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Abstract

With the rapid growth of digital technology, mobile phones are widely used for EFL teaching and learning. However, little is known about the effectiveness of integrating a mobile application into EFL classrooms to improve oral accuracy in Thai school contexts. An instructional intervention grounded with Mobile Assisted Language Learning (MALL) and dynamic assessment in Thai EFL contexts needs to be further investigated. This quasi – experimental study aimed to investigate the effectiveness of a mobile-based intervention to develop Thai EFL learners' speaking. Thirty students from a secondary school in southern Thailand were assigned to complete five oral tasks through the dynamic assessment process as an intervention on WhatsApp in order to develop their oral accuracy. Quantitative data were collected from the oral pre-test and post-test to examine the students' speaking development by utilizing the paired samples t-test. The results showed a significant difference between the pre-test and post-test after the implementation of the MALL-based intervention. It could be suggested that the application of the MALL-based intervention could develop EFL learners' oral accuracy in Thai school contexts. Implementations and recommendations of this study are discussed.

Introduction

Today, digital technology has played important roles in English as a Foreign Language (EFL) contexts. Literature has suggested that EFL teachers should integrate technology into their teaching through designing appropriate activities as a medium connecting between the instructor and learners in order to enhance 21st Century skills (Eaton, 2010; Gurgenidze, 2018; Joldanova et al., 2022). In addition, teachers can utilize mobile technologies such as mobile devices to promote EFL leaners' 21st century learning skills (Howlett & Waemusa, 2019). In terms of educational applications, the features of mobile devices can be leveraged to encourage unconfident learners to personalize their own learning and facilitate these learners through collaborative learning to access information anytime and anywhere (Kukulska-Hulme, 2018).

The concept of mobile devices as mediated tools in the pedagogical process and the mobile-assisted language learning (MALL) approach has been introduced through using mobile devices to improve language learning (Chinnery, 2006). MALL-based studies which investigated language learning improvement advocated the

effectiveness of MALL (Kamasak et al., 2021; Xu, 2020) through technology affordance via audio, video, text, image, and interactive features of mobile devices. A recent study reported that Thai EFL learners at high schools had difficulties in producing accuracy in language learning (Tanmongkola et al., 2020). Despite the advocacy of MALL applications, little has been known about how the integration of MALL in supporting language learning among Thai EFL learners, especially their speaking skills and oral accuracy.

With the evidence of MALL effectiveness in language learning (Alkhudair, 2020; Chang & Lan, 2021; Indrastana & Rinda, 2021), it is suggested integrating MALL with dynamic assessment (DA) into the process of pedagogical intervention, which should be promoted in order to enhance EFL students' oral accuracy. Inspired from Vygotsky's Sociocultural Theory, such DA intervention is applied to evaluate learners' performance while also promoting learning development through mediation in order to support learners' learning at different learning stages (Lantolf & Poehner, 2007). A MALL-based intervention can boost a collaborative space between learners and a teacher through dynamic assessment.

In EFL contexts, many studies showed the positive effects of using DA to enhance learners' speaking skills (Sun et al., 2017; Xu, 2020) and also to increase the positive perception among learners (Ahn & Lee, 2016; Almadhady, 2021). However, most of the studies in DA to enhance speaking skills in EFL contexts have only been conducted in face-to-face environments. It is challenging to investigate some appropriate mediation to integrate with DA (Lidz & Gindis, 2003). A mobile phone as a mediation should be integrated with DA and some studies reveal the positive effect of mobile-based dynamic assessment to enhance general language skills (Andujar, 2020; Ebadi & Bashir, 2021; Moeinpour et al., 2019; Rad, 2021).

Language teachers should understand the opportunities technology offers when designing and introducing a technology-integrated language classroom activity (Sharma & Hannafin, 2007). Choosing a mobile application to support activities and peer collaboration of the DA process is challenging, especially during the COVID 19 pandemic when learners are distant from school and they may not be familiar with a chosen technology. WhatsApp, a mobile application, has more than two billion active users worldwide and it is ranked as the most used mobile messenger app in the world (Dean, 2021a). In terms of language learning, many studies indicated that WhatsApp can be applied to facilitate learners' learning, for example to improve their speaking skills (Akkara et al., 2020; Andújar-Vaca & Cruz-Martínez, 2017) and positive attitude (Tahounehchi, 2021). With timely feedback in text massages, pictures and resource files, learners are also able to access materials anytime and anywhere (Sibplang, 2021). Theoretically, WhatsApp can provide learning opportunities to learners when it is used in a MALL-based intervention with the DA process to boost speaking skills.

Developing speaking skills for accuracy in EFL contexts is still challenging for researchers and educators. Speaking skills are significant for communication, consisting of accuracy, fluency and complexity (Skehan & Foster, 1997), all of which necessitate L2 learners' language proficiency. In her reviews, Chu (2011) mentioned that accuracy seems to be disregarded in development speaking skills of EFL learners. From Chu's (2011) remark, fluency becomes dominating in EFL research while accuracy and complexity are analyzed to be parts of fluency. In addition, well-known teaching methods in EFL contexts such as communicative language teaching and task-

based language teaching are meant to focus on learners' fluency.

During the COVID 19 pandemic, most Thai schools have shifted to online learning, and mobile devices have become prevalent among Thai learners when learning online (Petchprasert, 2020). In Thailand, mobile devices are important in learning online and could become a mediator between teachers and learners through various integrated approaches (Thaoyabut et al., 2021; Wongsuriya, 2020). Yet, little is known about the effectiveness of how to integrate MALL with DA process via WhatsApp on enhancing EFL learners' oral accuracy, a learning problem which still exists in Thai school contexts (Tanmongkola et al., 2020). The integration of DA within the MALL approach intervention via WhatsApp should be investigated to help Thai EFL students who need support from online teachers with learning online during the epidemic COVID-19 situation in Thai EFL contexts. Due to the school closure policy (Lao, 2020), this intervention can address the educational need where online learning takes place and teachers as well as students should shift their pedagogical practices from onsite to online settings. To cope with this gap, this study attempts to explore the effects of a MALL-based intervention with the DA process on Thai EFL learners' oral accuracy.

Background

MALL and Its Educational Values

Mobile Assisted Language Learning (MALL) is a learning approach that utilizes mobile devices such as mobile phones, tablets, MP3 players, podcasting to improve language competency (Chinnery, 2006). To Chinnery, the portability and connection of mobile devices are two of their most important features. In terms of connectivity, the mobile system must be able to connect and communicate with the learning website utilizing the device's wireless network to access learning material including short messaging service (SMS) and e-mail (Miangah & Nezarat, 2012). If learners' learning devices are movable, the learners can move the devices around and bring their learning resources with them (Huang & Sun, 2010).

In educational contexts, it is claimed that the use of mobile technology can facilitate leaners' 21st century learning skills (Howlett & Waemusa, 2019). According to the Framework for 21st Century Learning (Battele for Kids, 2019), the education in this century has gained importance in terms of ensuring that students develop their innovation, creativity, and teamwork, and they should learn how to apply those life skills to everyday activities. The use of mobile devices can facilitate learners to achieve these goals. Using mobile devices as an accessible mediation to provide feedback can share learning experiences between a teacher and learners (Godwin-Jones, 2011). It is suggested the use of mobile devices as mediation to collaborate in language learning can enhance speaking skills (Kukulska-Hulme & Shield, 2007).

With the support of MALL tools, EFL learners can be provided with learning resources through audio, video, text, image and interactive features of mobile devices to get exposed to authentic language learning (Chinnery, 2006). From the MALL perspective, it could be argued that it is not always necessary for EFL learners to study a language in a school setting (Chusanachoti, 2009) because their learning can be on their mobile devices whenever and wherever they prefer based on their learning style (Miangah & Nezarat, 2012).

Dynamic Assessment and Language Learning

Dynamic Assessment (DA) is a pedagogical approach which integrates teaching with evaluation, and teachers can provide consistent and effective assistance based on learners' development goals (Lidz & Peña, 1996). Influenced by Vygotsky's Zone of Proximal Development (ZPD), this approach is utilized to assess learner performance in relation to their ZPD (Lantolf & Poehner, 2011; Poehner & Lantolf, 2005). Vygotsky (1978) explains the ZPD is "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined under adult guidance or in collaboration with more capable peers" (p. 86). When applied to a learning setting, ZPD implies that interactions between beginner learners and a more skilled and experienced person or More Knowledgeable Others (MKO), such as a teacher, can promote learning (Behrooznia, 2014) through the use of mediators. In the DA process, an MKO can adjust the level of mediation in order to fit a student's current level of performance through providing various forms of scaffolding such as a structure or set of guidelines, asking questions, and giving frequent feedback for accomplishing the task (Gallimore & Tharp, 1990).

In EFL contexts, previous studies on DA showed the enhancement of language skills and also indicated the positive effects of DA on language learning (Ebadi & Asakereh, 2017; Hessamy & Ghaderi, 2014; Khoshsima & Farokhipours, 2016), including speaking skills. However, DA-based studies which investigated speaking skills are limited in formal research contexts, especially in Thai school contexts, where teachers can provide learners with an opportunity to practice speaking between the teacher and learners through a designed intervention with feedback, learning resources, and digital technology as a mediated tool.

During the pandemic situation with school closure in Thailand, technology is an option to support language learning in this situation with communication without the limited time and place (Segev, 2014). The teacher can apply mobile technology to be a part of the dynamic assessment process as a mediator to provide appropriate scaffolding to support the learners in developing language learning in different skills.

WhatsApp as a MALL Tool and MDA

Mobile technology is ubiquitous these days and shapes human communication. WhatsApp, one of the most extensively utilized and popular communication mobile platforms by global users (Dean, 2021b), is a smartphone-based instant messaging application that allows users to send and receive messages in a variety of formats, including text, image, video, and voice messages (Church & De Oliveira, 2013). This mobile application can be chosen as the mediation between the teacher and learners to boost speaking skills (Khan et al., 2021; Mustafa, 2018). In addition, it is convenient for leaners to access learning resources on WhatsApp any time any place and can share messages with each other as collaborative learning (La Hanisi et al., 2018).

With the educational benefits of WhatsApp providing the supportive atmosphere as a learning community, it can be integrated with dynamic assessments because WhatsApp can support collaborative learning (La Hanisi et al., 2018). This integration can facilitate learners with communication between teachers and learners such as feedback,

suggestions and learning resources to enhance speaking skills. The teacher can take the advantages of these features of WhatsApp to design language leaning to enhance learners' speaking skills by providing an opportunity for communication between the teacher and learners.

In this current study, the researchers take the advantage of mobile devices and WhatsApp and used DA with scaffolding processes adapted from Lantolf and Poehner (2011), in order to support EFL learners to improve their speaking skills (Tarighat & Khodabakhsh, 2016). Lantolf and Poehner (2011) utilized DA as scaffolding processes in a language classroom to illustrate interactions between a Spanish teacher and learners. According to the scaffolding framework in their project, the instructor provided an inventory of teacher prompts consisting of eight hints in order to support learners to increase their language skills and this framework also was modulated and applied in this study. However, research on utilizing WhatsApp as a part of scaffolding process for enhancing the speaking skills of Thai EFL learners is limited and it is not clear how to scaffold EFL learners with timely feedback to improve oral accuracy on WhatsApp.

Related Literature about MALL-Based Interventions in EFL Speaking Skills

Researchers have given interest in the integration of mobile technologies for educational purposes and many favor this implication for enhancing language learning. Like other mobile devices, mobile phones, provided with internet access services and different applications, are considered as widespread tools and are used in language learning. Using mobile phones in language learning as MALL is still a great interest and a steady preoccupation of researchers over these 10 years (Panagiotis & Krystalli, 2020) including the MALL approach to enhance speaking.

Previous studies indicated the positive effects of WhatsApp on English language learning especially for developing speaking skills (Akkara et al., 2020; Mustafa, 2018) and supporting collaborative learning (La Hanisi et al., 2018). With the affordances of WhatsApp to support speaking skills via the scaffolding intervention, MALL-based intervention or MALL-based dynamic assessment (MDA), the term coined in the study of Rezaee et al. (2019), can provide a collaborative space and a learning opportunity for learners to use English as an extension of classroom discussion and allows teachers to provide additional practice and monitor students' learning achievements.

Although a few studies have investigated the integration of MALL with DA in enhancing language learning by using WhatsApp, little is known about Thai EFL school contexts. Rezaee et al. (2019), for example, investigated the effects of MDA on oral accuracy of pre-intermediate Iranian EFL learners who were assigned to complete tasks on WhatsApp by using a text-chat and a voice-chat in a higher education context. The post-test results indicated that there was the significant development of oral accuracy after providing feedback in each task on WhatsApp. Moreover, the text-chat group outperformed the voice-chat group in such development.

The outperforming results of a text-chat group over the voice-chat group with WhatsApp in enhancing language development was also confirmed later by the studies of Rezaee et al. (2020) and Ebadi and Bashir (2021). In

Rezaee et al.'s (2020) study, pre-intermediate learners of English completed eight oral tasks via text-chats, voice-chats on WhatsApp, and face-to-face to improve oral fluency. These learners received the dynamic assessment intervention. The post-test results found that MDA via text-chat and voice-chat could improve learners' speaking fluency much more than those with the traditional face-to-face dynamic assessment.

Similarly, a recent study by Ebadi and Bashir (2021) indicated the positive effects of MDA on learners' language development and also showed favorable results for those with text-chat tasks (but in improving writing skills). However, gauging the participants' perception, they seemed satisfied with the voice-based mediation in terms of opportunity, confidence, and improvement. The learners agreed that the voice from the teacher influenced learners' confidence when the teachers interacted with the learners through voice-based mediation, allowing the teachers to explain and to modify faster and more effectively than that through text-based mediation.

Although previous studies of MDA revealed the positive effects toward language skills of EFL learners, these favorable results cannot be assumed in other contexts, including Thai EFL contexts. In addition, an investigation of WhatsApp-based intervention in focusing on oral accuracy in using English proficiency is still limited in Thailand. MALL-based intervention has been claimed to provide positive results for language development among EFL learners but little is known about the application of MALL to Thai EFL contexts especially high school learners by using WhatsApp, a mobile application. As Chinnery (2006) called for the application of MALL in language learning due to the paucity of MALL research and implications to language learning, this study aimed to respond to this call by investigating the effectiveness of the application of a mobile application on speaking skills and this would fill the gap in a specific context of Thai EFL school education.

Method

Research Purpose and Questions

This article reported on the results as part of a larger quasi-experimental research project which aimed to investigate the effects of MALL-based intervention by using WhatsApp on Thai EFL learners' oral accuracy which refers to oral production without linguistic errors. The specific question was: Are there any significant differences of oral accuracy improvement between before and after provided mobile-based intervention of Thai EFL learners? How often are the teacher-student interactions via WhatsApp-based MDA in each oral task?

Participants

Eighty Thai male and female students, aged 17 and studying English as a foreign language in Grade 11 in an English course with the lower intermediate English proficiency level at a secondary school in southern Thailand, were invited to participate in the research project voluntarily. The participant criteria included owning a smartphone with an internet package. Therefore, a questionnaire was used to identify the eligible participants. Out of eighty students, through purposive sampling, thirty students with smartphones and internet packages joined the project voluntarily and were selected to be the participants of this study project.

Instruments

The instruments of this study were a questionnaire, oral tasks and oral pre- and post-tests. The questionnaire was employed to assess the smartphone ownership and the internet package of students and comprised seven questions aimed at gathering information on their daily use of mobile devices. During the treatment section, five oral tasks were utilized to develop oral speaking for five weeks during an English course. Students had three minutes to task by recording their voice and sent a clip, weekly, to the teacher via WhatsApp. To evaluate each students' speaking progress, an oral pre-test and oral post-test, which consisted of three tasks, were given to the participants twice: one before and the other one after completing five spoken activities via WhatsApp in order to evaluate the development of participants after receiving mobile-based intervention. To ensure the validity of the test, three experts in the English language field were asked to evaluate the test and give comments for the tool improvement. To ensure the reliability of the tests, a test of internal consistency reliability (Cronbach's alpha = .87) was conducted.

Data Collection

This study applied a mobile-based dynamic assessment (MDA) intervention boosting oral accuracy of Thai EFL learners' speaking. Before the data collection, this study followed the ethical guidance approved by the Center for Social and Behavioral Science Institutional Review Board, Prince of Songkla University, Thailand.

At the beginning of the project, the students were introduced and trained to use WhatsApp for necessary features in an orientation session. Then, they took an oral pre-test via WhatsApp. During the MALL based intervention for five weeks, the students completed the tasks via WhatsApp by recording their 3-minute voice clip each week outside of the class hours and sending it to the English native teacher. To analyze their responses before returning the feedback to learners via WhatsApp, the teacher used the scaffolding guidelines adopted from Poehner and Lantolf (2005), from most implicit to most explicit ones. These scaffolding steps are as follows:

Step 1: Teacher asks students to say again
Step 2: Repeat the whole phrase questioningly
Step 3: Repeat just the part of the sentence with the error
Step 4: Teacher points out that there is something wrong with the sentence
Step 5: Teacher points out the incorrect word
Step 6: Teacher asks either/or question
Step 7: Teacher identifies the correct answer
Step 8: Teacher explains why via WhatsApp

To facilitate learners' speaking with these scaffolding steps, the teacher provided information, recommendations, videos, and other resources via WhatsApp to support participants to improve their oral speaking during MALL based intervention process over the course of five weeks (see Figure 1). After the implementation of the MALL-based intervention for five weeks, the learners were assigned to do the oral post-test in order to evaluate their oral production.

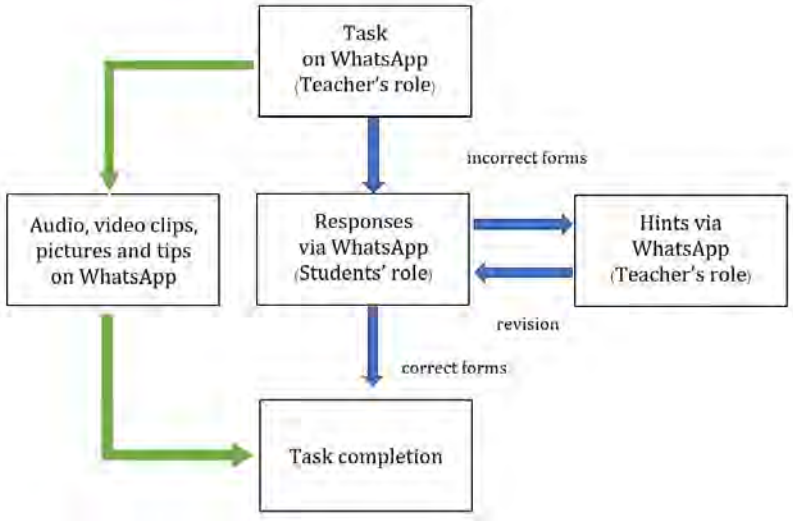

Figure 1. MALL-Based Intervention for Speaking Skills

Data Analysis

The scores from the pre- and post-tests which indicate oral accuracy, referring to how closely a learner follows the target language's rule structure (Bui & Skehan, 2018), were measured by calculating the number of error-free clauses as a percentage of the total number of clauses (Robinson, 2001; Skehan & Foster, 1997) based on the guidelines adapted from (Polio, 1997). The paired samples t-test was used to compare the scores from pre-test and post-test in order to analyze the relationship between the intervention and the learners' oral accuracy. In addition, the mean and standard deviation were used to measure the frequency of teacher-student responses via WhatsApp-based MDA in each task.

Results and Discussion

The research questions of the study aimed at investigating whether there was any significant effect of MDA on speaking of EFL learners after the intervention. The results were shown in Table 1.

Table 1. Test Performance (n=30)

Pretest		Posttest		Paired-Sample t-Test		
Mean	SD	Mean	SD	*t*	df	*p*
.48	.23	.74	.17	-7.03	29	.00*

Note. * $p < .01$

The results show that the mean score of all tasks from pre-test (M=.48) and post-test (M=.74) indicated the different improvement of their speaking significantly after the MDA intervention. In comparison of the results between the before and after treatment of MDA, a significant difference of the mean scores between the pre-test and post-test was found (p=0.00) at the significant level of .01, suggesting that the learners showed the development of oral accuracy after the treatment of MDA and this confirmed the effectiveness of MALL-based intervention for improving the learners' oral accuracy.

In addition, to understand the MDA-based interactions between the teacher and the students, the data of the frequency of the teacher-student responses on WhatsApp from the scaffolding steps in each task were calculated and the mean scores in each task also indicated the scaffolding process as shown in Table 2.

Table 2. Frequency of Teacher-student Responses in Each Task (n=30)

	Task 1	Task 2	Task 3	Task 4	Task 5	Overall
Mean	3.57	4.27	3.43	2.80	1.13	3.04
SD	2.82	2.68	2.62	2.78	1.92	1.52

The mean scores in Task 1 (M=3.57, SD=2.82), Task 2 (M=4.27, SD=2.68) and Task 3 (M=3.43, SD=2.62) were between 3.00 – 4.30, suggesting that the participants could complete these tasks after receiving scaffolding Step 3 (repeat just the part of the sentence with the error) and Step 4 (point out that there is something wrong with the sentence). However, the mean score in Task 4 (M=2.80, SD=2.78) seemed to be less frequent than the previous tasks. The participants had completed Task 4 with scaffolding Step 2 (repeat the whole phrase questioningly) and Step 3 (repeat just the part of the sentence with the error) from the teacher. For the last task, the mean score was the lowest (M=1.13, SD=1.92) of all. This may suggest the learners' development had less support from the teacher as an MKO because the participants completed Task 5 with scaffolding Step 1 (say again) and Step 2 (repeat the whole phrase questioningly). In addition, the mean score for overall tasks (M=3.04, SD= 1.52) presents that the participants mostly completed oral tasks with the scaffolding at Step 3 (repeat just the part of the sentence with the error).

This study investigated the effectiveness of MALL-based intervention on Thai EFL learners' oral accuracy. The results indicated that learners showed a significant development of oral accuracy after the MDA intervention. The results confirmed the positive effects of MALL-based intervention on English learning skills as reported by previous studies (Ashraf et al., 2016; Tarighat & Khodabakhsh, 2016; Rezaee et al., 2020).

The results in this study may be explained by the fact that the MDA intervention allows learners to interact, with the feedback of the teacher as an MKO, through the scaffolding process (Lantolf & Poehner, 2011), via their mobile devices. That facilitates learners with portability and connectivity beyond the boundaries of place and time. As Godwin (2021) asserted, using mobile technologies can be an accessible mediation between teachers and learners as a collaborative space, thus providing interactive learning resources for learners to enhance their oral accuracy. This practice is aligned with Thai EFL learners who have mobile phones to access in their everyday life, thus providing them with the learning space wherever and whenever they want (Miangah & Nezarat, 2012).

Moreover, through the MDA, teachers and learners can engage with speaking tasks to examine the learners' current level of performance on any task beyond the classroom wall. In the MDA process, the teacher could provide the feedback and suggestions with assistance that helps learners to identify their strengths and weaknesses in line with the notion of ZPD. The learners then could develop their learning through social interactions with the teacher to improve oral accuracy, indicating the possible collaborative space between the teacher and the learners via mobile devices (Godwin-Jones, 2011) and this is feasible in a Thai school context if the MDA intervention is

designed properly in a technology-enhanced learning environment as suggested by Sharma and Hannafin (2007). This study also could extend the study of Wongsuriya (2020) by using mobile applications to enhance young Thai learners' speaking, not only their pronunciation but also oral accuracy, suggesting that teachers are key to enhancing Thai young learners' English learning skills, especially oral accuracy.

Another explanation for the improvement of learners' language development in the results is the affordance features of MALL, the ability to access of MALL which allows learners to reach learning resources such as audios, videos, texts, and images on WhatsApp to enhance oral accuracy without limitation of time and place (Kukulska-Hulme & Traxler, 2007). As Miangah and Nezarat (2012) asserted, learning in a comfortable environment and scaffolding different levels of students are key factors in helping leaners succeed in learning language with MALL. In addition, the use of WhatsApp can facilitate language learning through multiple communication channels which could support corroborative learning (Godwin-Jones, 2011) as the mediation in interactions between learners and a teacher. The teacher can provide interactive feedback via WhatsApp to enhance oral accuracy and these interactions provide opportunities for using language in order to bridge the skill-gap of both learners and teachers as aligned with Godwin-Jones (2011).

In conclusion, the results of this study indicated that MALL-based intervention had a significant positive effect on developing oral accuracy of Thai EFL young leaners, filling the gap in a paucity of formal research in a Thai EFL context, providing empirical evidence that a MALL-based intervention can develop Thai EFL oral accuracy if designed appropriately.

Conclusion

The purpose of this study was to investigate the effectiveness of the MDA intervention on Thai EFL learners' oral accuracy via using WhatsApp. The results showed that using the MDA had a significant influence on enhancing the leaners' oral accuracy. These results also provide the important insights into how to maximize the use of available mobile devices to incorporate with classroom practices, in which today Thai EFL teachers face the online teaching practices with the school closure policy due to the Covid-19 pandemic and they are urged to integrate technology into their online teaching practices (Lao, 2020).

In this study, the MDA-based intervention illustrates its value to improve oral accuracy in a Thai EFL context. MDA, as a scaffolding processes, provides an opportunity for Thai EFL learners to practice speaking with interaction with the teacher through intervention. In order to improve learners' oral accuracy, the teacher can provide feedback in the form of scaffolding based on the ZPD of individual learners and WhatsApp as a mediator to be taken advantage of in MALL while supporting the process of DA. With the capability of WhatsApp, the teacher and students can interact in the peer collaboration and receive responses regardless of time and location.

This study sheds light on how to design the MALL-based intervention with a mobile device to scaffold EFL learners. However, one major drawback of this approach is the teacher's workload increases with a large class. Since many learners join the oral activities via WhatsApp at the same time, the teacher may need a longer time to

evaluate individual students' responses and this activity might reduce the promptness of their feedback. Moreover, limitations involving a stable internet connection in some local contexts should be noted for future preparation. Unsteady internet connections seem to cause learners problems uploading voice data when sending tasks with voice communication. Further work needs to be conducted to establish the effects of MALL-based intervention on other speaking skill aspects such as fluency, complexity, or the perceptions of EFL students after receiving the MALL-based intervention. Taken together, this study suggests that a MALL-based intervention should be a priority for Thai EFL teachers and policy makers to leverage the practical implication of everyday mobile devices in pedagogical practices for educational purposes.

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