 years	14	46.7
2-5 years	9	30.0
More than 5 years	2	6.7

B. Instrument

Data was collected via an online questionnaire survey. The questionnaire was adopted from the ones used by Davis [12] and Lee, Hsieh, and Ma [46]. It contains two parts: 1) demographic information and 2) perceptions of MALL. Participants' gender, age, degree, academic title, and teaching experience with MALL were collected in the first part. The second part consists of 26 five-point Likert-scale items on the four constructs, that is, perceived usefulness (6 items), perceived ease of use (6 items), behavioral intention (6 items), and actual use (8 items).

C. Data Collection and Analysis

The questionnaire was administered through *Wenjuanxing*, a Chinese online questionnaire website. The QR code and links were sent to some EFL teachers who had expressed interest in the project and were willing to participate in the survey. The results of the questionnaire were analyzed using SPSS 25.0. To answer the three research questions, descriptive statistics, general linear model, correlation analysis, and multiple regressions analysis were used.

V. Results

A. Reliability of the Questionnaire

The results presented in Table II showed that all the constructs are reliable in the questionnaire with the Cronbach's alpha for all variables ranging between 0.8274 to 0.951, as shown in Table II. According to Nunnaly [47], Cronbach's alpha value greater then 0.90 indicates excellent internal consistency (PU = 0.951, AU = 0.904); and α greater than 0.80 represents good internal consistency (PEU=0.874, BI=0.824).

TABLE II: RELIABILITY OF THE QUESTIONNAIRE

Variables	Cronbach's alpha	Item number
Perceived Usefulness (PU)	0.951	6
Perceived Ease of Use (PEU)	0.874	6
Behavioral Intention (BI)	0.824	6
Actual Use (AU)	0.904	8

A. What Are the Levels of Chinese College EFL Teachers' Acceptance of Using MALL for Teaching?

The means and standard deviations (SD) of each variable are presented in Table III. The mean score for BI and AU was 4.2 and 4.1 respectively, which is slightly higher than 4 (agree) indicating a slightly high level of acceptance of using MALL in teaching. Similarly, the mean score of PU is 4.0 (agree) showing participants' positive attitudes towards MALL's usefulness. Their perception of MALL's ease of use is 3.5 which is between 3.0 (neither agree nor disagree) and 4 (agree) showing the use of MALL for teaching is reasonably easy. According to Creswell and Guetterman [48], SD is "an indicator of the dispersion or spread of the score (p.186)." The SD of four variables ranged from 0.45 to 0.61, which means the narrow spread of participants' answers around the mean scores of each variable.

TABLE III: MEANS AND STANDARD DEVIATIONS (SDS) OF EACH VARIABLE

Variables	Mean	SD	n
Perceived Usefulness (PU)	4.0	0.61	30
Perceived Ease of Use (PEU)	3.5	0.60	30
Behavioral Intention (BI)	4.2	0.45	30
Actual Use (AU)	4.1	0.58	25

B. What Are the Associations of Demographic Variables with the Intention to Use MALL?

General Linear Model was used to understand the association of demographic variables with their BI to use MALL. As shown in Table IV, respondents' gender, age, and academic title do not show any significant difference in their behavioral intention to use MALL for teaching. But the results showed that women have higher intentions than men. Participants about 30 to 39 years old are more likely to use MALL compared to other age groups. Lecturers showed the lowest intentions while professors showed high intentions to use.

Among five demographic variables, the mean of BI differs based on the degree that the EFL teachers possessed ($p < 0.05$) and their years of teaching experience with MALL ($p < 0.001$). From this, it seems that EFL teachers with a doctoral degree are more willing to adopt MALL for teaching compared to bachelor's and master's degree holders. However, with only two PhD respondents in the sample, drawing upon this conclusion can be misleading. Further studies should be conducted to confirm this finding. It should also be noted that participants who have been using MALL for teaching in their classrooms have higher intentions to continue using it.

TABLE IV: ASSOCIATION OF DEMOGRAPHIC VARIABLES WITH MEAN BI

Variable	Mean	SE	P
Gender			
Male	4.117	0.209	0.259
Female	4.354	0.132	
Age			
less than 30	4.289	0.418	
30-39	4.890	0.272	0.988
40-49	4.217	0.199	
more than 50	4.148	0.231	
Degree			
Bachelor	4.078	0.247	
Master	3.999	0.166	0.031*
Doctoral	4.630	0.247	
Academic Title			
Teaching Assistant	4.269	0.307	
Lecturer	3.893	0.177	0.402
Associate Professor	4.154	0.248	
Professor	4.627	0.441	
Teaching experience with MALL			
Yes	4.532	0.141	0.006**
No	3.940	0.197	

* $p < 0.05$
** $p < 0.001$

C. To What Extent do Perceived Usefulness (PU) and Perceived Ease of Use (PEU) influence Chinese EFL Teachers' Behavioral Intention (BI) to use MALL for Teaching and How do This Influence the Actual Use (AU) of MALL?

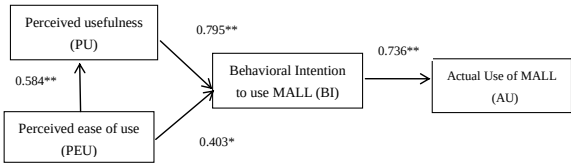
For understanding the relationship among each construct, correlation analysis was conducted, and the results showed that PU, BI, and AU have a high correlation with each other ($p < 0.05$). As shown in Table V, respondents' behavioral intention has a high positive correlation with perceived usefulness ($r = 0.803$, $p < 0.001$), and actual use ($r = 0.736$, $p < 0.001$). It has a weak but positive relationship with perceived ease of use ($r = 0.298$, $p > 0.05$).

TABLE V: THE INTER-CORRELATIONS AMONG EACH CONSTRUCT

Variables	PU	PEU	BI	AU
Perceived Usefulness (PU)	-			
Perceived Ease of Use (PEU)	0.588*	-		
Behavioral Intention (BI)	0.803**	0.298	-	
Actual Use (AU)	0.822*	0.510*	0.736**	-

* $p < 0.05$
** $p < 0.001$

The results of hypotheses testing are shown in Table VI. Four hypotheses were accepted. Fig. 3 provides the model with the significant paths and their standardized path coefficients.



*$p < 0.05$
** $p < 0.001$

Fig. 3. Proposed model with standardized path coefficients.

TABLE VI: SUMMARY OF HYPOTHESES TESTS

Hypotheses	Standardized Coefficients Beta	R^2	SE	t	p	Results
H1 PU→BI	0.795	0.632	0.281	6.933	0.000**	Accepted
H2 PEU→BI	0.403	0.163	0.424	2.332	0.027*	Accepted
H3 PEU→PU	0.584	0.341	0.506	3.804	0.001**	Accepted
H4 BI→AU	0.736	0.541	0.404	5.208	0.000**	Accepted

*$p < 0.05$
** $p < 0.001$

According to Creswell and Guetterman [27], R square can be viewed as the coefficient of determination, which refers to the portion of the variation in the dependent variable that the independent variable(s) can predict. The results of multiple linear regression (Table VI) show that 63.2% of the variation in BI to use MALL for teaching is explained by PU and 16.3% by PEU among Chinese EFL teachers. Both PU (β = 0.795, $p < 0.001$) and PEU (β = 0.403, $p < 0.05$) have a significantly positive impact on the Chinese EFL teachers' BI. PEU (β = 0.584, $p < 0.001$) can significantly influence PU and give PU a mediator role in the model. EFL teachers' BI (β = 0.736, $p < 0.001$) can significantly predict their AU of MALL in teaching.

VI. DISCUSSION

As shown above, the result for the first research question indicates that Chinese EFL teachers' acceptance of MALL in their classrooms are rather high. They perceived MALL to be very useful and reasonably easy to use. The findings of this study are consistent with the previous research [18]-[23], [29], [30], but are different from studies on teachers' acceptance of MALL a few years ago [10], [21]. The result of Liu et al.'s study indicated teachers' negative perceptions toward MALL in the classroom [10]; however, the result of this study indicated a rather high acceptance of MALL both in formal and informal settings. This may imply that EFL teachers' perceptions of the use of MALL in the classroom have changed after its intense and wide use during the COVID period. For respondents in Ali's study [21], they felt it is easy for them to operate mobile devices in the classroom; nevertheless, respondents in this study perceive the use of mobile technology as just reasonably easy. It may be explained by the lacking of mobile technology-related knowledge, skills, and training to integrate mobile technology into English language teaching [18], [21], [22].

When investigating the association of EFL teachers' demographic variables with their BI, the result shows that PhD degree holders and teachers who have MALL experience are more willing to adopt it. As Greeno, Collins, and Resnick [49] claimed, teachers tend to teach according to how they have been taught and educated as students. EFL teachers who have a doctoral degree spent more time studying and this may have provided them with more chances of learning via mobile technology in school. Their learning experiences with MALL during their PhD journey might further impact their teaching style and explain why PhD degree holders are more likely to use MALL for teaching. However, future studies with a large sample size covering different academic degree holders should be conducted to confirm this finding and interviews also should be used to investigate the reasons. Another finding of research question two is consistent with Hu, Laxman, and Lee's [50] finding that teaching experience with mobile technology has affected participants' BI. Positive experience, in particular, will positively influence users' willingness to use technology.

The results of hypotheses testing of the model prove the effectiveness of TAM [12] and are consistent with findings of previous studies [51]-[53]. Compared to PEU, PU played a more significant role in explaining the variance of BI to use MALL in this study. The finding indicates that Chinese EFL teachers' intention to use MALL for teaching is affected by both its usefulness and ease of use, but they are more likely to adopt it if they perceive MALL to be useful. When participants perceived MALL to be easy to use, they often perceived it to be useful. EFL teachers who have higher BI are more likely to use it in language teaching.

Overall, this study found that Chinese EFL teachers have a high intention to use MALL for teaching in higher education which can be explained by the experience gained during the intensive mobile technology use during the COVID period. For them, MALL is very useful for EFL education and can enhance their teaching effectiveness.

VII. CONCLUSION, IMPLICATIONS, AND LIMITATIONS

This study aims to investigate the acceptance of MALL among Chinese EFL teachers in higher education and the factors behind it. The findings of the exploratory test show that Chinese EFL teachers positively accept MALL at a rather high level. Users with MALL experience are more likely to have the intentions to use MALL for teaching. The results of the study also prove the predictive ability of TAM to explain the intention to use mobile technology with perceived usefulness and perceived ease of use among a sample of EFL teachers.

This study has two implications: 1) Chinese EFL teachers need to take part in the training sessions for using mobile technology for teaching for better use of MALL and teachers' professional development; 2) given that most participants perceived MALL to be reasonably easy to use, the challenges and barriers of using MALL can be further examined in future studies; 3) since only two variables (PU and PEU) were examined in this study, further research is suggested to confirm other factors affecting MALL use based on TAM.

This study has several limitations as follows: 1) Since it is an exploratory study conducted on a small group of respondents, the generalizability of the data is limited. Conclusions drawn based on some of the findings may be misleading because of the small sample size. A survey involving a larger sample size should be conducted for a more comprehensive picture of the phenomenon. 2) The data analysis was solely dependent on quantitative data from the survey. Qualitative data (such as interviews and observation)

should be included and triangulated with the quantitative data in future studies to explore further the factors influencing the use of MALL as well as its benefits and challenges.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Zengfang Lin conceived the research and collected the data; Zengfang Lin and Arshad Abdul Samad analyzed the data; Zengfang Lin and Ain Nadzimah Abdullah wrote the paper.

ACKNOWLEDGMENT

The authors wish to thank Taylor's University, Centre for Future Learning and Research Centre for Future Learning for organizing Taylor's 14th Teaching and Learning e-Conference 2021.

REFERENCES

[1] M. Al-Emran, "Mobile learning during the era of COVID-19," *Revista Virtual Universidad Católica del Norte*, vol. 61, pp. 1-2, 2020.
[2] Z. Hou and A. Vahid, "A review of the methodological quality of quantitative mobile-assisted language learning research," *System*, vol. 100, article 102568, 2021.
[3] C. Fujimoto, "Perceptions of mobile language learning in Australia: How ready are learners to study on the move," *The Jalt Call Journal*, vol. 8, no. 3, pp. 165-195, 2021.
[4] H. Hashim, M. M. Yunus, M. A. Embi, and N. A. M. Ozir, "Mobile-assisted language learning (MALL) for ESL learners: A review of affordances and constraints," *Sains Humanika*, vol. 9, no. 1-5, pp. 45-50, 2017.
[5] N. Mittal and S. Alavi, "Construction and psychometric analysis of teachers mobile learning acceptance questionnaire," *Interactive Technology and Smart Education*, vol. 17, no. 2, pp. 171-196, 2020.
[6] A. Kukulska-Hulme, "Mobile-assisted language learning," *The Encyclopedia of Applied Linguistics*, pp. 1-9, 2020.
[7] F. Cakmak, "Mobile learning and mobile assisted language learning in focus," *Language and Technology*, vol. 1, no. 1, pp. 30-48, 2019.
[8] R. A. Alsharida, M. M. Hammood, and M. Al-Emran, "Mobile learning adoption: a systematic review of the technology acceptance model from 2017 to 2020," *International Journal of Emerging Technologies in Learning*, vol. 15, no. 5, pp. 147-162, 2021.
[9] F. Ozdamli and H. Uzunboylu, "M-learning adequacy and perceptions of students and teachers in secondary schools," *British Journal of Educational Technology*, vol. 46, no. 1, pp. 159-172, 2015.
[10] H. Liu, W. Tao, and W. Cain, "Investigating mobile assisted English foreign language learning and teaching in China: Issues, attitudes and perceptions," *Handbook of Research on Foreign Language Education in the Digital Age*, ch. 15, pp. 315-333, 2016.
[11] Z. Chen and J. Jia, "Twenty years of MALL in China: Review and prospect," *Foreign Language World*, vol. 2020, no. 01, pp. 88-95, 2020.
[12] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *Mis Quarterly*, vol. 13, no. 3, pp. 319-340, 1989.
[13] M. Al-Emran and K. Shaalan, "Learners and educators attitudes towards mobile learning in higher education: State of the art," presented at the 2015 International Conference on Advances in Computing, Communications and Informatics (ICACCI), 2015.
[14] J. Burston and A. Athanasiou, "Twenty-five years of MALL experimental implementation studies: What do we really know about it?" in *Recent Tools for Computer-and Mobile-Assisted Foreign Language Learning*, A. Andujar, Ed. Hershey, PA: IGI Global, 2020, ch.2, pp. 35-59.
[15] G. Duman, G. Orhon, and N. Gedik, "Research trends in mobile-assisted language learning from 2000 to 2012," *ReCALL*, vol. 27, no. 2, pp. 197-216, 2015.
[16] A. Panagiotis and P. Krystalli, "Mobile assisted language learning (MALL): Trends from 2010 to 2020 using text analysis techniques," *European Journal of Education*, vol. 3, no. 3, pp. 84-93, 2020.
[17] A. Gimeno-Sanz, V. Morgana, and J. Vyver, "Understanding learner and instructor attitudes toward and use of mobile-assisted language learning," in *Recent Tools for Computer-and Mobile-Assisted Foreign Language Learning*, A. Andujar, Ed. Hershey, PA: IGI Global, 2020, ch. 1, pp. 1-34.
[18] R. Dashtestani, "Implementing mobile-assisted language learning (MALL) in an EFL context: Iranian EFL teachers' perspectives on challenges and affordances," *Jalt CALL Journal*, vol. 9, no. 2, pp. 149-168, 2013.
[19] H. Jung, "Fostering an English teaching environment: Factors influencing english as a foreign language teachers' adoption of mobile learning," *Informatics in Education*, vol. 14, no. 2, pp. 219-241, 2015.
[20] J. Grimshaw, W. Cardoso, and L. Collins, "Teacher perspectives on the integration of mobile-assisted language learning," in *CALL in a Climate of Change: Adapting to Turbulent Global Conditions–Short Papers from EUROCALL*, K. Borthwick, L. Bradley, and S. Thouesny, Eds., 2017, pp. 135-139.
[21] M. M. Ali, A. Gulzar, and T. Yasmeen, "Teachers' perspective towards mobile assisted language learning in Pakistani ELT class rooms," *New Horizons*, vol. 12, no. 2, pp. 77-92, 2018.
[22] H. Bozorgian, "Teachers' attitudes towards the use of MALL instruction in Iranian EFL context," *The International Journal of Humanities*, vol. 25, no. 3, pp. 1-18, 2018.
[23] K. Balliammanda, "Perceptions of teachers on teaching and learning with mobile devices in higher education classrooms in Oman: A pilot study," *Studies in Technology Enhanced Learning*, vol. 1, no. 2, pp. 359-370, 2021
[24] K. Mac Callum, L. Jeffrey, and Kinshuk, "Factors impacting teachers' adoption of mobile learning," *Journal of Information Technology Education: Research*, vol. 13, pp. 141-162, 2014.
[25] K. Saidouni and A. Bahloul, "Teachers and students' attitudes towards using mobile-assisted language learning in higher education," *Arab World English Journal (AWEJ) Special Issue on CALL*, no. 3, pp. 123-140, 2016.
[26] Z. Wang and Y. Cui, "Mobile-assisted language learning in China's college English education: The reality and research," in *Mobile Learning Design: Theories and Application*, D. Churchill, J. Lu, T. K. F. Chiu, & B. Fox (Eds.), Singapore: Springer Singapore, 2016, ch. 20, pp. 335-349.
[27] L. Hsu, "English as a foreign language learners' perception of mobile assisted language learning: A cross-national study," *Computer Assisted Language Learning*, vol. 26, no. 3, pp. 197-213, 2013.
[28] Y. Meng and J. Chen, "A study on mobile learning mode of English language learning based on smart phone application (App)," *Journal of Liaoning Normal University (Social Science Edition)*, vol. 44, no. 01, pp. 118-124, 2021.
[29] L. Hsu, "Examining EFL teachers' technological pedagogical content knowledge and the adoption of mobile-assisted language learning: A partial least square approach," *Computer Assisted Language Learning*, vol. 29, no. 8, pp. 1287-1297, 2017.
[30] F. Huang, "Acceptance of mobile learning in classroom instruction among college English teachers in China using an extended TAM," presented at the 2017 International Conference of Educational Innovation through Technology (EITT), 2017.
[31] F. Huang, T. Teo, and M. Zhou, "Factors affecting Chinese English as a foreign language teachers' technology acceptance: A qualitative study," *Journal of Educational Computing Research*, vol. 57, no. 1, pp. 83-105, 2019.
[32] J. Zhang, S. Yu, and M. Puteh, "Teachers' perceptions on mobile pedagogy in China's higher education," presented at the 2020 9th International Conference on Educational and Information Technology, 2020.
[33] A. Yu, "Understanding information technology acceptance and effectiveness in college students' English learning in China," Ph.D. dissertation, University of Nebraska, Lincoln, NE, 2019.
[34] R. Metruk, "Confronting the challenges of MALL: Distraction, cheating, and teacher readiness," *International Journal of Emerging Technologies in Learning (iJET)*, vol. 15, no. 2, pp. 4-14, 2020.
[35] A. Naciri, M. A. Baba, A. Achbani, and A. Kharbach, "Mobile learning in Higher education: Unavoidable alternative during COVID-19," *Aquademia*, vol. 4, no. 1, ep20016, 2020.
[36] K. Tang, C. Hsiao, Y. Tu, G. Hwang, and Y. Wang, "Factors influencing university teachers' use of a mobile technology-enhanced teaching (MTT) platform," *Educational Technology Research and Development*, vol. 69, no. 5, pp. 2705-2728, 2021.
[37] I. Ajzen, "From intentions to actions: A Theory of planned behavior," in *Action Control: From Cognition to Behavior*, J. Kuhl & J.

Beckmann (Eds.), Berlin, Heidelberg: Springer Berlin Heidelberg, 1985, pp. 11-39.
[38] V. Venkatesh and F. D. Davis, "A theoretical extension of the technology acceptance model: Four longitudinal field studies," *Management Science*, vol. 46, no. 2, pp. 186–204, 2000.
[39] V. Venkatesh and H. Bala, "Technology acceptance model 3 and a research agenda on interventions," *Decision Sciences*, vol. 39, no. 2, pp. 273–315, 2008.
[40] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User acceptance of information technology: Toward a unified view," *MIS Quarterly*, vol. 27, no. 3, pp. 425–478, 2003.
[41] V. Venkatesh, J. Y. Thong, and X. Xu, "Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology," *MIS Quarterly*, vol. 36, no. 1, 157–178, 2012.
[42] E. M. Van Raaij and J. J. L. Schepers, "The acceptance and use of a virtual learning environment in China," *Computers & Education*, vol. 50, no. 3, pp. 838–852, 2008.
[43] J. C. Sánchez-Prieto, Á. Hernández-García, F. J. García-Peñalvo, J. Chaparro-Peláez, and S. Olmos-Migueláñez, "Break the walls! Second-order barriers and the acceptance of mlearning by first-year pre-service teachers," *Computers in Human Behavior*, vol. 95, pp. 158-167, 2019.
[44] R. L. Thompson, C. A. Higgins, and J. M. Howell, "Personal computing: Toward a conceptual model of utilization," *MIS Quarterly*, pp. 125-143, 1991.
[45] T. Teo, "Is there an attitude problem? Reconsidering the role of attitude in the TAM," *British Journal of Educational Technology*, vol. 40, no. 6, pp. 1139-1141, 2009.
[46] Y. H. Lee, Y. C. Hsieh, and C. Y. Ma, "A model of organizational employees' e-learning systems acceptance," *Knowledge-Based Systems*, vol. 4, no. 3, pp. 355-366, 2011
[47] J. Nunnaly, *Psychometric Theory*, New York: McGraw-Hill, 1978.
[48] J. Creswell and T. Guetterman, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*, 4th Edition, Prentice Hall Upper Saddle River, NJ, 2002.
[49] J. G. Greeno, A. M. Collins, and L. "Resnick, Cognition and learning," in *Handbook of Educational Psychology*, D. C. Berliner & R. C. Calfree (Eds.), New York, NY: Simon & Schuster Macmillan, 1996, pp. 15–46.
[50] S. Hu, K. Laxman, and K. Lee, "Exploring factors affecting academics' adoption of emerging mobile technologies-an extended UTAUT perspective," *Education and Information Technologies*, vol. 25, no. 5, pp. 4615-4635, 2020.
[51] F. Aburub and A. Ibrahim, "A new integrated model to explore factors that influence the adoption of mobile learning in higher education: An empirical investigation," *Education and Information Technologies*, vol. 24, no. 3, pp. 2145-2158, 2019.
[52] H. Liu, L. Wang, and M. J. Koehler, "Exploring the intention-behavior gap in the technology acceptance model: A mixed-methods study in the context of foreign-language teaching in China," *British Journal of Educational Technology*, vol. 50, no.5, pp. 2536-2556, 2019.
[53] S. A. Nikou and A. A. Economides, "Mobile-based assessment: Investigating the factors that influence behavioral intention to use," *Computers & Education*, vol. 109, pp. 56-73, 2017.

Zengfang Lin is currently a PhD candidate at Taylor's University. She is also a faculty in the College of Foreign Languages at Dali University, China. She obtained her master's degree in TESOL at New York University, United States. Her research interests are EFL education, EFL teachers' technology use, and English-Chinese translation education.

Ain Nadzimah Abdullah is affiliated with the School of Education, Taylor's University Malaysia, where she currently works as a senior research fellow. Her major research interests are in studies related to sociolinguistics, languages in contact, language planning and policy, bilingualism, and multilingualism.

Arshad Abdul Samad is a senior research fellow at Taylor's University. He holds a PhD in applied linguistics from Northern Arizona University, United States. His research interests broadly focus on education at the secondary and tertiary levels with an emphasis on language education, especially in the areas of assessment, learner agency, and grammar instruction.