# Mobile-Assisted Language Learning (MALL) in Language Learning

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## Abstract

This is a case study using an interactive digital game to teach grammar via Mobile Assisted Language Learning (MALL). The interactive game via MALL is aimed to ease TESL students' fear and trigger their interest in learning grammar. The game uses the Theory of Variation (Marton & Booth) to design the grammar exercises in the game. A survey questionnaire and a semi-structured interview were administered to gauge the students' perceptions of using the game. The findings show that the game has somewhat improved students' grammar knowledge.

Keywords: Digital board game; Grammar; Mobile Assisted Language Learning; Variation theory


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## 1.0 Introduction

The study expands from the researcher's previous research on the use of the digital board game "Throw Back Time" (TBT) via Mobile Assisted Language Learning (MALL). The last study highlights students' perceptions of the advantages of using TBT via MALL. However, the current research deals with students' perceptions of the benefits and constraints of using TBT via MALL in learning grammar.

Learners of English as a second language (ESL) often consider grammar as complex. They struggle to acquire and master all the syntax, morphology, and various aspects of grammar that seem to be confusing to them (Stavre & Pashko, 2016). It is then not surprising to note that one of the factors that hinder learners from achieving proficiency in English is their limited knowledge of grammar (Mahalingam & Embi, 2017). Sadly, although learners in Malaysia have been exposed to English for more than ten schooling years, they have yet to master the language's grammar by the end of secondary school education (Mahalingam & Embi, 2017). Over the years, great strides have been made in analyzing the benefits of computer-based and network-based software in the teaching and learning of language (Outhwaite, Gulliford & Pitchford, 2020). However, the most crucial issue is how attainable and valuable is the technology that would permit the teaching and learning to spread beyond the educational setting. One technology-based device that is useful and of vital importance to students is the mobile phone (Metruk, R., 2020). Therefore, the mobile phone is an attainable tool for teaching and learning. The study aims to use TBT via MALL to teach grammar tenses and aspects (Simple Present, Simple Past, Present Continuous, and Past Continuous). It also investigates the benefits and constraints that students face in using TBT via MALL.

## 2.0 Literature Review

### Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) by Davis (1989) constitutes the theoretical foundation of this study. TAM is the most favourable theoretical framework in defining user acceptance of information technology (Kang, 2014) and mobile applications (Kumar, K., 2020). Two aspects, perceived usefulness (PU) and perceived ease of use (PEOU), are essential in adopting a technology. Perceived usefulness means "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 986). It has to do with an individual's perceptions of how technology will unmistakably affect one's ability towards better outcomes. Individuals will be optimistic that they will accomplish more with the use of technology. Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 984). It affects an individual's behaviour in utilizing technology. Perceived ease of use will affect behaviour and perceived usefulness. This theory was used to investigate and assess students' perceptions of TBT via MALL in learning grammar tenses in terms of perceived usefulness (PU) and perceived ease of use (PEOU).

**MALL**

Mobile-Assisted Language Learning (MALL), which is the subdivision of Mobile learning and CALL, has made its way into the language classroom as it provides extensive learning benefits (Nikolopoulou, 2020). MALL brings technology into the classroom that turns lessons to be more effective and intriguing through the support of handheld mobile devices. Some of the benefits of MALL include:

- Learners believe that they are subconsciously able to learn something under less pressure (Nikolopoulou, 2020). Once they notice that an application improves their grades, they will use and benefit from it (Franciosi, 2017).
- Learners perceive an approach is right, and it would be used as a practical after-class activity (Thomas & Munoz, 2016). A supportive learning environment can make a big difference in the classroom environment in improving the learners' self-esteem and pursuing their goals.
- Learners can simultaneously participate in various learning activities, can receive course information, notes, and exercises almost instantly (Zou & Li, 2015). Therefore, MALL acts as a negotiator that provides personalized learning and promotes active learning.

Although MALL provides a lot of learning advantages, it also poses challenges:

- The problem in internet connectivity is the biggest problem students face in using MALL in English language classrooms (Nuraeni et al., 2020).
- It might be less attractive as it is bound to the (Harwati Hashim, 2017).
- Fear of losing or breaking the device when using it outdoor (Welsh et al., 2015).
- Learners face technical problems (Ganapathy et al., 2016) and weak devices (Wu, 2015) during the learning session.

A supportive learning environment can make a big difference in the classroom environment in improving the learners' self-esteem and pursuing their goals. Some improvement is necessary to better integrate MALL in learning activities, mobile devices, teachers' roles, and learning support systems. Moreover, material selections and applications should meet learners' needs and consist of practical activities that are neither difficult nor demanding.

## 3.0 Methodology

The research entailed the use of quantitative and qualitative measures. The sample population for this research was selected based on a purposive sampling of 48 Teaching English as a Second Language (TESL) Foundation Programme students of Universiti Teknologi MARA (UiTM) Dengkil Campus. To examine the students' perceptions on the benefits of using the digital board game via MALL, a questionnaire from Ducey (2013) was adopted to evaluate MALL's perceived usefulness and perceived ease of use with some changes made to suit the study. A 5-point-Likert Scale was used, which focuses on Technology Acceptance Model (TAM) elements that include:

1. Perceived Usefulness (PU) – to examine whether TBT via MALL helps learn grammar.
2. Perceived Ease of Use (PEOU) – to see whether TBT via MALL is easy to use.
3. Attitude (A) – to check whether players accept TBT via MALL.
4. Behaviour to use (BI) - to examine whether players would continue using digital games via MALL in the future.

Eleven items used are run on the reliability statistics (Cronbach's Alpha) and SPSS 22 to check their internal reliability.

Besides the questionnaire, a semi-structured interview was also carried out. Standardized, open-ended questions were used with all the respondents in the session. The objective is to facilitate data analysis and comparison among the respondents. Before the interview, a field test was done by one ESL expert to check on the quality of the interview questions concerning the research question.

**TBT**

The digital board game is called "Throw Back Time" (TBT). The students will be trapped in different times reflected in the various English grammatical tenses such as the present, present continuous, past, or past continuous tense when playing the game. The game is developed using unity version 5.4 (2016) and then was upgraded to version 5.5 (2017). The concept of playing the digital board game is similar to playing the "Monopoly" game. The difference is that the "Monopoly" game involves buying and selling assets, whereas TBT involves verb formation. Before playing the game, players have to click on the 'practice' button to learn the basic aspects of grammar tenses and aspects. The game's design was based on a well-established, tested, and practiced learning theory, the variation theory (Lo, 2012). According to this theory, learning is a function of discernment, and discernment is a function of variation. To discern a certain aspect, that aspect must vary against an unchanging background of other aspects. Each learning object has many aspects. Each aspect must first be discerned separately through patterns of variation such as contrast, separation, or generalization, followed by the simultaneous variation of all aspects resulting in fusion (Lo, 2012). For example, in the game, each of the critical aspects (tenses) are treated separately with patterns of variation at first to help students discern them. These are integrated into steps (fusion) to help students see all the aspects together. Before students start playing the game, they have to click on the 'practice' button, where there will be notes, tables, and quizzes on each grammatical tense. The notes are in the form of a formula. It is used as a part of language learning strategy to help learners cultivate language competence as it permits learners to incarnate the learning development (Embi & Amin, 2010). The formula will allow students to remember the uses and functions of each tense easily. Once the students are confident about their progress on each grammar tense and aspect, they can start playing the game by retreating from the 'practice' menu and clicking on the 'board game' button. There are 664 sets of questions arranged into six different

types of questions in the quiz provided in the game. A few examples of the questions are shown and described below:


Figure 1: Two-answer options

The patterns of variation involved (Marton et al., 2004, p.16-17). Contrast - to see the difference (variation) between two values (Present Progressive and Present Tense). Fusion - to use several critical aspects (two tenses) simultaneously.


Figure 2: Choose a similar sentence with the given one

**The patterns of variation involved:**
Separation - separate aspect by varying values from invariant aspect
Generalization - allowing varied appearances of the same value
The question to reinforce that each tense and aspect carries different usage. The examples of the sentences from the same category (past progressive) that serve different usage are explained below:
i.I was overtaking a truck when I heard a loud thump.
(It explains the use of the past progressive with the simple past to talk about an ongoing action that was interrupted by another action. The use of the simple past is for the interrupting action.)
ii.While I was reading, Amy was sleeping.
(It explains two simultaneous actions in progress in the past.)
iii.They were painting their house at 5 p.m. yesterday.
(It describes a specific time in the past.)
iv.She was always complaining over trivial matters.
(It shows irritation or negative behaviour.)

Figure 4: Fix the sentences using the correct grammar rules

**The patterns of variation involved**
Separation - separate aspect by varying values from invariant aspect
Generalization - allowing varied appearances of the same value
Here learners have to separate the correct and incorrect grammar rules and also to generalize the use of grammar rules. Generalization enables learners to see the relationship between the use of each tense and aspect and its meaning.

## 4.0 Results

This section presents the results from the questionnaire Using Technology Acceptance Model (TAM).

1.Perceived Ease of Use (PEOU)

The findings show that 91.5 % of the respondents strongly agree and agree that TBT via MALL is easy to use, and only 2.1 % disagree with the statement. 100% strongly that it is easy to become skillful in using TBT via MALL. Besides, 91.5 % of the respondents strongly agree and agree that learning how to use TBT via MALL is easy, only 2.1 % disagree.

2.Perceived Usefulness (PU)

100% of respondents strongly agree that TBT via MALL helps to improve grammar knowledge. Also, 85.1% of the respondents strongly agree that TBT via MALL helps them remember grammar rules.

3.Attitude (AT)

Also, 95.8. % of the respondents strongly agree and agree that Throwback Time (digital game) via MALL is an excellent idea to learn grammar, and only 4.3 % remained neutral to the statement. A total of 97.8. % of the respondents strongly agree and agree that Throwback Time (digital game) via MALL is a wise idea to learn grammar, and only 2.1 % remained neutral. Apart from that, 78.8% of the respondents strongly agree and agree that they are positive towards TBT via MALL, while 21.3% remained neutral.

4.Behavioral Intention (BI)

A total of 91.5% of the participants intend to use MALL in various learning activities in the future, and the other 8.5% was neutral to the statement. A total of 68% strongly agree and agree to use MALL frequently, while 31.9 % remained neutral. Lastly, 59.6% of the respondents intend to be a heavy MALL user, while the other remaining 40.4% was neutral to the statement.

Table 1 Students' perceptions on TBT via MALL

| No. | Statements | Strongly Agree (%) | Neutral (%) | Disagree (%) |
|---|---|---|---|---|
| 1 | MALL is easy to use | 91.5 | 6.4 | 2.1 |
| 2 | Easy to become skillful | 100 | | |
| 3 | Learning how to use MALL is easy. | 91.5 | 6.4 | 2.1 |
| 4 | MALL helps to improve grammar | 100 | | |
| 5 | MALL helps to remember grammar | 85.1 | 14.9 | |
| 6 | TBT via MALL is a good idea | 95.8 | 4.3 | |
| 7 | TBT via MALL is a wise idea | 97.8 | 2.1 | |
| 8 | I am positive towards TBT via MALL | 78.8 | 21.3 | |
| 9 | I intend to use MALL in various activities | 91.5 | 8.5 | |
| 10 | I intend to use MALL frequently | 68 | 31.9 | |

| | | | |
|---|---|---|---|
| 11 | I intend to be a heavy user of MALL | 59.6 | 40.4 |

The following section describes the interview findings on TBT Via MALL's advantages, which offers learning benefits through constant practice, effective feedback function, fun learning experience, and a unique and valuable application.

We believe that learning will not take place by itself even when exposed to the teaching materials. In MALL, teacher intervention is not available. Therefore, the game must be designed in such a way as to maximize learning in such a situation. Since the items were designed guided by variation theory, we are interested in finding out how the theory has contributed to learning. Two questions (4 and 5) on the questionnaire are related directly to grammar learning; they both scored very highly (100% and 85.1%). The interviews, on the other hand, revealed how the game helped them achieve learning. Participants claimed that they could 'compare and contrast' the usage of the tenses and aspect with time markers.' One group claimed that "having more than one option in the answer part reminded us what the different verbs are for." Some commented that 'The options given lead us to the correct answers". Several other groups reported that "we know and remember what we do wrong and will not repeat the same mistakes." They were also adamant that the discernment of the critical elements will enhance their understanding of grammar. They agreed that when the tenses are mixed up, they learned different kinds of tenses quickly. All these reflected on the success of using the pattern of variation 'contrast' in the design. The usefulness of using the patterns of generalization and fusion is also reflected in the following: participants told us that they 'realized that different tenses and aspects convey different meanings. They further reported that "time phrases" did not always help them find the appropriate answers to the questions. Therefore, another method like checking the contextual clues was also necessary to discern the meaning. They managed to generalize the use of textual meaning to discern the tenses and aspect further. Other than that, they were more alert on the arrangement of "subject verb object." To make sure that the subjects of each tense and aspect agree with the object, they had to consider the singular and plural items. They felt that they did not take the element seriously before being exposed to the game. These are all in line with variation theory, which stresses that variation helps one discern what has been taken for granted.

Participants also welcomed the explanations or reasons initiated in the game. The explanations or reasons helped them learn the connections among the tenses and aspect in a more precise manner. Four of the groups claimed that "the notes in the explanations are concise and straightforward, we can remember the dos and don'ts of grammar elements. They believed they learned a lot from the explanations given that helped enhance their understanding of the critical elements better. Some groups claimed that "the explanations are beneficial as they come right after making the mistakes, the explanations explain what is right and wrong." They felt that the explanation given helped enhance their grammar and their writing and speaking skills. By providing feedback, learners are more at ease as the game is fun and enjoyable.

Moreover, they reported that they were learning in a fun way. One group stated that "as we play, we learn something without realizing it." "We learn to look for clues; we learn the structure of different grammar elements and the specific usage of each tense and aspect." The other group added that "The game makes us independent learners. It all depends on us. If we want to be better, we have to play the game every day". They also added that they were subconsciously able to learn something while having fun in the activity. The positive emotion is in line with the researcher's aim to transform the game as an autonomous learning experience where the learners enjoyably control their learning process.

Several students claimed that using the game via MALL provided them with continuous practice to grammar exercises. "While other friends of mine are panicking and busy reading grammar notes for test 1, we can just relax; we know we will get a lot of input by just playing the game". They believed that the application involved less effort, and they were able to use it anywhere and anytime that they preferred to prepare for their test. Consequently, the approach engaged the students in constantly learning even when they were not under their teachers' supervision in the classroom.

The participants were also in favor of the game application. All of the groups agreed that "The game application is good." One way to sustain the novelty value is to develop different difficulty levels to support learners' interest in accomplishing their learning activities. Above all, they acknowledged the experience they received to see how grammar tenses and aspect work, discover answers to their uncertainties, and discern the new grammar structures through plenty of drills.

This section describes the findings from the interview on the challenges that learners feel after using TBT via MALL:

Some of the groups mentioned that similar questions came out a few times in the game. The 664 questions from the spreadsheet that appear in the board game are chosen randomly. The students might encounter the same questions twice throughout the game. Therefore, it is beyond the researcher's control to ensure that the players will merely encounter a new set of questions in every loop. Nevertheless, some students felt that "please include more quiz questions." However, some felt that "it's fine to see the same questions popping out once or twice as it will further enhance our memory to the structure". Ample practice and repetition of certain elements in gameplay will enhance character skills (Zou & Li, 2015). Nevertheless, further improvement can be made by ensuring that each question will appear once and not more in the future, and additional quizzes should be added to rectify the problem.

Learners also needed more time to play the TBT game as they failed to do so due to their busy schedules. The problem was rectified when the learners were aware that the TBT game was designed based on the Grammar I (TSL 041) subject for that particular semester that involved simple present, present progressive, simple past, and past progressive. Learners will use the technology in many positive ways once they realize its pedagogical values (Thomas & Munoz, 2016).

Some groups criticized the layout of the game. "We pass through the loop over the loop of the same surrounding." It makes the game dry. Can we see different surroundings in each loop?" "I would love to see more visual and audio effects" and "I like more graphic and interactive comments." They wanted to experience different environments or to surround in each loop. They disliked seeing the same features repetitively. The suggestions on improvising the game to be more exciting and to improve the game for future use seem impartial. What worried the researcher at the early stage of the game development was too many features, or interfaces would hamper the game's performance. At the beginning of the study, the researcher was adamant about keeping the game simple with limited features to accelerate the game's performance. Nevertheless, the researcher feels that further improvement can be made by making the game into three stages: easy, intermediate, and advanced stages, respectively. Each loop can represent a different stage with different surroundings and obstacles for the students to experience. Above all, the surroundings and obstacles must be kept simple and serve the purpose of learning while playing. The researcher has to bear in mind that the game has learning purposes and is not designed for entertainment purposes.

Respondents also expressed the drawbacks of the technical glitches of TBT via MALL in terms of usability. "The tab is lagging." I sometimes have to wait longer for the game to run". (Ganapathy et al., 2016); his study also agreed that some applications that seem to be uncomplicated and user-friendly might cause some technical dysfunctionality or inconsistency. Learners also requested a more powerful device to ease their learning. "I think we need to use a more powerful device." "I-phone is better in performance." The learners were using "Ex Mobile" tablets during the experiment. To solve the problem better, they suggested opting for more powerful tablets. Therefore, a continuous evaluation is necessary throughout the experiment to rectify any issues that occur. Since technical glitches only happened to a small number of respondents, the researcher then had to refer to a computer expert and was notified that the problem came from the tablets and not from the game. Educators should opt for smartphones to reduce the drawbacks of mobile devices in many ways (Wu, 2015). Thus, the problem could be avoided if the participants were provided with more sophisticated mobile devices in the future.

As the tablets given to the participants were on a loan basis, they revealed their fear in handling the tablets. "I have to be extra careful in using the tablets." "The facility agreement form that I have signed kind of reminds me to take very good care of the tablets." There is a hidden advantage from the fear that learners developed from losing and damaging the tablet. The fear makes them more careful with the tablets that they receive on a loan basis. This contract indirectly helps to develop learners' sense of responsibility (Welsh et al., 2015). It is good that they abide by the Facility Use Agreement contract that they have signed to ensure that that the device is kept safe.

## 5.0 Discussion

The findings from Perceived Ease of Use (PEOU) revealed that learners acknowledged using TBT via MALL mainly because they could use it easily and become skillful in using it. Hence, a user-friendly game could ease and facilitate learning as it is easy to use. In terms of Perceived Usefulness (PU), Learners could also see the learning benefits from using the game based on their performance in the post-test (from the researcher's previous study). The results are in accordance with a previous study by Davis (1989), which claims that when students notice that an application will make a difference in their grades, they will see the application as beneficial and want to use it and benefit from it. The positive attitude represented their optimistic behaviour in using TBT via mobile technology. The results were also in line with a previous study by Franciosi (2017) that believes that learners' accomplishment depends on their recognition and value towards the particular activity given to them compared to other choices. The positive attitude was in line with the researcher's aim to transform the game into an enjoyable learning experience where the learners control their learning process. The digital game is one of the suggestions to the tools that teachers can add to make teaching enjoyable (Nikolopoulou, 2020). Exciting and competitive games allow learners to concentrate and try their best to win and simultaneously help them retain language input subconsciously.

The findings from learners' perceptions from the semi-structured interview suggest that TBT via MALL offers learning benefits through constant practice, effective feedback function, fun learning experience, and a unique and valuable application. The results are supported by (Thomas & Munoz, 2016) prove that using the digital game via MALL can lead to better learning improvement. The aim is to expose the students to various sentence patterns and guide learners to the clues in every sentence and help them correct the errors in TBT questions. Apart from the fun learning benefits, TBT via MALL application is also seen as unique by learners. The game may not be as intriguing as the commercial games in the market, for example, Mine Craft. But the game is unique, a structured one where the end product has specific objectives and is designed with learning outcomes in mind before it is uploaded into mobile devices.

All in all, the participants were optimistic about their grammar learning experience using the TBT game via MALL. The integration of MALL, if used carefully, will not only make grammar teaching accessible, exciting but can also ease grammar learning (Nikolopoulou, 2020) and extends many other learning benefits (Zou & Li, 2015). Therefore, it is essential for teachers to design enjoyable and meaningful games that will lead to positive learning outcomes.

Although learners showed an encouraging response in using TBT via MALL, some drawbacks were inevitable. However, the researcher believes that there are ways and means to rectify the flaws for further improvement of the game and the continuous use of MALL to give optimum benefits for learners in learning grammar. However, it should also be highlighted that there are times where the 'pen and paper approach is better than the mobile devices. Therefore, we should not abandon the traditional learning approach while, on the other hand, the promising benefits of mobile learning should be enhanced.

## 6.0 Conclusion

The positive results from TBT using MALL can be an example of a learning tool to draw learners closer to grammar and take away their fear of grammar. The use of games that are governed by solid pedagogic principles can complement traditional face-to-face teaching methods. Teachers' burden of providing the technicalities of grammar knowledge can somewhat be eased by technology. Instead, teachers can provide the necessary scaffolding to slow learners who demand personal coaching and attention. The findings from this study also show how much learners are open to creative and innovative teaching. Their favourable accounts towards TBT game via MALL further emphasize the need for effective teaching strategy for a challenging subject, for instance, grammar.

Learners' excitement to technology opens a new direction for teachers to utilize innovative techniques in the classroom. The findings also reveal the importance of catering to learners' learning diversity, learning flexibility, and innovative teaching techniques to create a thriving learning environment. However, as the researcher was the one who interviewed the participants, there might have been a certain amount of inhibition from the learners when they shared their views and perceptions on the game. Future research can look into a game application that can correct students' sentences. It will be an engaging, interactive game that can generate a two-way interaction between the player and the application.

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## Article Contribution to Related Field of Study

Educational / Learning Environment

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