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Mobile Assisted Personalised Language Learning (MAPLL): Sustaining Rural School Learners' Distance Learning

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Abstract

This study aims to investigate the application of an adapted model, namely Mobile Assisted Personalised Language Learning (MAPLL) via e-modules, in tackling the hardship of rural schools learners' online language learning during the emergent outbreak of coronavirus (COVID-19), with the vision of ensuring digital equity among learners.The underlying research main concepts and theories are portrayed. Technology-mediated learning theory, cognitivism, constructivism and connectivism stand out, allowing a consolidate foundation for the understanding of context investigation. To evaluate the effectiveness of chosen model, this study sets forth findings from a mixed method case study among rural secondary school learners in Malaysia. In this study, learners undergo English vocabulary lessons through MAPLL model. Data collection was carried out through questionnaires and semi-structured interview. The study results strengthen foundation of MAPLL model in reducing digital gap. Learners experienced positive impacts in terms of technology, flexibility, learning approach, learning content, and mood. The practical and theoretical implications of this research are discussed, providing insights into how MAPLL model can be applied or influence practices in the field of education.

Keywords: *MAPLL, Mobile Learning, Personalised Learning, Digital Equity, ESL Learning.*

Introduction

When COVID-19 pandemic hit Malaysia, in many ways, Malaysians had to experience abrupt changes in their livelihoods, including learners' learning method. On 18th March 2020, Malaysia commenced the Movement Control Order (MCO) throughout the nation. Preschools, primary schools and secondary schools in Malaysia are directed to hold off physical classroom learning. Instead, lessons are switched to distance learning. Since 1st March 2021, all schools and educational institutions reopened gradually. However, skyrocketed rise of COVID-19 cases in Malaysia had forced schools to encounter closures again on 17th May 2021. Teaching and learning activities, once again, faced disruption. Teachers, whether tech-savvy or not, must adopt and adapt to new teaching instances via a total virtual and distant environment. Agreement was held against it (Izmestiev, 2012; Hanover Research, 2014; Reyna, 2020). Hence, the reliance on internet and electronic equipment has drastically increased. This may be the first in history for Malaysia to conduct lessons fully online with the aid of electronic equipment. Malaysia encounters a transition from face-to-face or blended learning to online learning.

"Findings from a survey by the Ministry of Education (MOE) involving close to 900,000 learners indicate that 37% of learners do not have any appropriate devices. At the same time, only 6% to 9% of learners own a personal computer and/or a tablet. Even if a household has a personal computer, many would have to share with other household members for work or study (Hawati and Jarud, 2016, p.2)". According to this statement, we know that there are approximately 333,000 learners who do not own a suitable device for online education. These listed issues have become a hindrance to achieve education equality among the Malaysian learners (The World Bank Group, 2021). Internet access, digital devices or technological concerns undoubtedly are pre-requisites for a learning to take place (Bingham et al., 2018; Lakulu et al., 2019; Blagg et al., 2020)

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Despite the concerted efforts made by Malaysian government to reach out to incapable learners─ Educational TV, guidance and counseling services, free laptop, and internet service to underprivileged bottow 40% (B40), there are still learners who cannot achieve various forms of effective and maximal learning experience due to the lack of suitable devices and internet status. Moreover, some families shared one laptop, and this might cause difficulty for the learners to learn conveniently. Therefore, utilising the mobile device as a learning and teaching tool should be considered as it is more affordable, beneficial and convenient for use (Huang, Wang, & Hsieh, 2012; Mehdipour & Zerehkafi, 2013; Ally & Tsikanos, 2014; Qoussini, Jusoh & Tabib, 2015; Kukulska-Hulme, 2016; Radhakrishnan, 2015; Whalley et al., 2021).

This study, therefore, seeks ways to achieve an equal online education opportunity in developing countries for ESL learners who use mobile devices as the learning too. It sets forth findings from a mixed research study on achieving digital equity for every school ESL learner who experiences total "out-of-school" learning amid COVID-10 pandemic. A learning approach, Mobile Assisted Personalised Language Learning (MAPLL) through e-modules was proposed to realise the situation. It is an instructional model derived from Mobile Assisted Personalised Learning (MAPL) by Song, Tan and Awang (2021) that is applicable for any school subject learning. This study was conducted among rural secondary school learners in Malaysia, one of the developing countries where some learners could not learn online freely, bound by restrictions. These learners are mostly marginalised from the aspects of socioeconomic background and geographical locations.

Theoretical Framework

Technology-Mediated Learning Theory

The theory "technology-mediated learning" implies usage of technology in conveying information and linking people (Bower, 2019). For instance, blogs, learning management systems, mobile applications, social media, and virtual worlds are some of the digital technologies available. It has become more commonly utilised in online learning environments. The mediation of the technology occurs when an educator leaves learning content online to be later accessed by the learners on their laptop or smartphone. Communication would not exist if there is no mediation.

It was emphasised four pivotal premises of technology-mediated learning (Ertmer & Newby, 2009). Firstly, digital technologies help learners to pursue learning goals. Secondly, learners' beliefs, knowledge, practices, and the environment influence each other in a technology-mediated learning context. Third, teachers play the role in maximising learners' learning outcomes and experiences through meaningful use of technologies in a technology-mediated learning setting. Finally, representation, interaction, production, and learning of the learners are influenced by the technology affordance, recognition and use. In this study, MAPLL will apply the theory by integrating technology to provide online instructions and learning content. These digital technologies will be the mediation for the educator to conduct English lesson. While carrying out the approach, four premises are referred constantly as guidance.

Cognitivism

Next, MAPLL is also supported by cognitivism theory. Cognitivism is conceptualisation of learners' learning processes learning (Ertmer & Newby, 2009). It acknowledges how a piece of information is received, organised, stored, and retrieved by the mind. In other words, learning is concerned with learners' know and how they come to acquire the knowledge [19]. Knowledge acquisition is a mental activity involving internal coding and structuring by the learner. He or she is an active participant in the learning process.

Moreover, it is asserted that merely environmental "cues" and instructional components do not suffice learning. There are additional key elements to take into account such as the way that learners attend to, code, transform, rehearse, store and retrieve information. Also, learners' thoughts, beliefs, attitudes, and values are influential to learning process too. Suitable learning strategies are the key to effective cognitive

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approach. Focusing on learner-centered learning, MAPLL approach requires learners to be the active participants and always process the learning cognitively.

Constructivism

Meanwhile, MAPLL also allows learners to always create meaning through learning experience. This is considered as a sub part of cognitivism as both conceive learning as a mental activity but that is about where the similarities ended. Cognitivists believe that mind is a reference tool to the real world, while the constructivists opine that input from the world is filtered by the mind to create its own different reality. Additionally, the content knowledge of MAPLL modules is embedded in the realistic settings and produce interaction between learners and environment which is crucial in constructivism learning (Jonassen, 1991).

Connectivism

Lastly, with the application of m-learning in MAPLL, connectivism takes place. As proclaimed, knowledge and learning knowledge are associative in connectivism (Goldie, 2016). They are networks of connections formed from experience and interactions between individuals, societies, organisations, and technologies that link them. In this study, MAPLL employs digital forms of networks to convey the knowledge. To determine if MAPLL network is successful, there are a few characteristics that will be followed, which are diversity, autonomy of participants, openness, and connectivity. During the learning process, the size and location of network do not matter. These learners and the technology are all the contributors of the resources regardless of the knowledge domains.

Methodology

Research Design

This study focused on learning issues faced by rural school learners to reduce digital divide and different teaching approach, MAPLL, was planned to mend the issues. Considering the need of in-depth, multi-faceted understanding of these concerns, a multiple exploratory case study approach was chosen for this study. It adopted the mixed research design, which is appropriate to collect enough data through questionnaires, the quantitative design, and semi-structured interviews, the qualitative design. Likert scale questionnaire instrument and semi-structured interviews were utilised to answer RQ1, identifying the learners' thoughts on MAPLL teaching approach and to gain targeted and additional responses.

Participants and Setting

Via purposive sampling method, four Form 2 rural school learners had contributed to the research data. These learners study in a national secondary school located in Negeri Sembilan. Only the underprivileged learners who miss the equal online learning opportunities and encounter difficulties in online learning are selected to participate in this study. To obtain multi-faced responses, the selected learners are from mixed English language competency levels.

Process, Data Collection and Data Analysis

Adopting the MAPL model, the steps to conduct the MAPLL English vocabulary lesson through e-modules are as illustrated as below:

Step 1 - Create learner profiles
• Identify learners' proficiency level, strengths, weakness, preferred learning styles & of interest.

Step 2 - Create personal learning paths for learning English vocabulary
i) Group learners into mini group. ⬇

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- Set up a group for mini group in social networking application, WhatsApp.
- Learners suggest preferred e-modules activities to master vocabulary.
- Facilitate discussion of selected theme in WhatsApp group.
- Guide learners who have not mastered the concept / topic personally.
- Assign e-modules to learners.
- Learners share target score/ objective for the modules.
- Prepare a "data wall" to track learners' progress.
- Assist learners whenever necessary.

Step 3 - Continuous assess for learners' mastery / mastery-based grading

i) Assess learners' each e-module and provide feedback to learners' answers.

- State learners' achievement level for each module results.
- Distribute next e-module.
- Collect and analyse learners' data.

Step 4 - Learner reflection

- Learners reflect on learning experience after each module.
- Develop learners e-portfolio to record learners' data.

Results and Discussions

Research Question 1: What are the impacts of MAPLL on Malaysia rural secondary school learners in learning language online?

To obtain various and in-depth responses from learners, questionnaire and semi-structured interview were analysed. Analysed questionnaire includes a total of 8 items which explored learners' online English language learning participation, motivation level, learning convenience, lessons' suitability, learning outcome and learning mode after experiencing MAPLL (Table 1). Next, semi-structured interview transcripts was categorized into two sub-sections to investigate on learners' overall experience (Table 2) and effectiveness (Table 3) towards MAPLL.

Questionnaire

Table 1. Table of Questionnaire's Items Analysis

Items	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
Item 1: I can participate more in online English lesson with lesser difficulties faced.	50	50	0	0
Item 2: I feel more motivated to learn English online.	50	0	50	0
Item 3: I can access to learning anytime and anywhere.	100	0	0	0
Item 4: I feel the lessons suit me and are planned based on what I need.	100	0	0	0
Item 5: I feel I learn better and can achieve better results.	50	50	0	0
Item 6: I get to learn English through various learning instances.	25	75	0	0

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Item 7: I can apply learning in my real world context.	25	75	0	0
Item 8: I get to work with others to explore ideas.	25	75	0	0

Semi-structured Interview

Table 2. Table of MAPLL Experience in Distance Learning

Data	Codes	Category	Theme
Q2: Compared with MAPLL approach, are there any differences from what you have learnt from previous classes? **Excerpt 1 (Learner A)** "Yes.Advantages of the module that Tc for now easy for me to understand. For example Tc for pictures and question him that make it easier for me to display behavior or behaviors" • "Yes. The advantages of learning through this module is that it is easy for me to understand. For example, the graphics and questions asked in the modules allow me to understand and answer easily."	• Easier comprehension through graphics and questions.	• Visual Aid • Personalised instruction	• Learning content
		• Intriguing learning process	• Learning approach
Excerpt 2 (Learner B) "yes. It's fun to learn."	• Fun		
Excerpt 3 (Learner C) *"Sangat berbeza kerana projek ini lebih menarik perhatian saya untuk membuat kerja sekolah"* • "Vast difference because this project catches my attention to do school works.	• Catch attention.	• Intriguing learning process	• Learning approach
		• Learning instance	• Learning approach
Excerpt 4 (Learner D) "yes,it's different. the way we learn and do works."	• Different learning experience		
Q3: Overall, what are your feelings when learning through this approach?		• Positive feelings	• Positive
Excerpt 1 (Learner A) "Feeling excited and happy"	• Excited and happy	• Positive feelings	• Positive
Excerpt 2 (Learner B) "Happy"	• Happy		
Excerpt 3 (Learner C)			• Positive

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"Saya berasa lebih gembira dan yakin kerana tidak mengikuti kerja yang telah ada di buku teks." • "I feel happier and more confident because I did not have to follow up the work on textbook." **Excerpt 4 (Learner D)** "Yes,I'm having fun."	• Happy and more confident • Fun	• Positive feelings • Positive feelings	• Positive

Table 3. Table of Overall Effectiveness of MAPLL

Data	Codes	Category	Theme
Q4: How did the MAPLL approach help you when trying to attend online classes? **Excerpt 1 (Learner A)** "Yes,the module is helpful for me to save time,line and easy to understand" • "Yes. This module is helpful for me to save time and internet data. Moreover, easy to understand."	• Save time • Save internet data • Easy to understand	• Time • Bandwidth • Content Comprehension	• Convenience • Technology • Learning Content
Excerpt 2 (Learner B) "safe time" • "save time"	• Save time	• Time	• Convenience
Excerpt 3 (Learner C) *"projek ini tidak menggunakan data yang banyak"* • "This project doesn't consume much internet data."	• Save internet data	• Bandwidth	• Technology
Excerpt 4 (Learner D) "This project is very helpful based on the way my interest in learning." • "This project is very helpful that it is designed based on my learning interest."	• Capture learning interest	• Learning interest	• Learning Content
Q5: Do you think MAPLL is an effective approach for you to participate more in online classes? Why? **Excerpt 1 (Learner A)** "Ye,I feel happy be able to enter the class even though I can not join the GM.But I feel successful with the module that Tc sent." • "Yes. I feel happy to be able to join classes even though I couldn't join Google meet classes. I feel that the	• Happy • Join classes through	• Positive feelings	• Mood • Flexibility

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modules teacher sent are successful for learning because of the activity." **Excerpt 2 (Learner B)** "yes , because I can get a new work" • "Yes, because I got to approach different kind of schoolworks." **Excerpt 3 (Learner C)** *"ya, kerana projek ini boleh disiapkan pada masa yang lapang."* • "Yes, because this project can be done during free time." **Excerpt 4 (Learner D)** "This project was very helpful as it help me get exited in online classes" • "This project is very helpful as it made me excited to join online classes."	other instances • Improve learning • Variety of lesson activities • Work during free time • Excited	• Alternative learning instance • Learning activities • Learning activities • Flexible study time • Positive Feelings	• Learning content • Learning content • Flexibility • Mood
Q6: Other than involving yourself in online classes, are there any other impacts that you have felt from the approach? If yes, what are they? **Excerpt 1(Learner A)** "The other effect I get is I think I can learn more English." **Excerpt 2 (Learner B)** "Yes I'm happy and feel easy to join class." **Excerpt 3 (Learner C)** *"Kesan positif yang ada pada saya ialah yaking untuk membuat kerja sekolah dan berasa lebih tenang daripada sebelum"* • "The positive impacts that had on me is that I was more confident and calmer in finishing schoolwork compared to the past." **Excerpt 4 (Learner D)** "I had positive impact after learning through this project. I improved more English."	• Better language learning experience • Happy • Easy to join class • More confident • Calmer • Improve English	• Learning experience • Positive Feeling • Convenient time • Positive Feeling • Positive Feeling • Better learning	• Learning approach • Mood • Flexibility • Mood • Learning approach

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Findings indicated learners' distinct positive inclination in participating MAPLL through e-modules model learning. Out of 8 items responses from questionnaire, 7 items obtained entirely positive responses with reference to the model impact. This covers the aspects of participation, learning flexibility, lessons suitability, learning performance, learning instances variety, real world context learning, and idea exploration.

Additionally, learners expressed positive experience and impacts from model. Three themes, including five categories and seven codes were discovered. Experience wise, learners opined huge learning content and learning approach difference had in MAPLL model which made them more happy, excited and confident in online learning. This indicated learning highly relies on psychological effects (Manoharan, Tan & Sultan, 2022). Particularly, Learner A stated visual aids and personalised instruction utilized in modules eased her understanding towards learning English vocabulary. Aspired by Knowledge Personalization framework in mobile learning (Toh et al., 2016)), the modules created had considered characteristics, abilities, and behaviours of learners.

Lastly, model efficacy findings revealed seven themes, thirteen categories and fifteen codes. Convenience, technology, learning content, mood, flexibility and learning approach were the key themes distinguished. This has indirectly complemented the potential flaws of submission that proposed by Tran (2016) where active participation, learning motivation, discussion and feedback are less likely to take place within an online classroom setting. Finally, it opposed to Halupa (2016) statement in which interpersonal relationships will be neglected because of digital interface. This has magnified the purpose of PL in MAPLL model to sharpen learners' social competence through online learning(Murphy, Redding & Twyman, 2016; Demink-Carthew, Netcoh & Farber, 2020).

Although learners felt satisfied with the model, there are learners who opposed to the idea of learning idea in general, which led to their disagreement about being more motivated to learn in questionnaire. Moreover, the aspects in questionnaire were not all immensely agreed. For instance, participation, learning performance, learning instances variety and real-world context learning, and idea exploration. This implies the model's scope for improving.

Conclusion

MAPLL through e-modules model had put forward opportunities for underprivileged learners in selected rural secondary school to learn digitally equal. Overall, learners reacted positively in questionnaire and interview towards learning online via the model. Therefore, this study proved the potential that MAPLL model could reduce the digital gap among the marginalized learners and encourage their academic, emotional and social development.

The integration of mobile learning in the model has allowed flexible learning without time and space restriction. It has also enlarged possibilities of e-modules of being downloadable and accessible via ample effective tools or alternatives. Besides, learners' needs and interests were considered in a cultivated PLE. Learners gained more autonomy in pursuing own learning breakthrough. Inclusion of both m-learning and PL in MAPLL model has extensively benefited learners in learning online equally. Detailed steps and elements required in the model ascertained learning to reach its optimum effect.

Nevertheless, not all barriers could wholly be solved with the model. There are still unreachable and unresolved aspects as conveyed by learners during the interview, such as external distraction due to environment and learners' reliance on transportation to access internet elsewhere. Additionally, educators might need more time and energy to get accustomed with the model execution especially when teaching in developing countries where educators might experience personalized teaching for the first time. The whole adaptation process will be taxing along with the existing workloads in school. Consequently, the model preparation can be time consuming. This suggests the model to be utilized in smaller scale class. Moreover, MAPLL e-modules approach tested is limited to only language learning context and thus, does not imply fully to other subjects learning. Therefore, these conclusions may result inaccurate inferences. Nonetheless,

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the detailed MAPLL steps carried out and data interpretation are still crucial in complementing the approach.

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