

The Effectiveness of Mobile-Assisted Language Learning (MALL) via smartphone applications for tertiary ESL learners

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Article Info	ABSTRACT
<p>Article history: Received: 22 July 2022 Revised: 3 August 2022 Accepted: 25 August 2022 Published: 1 September 2022</p> <p>Keywords: Mobile-Assisted Language Learning(MALL) Motivation Attitude Class participation Smartphone applications</p> <p></p>	<p>Mobile-Assisted Language Learning (MALL) is important in motivating learners and changing their attitudes in learning the English language interactively. This study explored a group of tertiary students in a Malaysian English language classroom setting to investigate the effectiveness of the MALL method to support English language learning by using selected smartphone applications. This study aimed to determine the students' motivation, attitude, and class participation before and after using the selected smartphone applications in the ESL classroom. The mixed-method analyses were employed to strengthen the findings that supported the soundness of this study and the aptness of the smartphone applications used in this study. Online questionnaires and interviews were conducted to collect the data for this study. The questionnaires were analysed using SPSS version 25, and the interviews were analysed using NVIVO R1. The quantitative findings revealed differences in the students' attitudes which impacted their motivation and resulted in positive classroom participation after the students engaged with the smartphone applications during their ESL lessons. The qualitative findings revealed the students' expectations and perspectives in detail. This study asserts that MALL brings advantages in the ESL classroom. It empowers learners to be more responsible in learning and regulating their communication between peers and teachers through technologically supported participation, especially during this COVID-19 pandemic.</p>

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INTRODUCTION

Mobile Learning, also known as M-learning, is a fantastic art of using mobile technologies to develop the learning experience. Ozdamli and Cavus stated that "Mobile learning as a kind of learning model is allowing learners to obtain learning materials anywhere and anytime using mobile technologies and the Internet" (2011, p. 937). Patil, Almale, Patil, Gujrathi, Dhakne-Palwe, Patil, and Gosavi (2016) strongly suggested that "mobile technology promotes construction and sharing of knowledge which in turn help students' learning by activating their cognitive processes, explaining and elaborating their understanding" (p. 1). Since mobile devices have been included as one of the instructional tools for teaching and learning, pedagogies related to mobile learning should be used as a strategy for student-centred learning.

Mobile learning has brought English language teaching to a new level in or outside the classroom. Muhammed (2014) stated that M-learning has many advantages, including the ease of downloading "certain English applications and programs that may help learners to improve their language skills, their language systems like grammar and vocabulary." In support of this, Zervas and Sampson (2015, p. 852) have defined Mobile Assisted Language Learning (MALL) as "an approach to language learning that is assisted or enhanced through the use of a handheld mobile device." Additionally, Rahimi and Miri (2014, p. 1471) posited that MALL is known as "any type of language learning that takes place with the help of portable devices." They further explained that learning using MALL "emphasizes continuity or spontaneity of access and interaction across different contexts of use" (p. 1471).

Blended learning has been integrated into the teaching and learning process in many higher institutions in Malaysia (Wahab, Othman & Warris, 2016). This learning approach was mainly incorporated in ESL classroom teaching using website platforms or the universities' own Learning Management System (LMS) portal (Goh & Yang, 2021). However, many educators did not realize or accept the integration of smartphone applications, especially in the English language classroom, which is beneficial and exciting for students studying using their own handheld devices. The following research questions and objectives were formulated to guide this study (Kassim & Said, 2020).

Research Questions

- i. How are the students' classroom participation, motivation, and attitude towards learning the English language with the aid of selected smartphone applications in their classroom?
- ii. What are the benefits of smartphone applications for the student's educational and social purposes?
- iii. How effective are the selected smartphone applications used in their ESL classroom?

Research Objectives

- i. To investigate the perceptions of the students' classroom participation, motivation, and attitude towards learning the English language with selected smartphone applications in their classroom.
- ii. To discover the benefits of smartphone applications for the student's educational and social purposes.
- iii. To explore the selected smartphone applications effectiveness in their ESL classroom.

LITERATURE REVIEW

Mohamed and Norazah (2015, p.4) stated that "Mobile technologies are becoming more entrenched, ubiquitous and networked, with expanded and superior capabilities and capacities for great social interactions, context awareness, and internet connectivity." Mobile learning helps learners enjoy productive lifelong learning by integrating the authentic and realism of life into the formal and informal learning process. To justify why smartphones are essential in the learning process, Cheong, Chai, and Rajasvaran (2016, p. 2737) mentioned that "Smartphones has revolutionized the usage of smartphones as a communication tool for nearly every facet of the digital lifestyle, including web browsing, multimedia entertainment, navigation, electronic payments, smart keys as well as mobile learning." The researchers further posited that "In today's world, students assimilate learning through educational applications running

on mobile devices without the limitations of time and location" (2015, p.1). Through mapping, display selection, presentation, and Wi-Fi modules, educational content is presented.

Muhammed (2014), in his study, mentioned that his targeted EFL university students preferred to use smartphone applications in their English language classrooms. This is because, "first, English is the only language of many of the applications they used to strengthen their language learning experience. Second, as the targeted students were from the English department, the smartphone is portable and compatible". Although Muhammed's (2014) study supported the positive impact of M – learning on EFL students, it is still not clear whether the same method can be applied to other students from different courses.

Another study by Patil, Almale, Patil, Gujrathi, Dhakne-Palwe, Patil, and Gosavi (2016) explored the attitudes and perceptions of undergraduate students towards M-learning. Their study indicated that "the mobile phone-enabled students to communicate easily with faculty and each other, regardless of time and place. It also helped students exchange information and data related to their reference materials" (2016, p. 1). Although their study showed positive results through the questionnaire given to the students, the students' attitudes and perceptions should be explored in-depth through face-to-face interviews, which was lacking in their study.

Abdullah (2021) completed his PhD thesis that investigated the reality use of smartphone applications in a university in Saudi Arabia. This study adopted a mixed-method research approach in which the data was collected through a survey and semi-structured interviews. This study only focused on the patterns of smartphone apps usage instead of how it is utilised in the classroom. Moreover, it involved all the students who did not specify how smartphone apps impacted them, especially in the ESL classroom.

On the other hand, Adje (2019) studied the use and effect of smartphone applications in the students' learning activities at a higher education institution in Ghana. The quantitative method was applied in his study through questionnaires to find students' perspectives on smartphone applications in the learning activities. Although the findings showed positive views from the students, they also mentioned that there are also negative effects in using smartphone applications in the classroom, such as network problems, call interruptions during the usage, and the small screen size.

Bahari (2021) in his study posited that the pedagogical aspect of MALL is "towards more flexible, adjustable and interoperable instructional designs that can address a wide range of motivational factors" (p. 15). It is suggested that instead of getting the teaching content ready for all types of learners, the teachers must create an adaptive teaching content that varies from one learner to another which is believed to enhance their motivation and engagement in the class.

Another study on the usage of smartphone applications in a higher institution in Malaysia was conducted by Kumar, Rajamanickam, and Sharifah (2020) entitled 'Exploring the Use of Mobile Apps for Learning: A Case Study on Final Year Engineering Undergraduates in Malaysia.' This study also used only the quantitative method in exploring the students' usage of smartphone applications in learning. The samples were chosen in this study only focused on the students from only one programme which the findings cannot be generalized to students from other programs. Their study focused on studying the students' habits and the usage of smartphone applications, especially in informal learning.

The learning of language attitude in this study refers to the affective reactions towards the language learning via mobile devices. Gardner's theory (AMTB) is also important in identifying attitudes because it is seen as a component that can motivate in language learning. Gardner (1985) "uses the term attitude as referring to the mental and neutral state of readiness organized through experience, which exerts an influence on the individual's response to all objects and situations to which it is related", Ngoc (2004, p.4). The ARCS model is an instructional design approach that focuses on the motivational aspects of learning environment, which was created by John Keller in 1987. This model emphasis that when the students are taught by using mobile devices, it can capture their attention because this motivational element is able to engage the students and activates their knowledge through visual in language learning. In Social Constructivism, collaborative learning is very much emphasized in the teaching and learning process to encourage students' participation.

This is because, collaborative learning methods require learners to develop teamwork skills and to see individual learning as essentially related to the success of group learning (Akyol & Fer, 2010). More generally, collaborative learning should be a process of peer interaction that is mediated and structured by the teacher. Discussion can be promoted by the presentation of specific concepts, problems, or scenarios; it is guided by means of effectively directed questions, the introduction and clarification of concepts and information, and references to previously learned material.

It is found that most of the studies that were related to the usage of smartphone applications in the ESL classroom were only focused to only one research method that is either quantitative or qualitative method. Some studies investigated the students' perceptions using the survey method instead of experimenting with smartphone applications in the ESL classroom. Most of the studies rarely adopt mixed method design as it takes up longer period to analyse both data. Moreover, the studies presented above did not clearly indicated on how smartphone applications had motivated the students' to learning English language and how this was possible in changing their attitudes and be more participative in learning the language in the ESL classroom. Therefore, our study introduces a novel approach on how the mixed-method research design can be applied to study the students' classroom participation, motivation, and attitude in the ESL classroom.

METHODOLOGY

This section shows the methodology applied in this study. This section will discuss the participants, instruments, research process, data analysis procedures, and ethical considerations.

Participants

The present study was conducted among undergraduates in a public university in the northern part of Malaysia. 48 diploma students (male and female) with mixed language proficiency abilities participated in this study from December 2016 till April 2017. The students were selected based on purposive sampling as this target group of students was required to take the ELC150/151: Integrated Language Skills II during their 2nd semester of the studies. This group of students comes from 3 different programs: Hotel and Tourism, Electrical Engineering, and Mechanical Engineering. The participants were between 19 – 20 years old. Since this is a pilot study, only 48 students answered the survey, and 5 students from the 48 students were chosen for the face-to-face interview. The selection was based on the number of students given by the faculty management. Before the research took off, 'Informed Consent Statements' were distributed and signed among the volunteered students which briefly explained the nature of the research and offered assurance of confidentiality and protection of the subjects' anonymity.

Instruments

Qualitative and quantitative methods were used in this study to evaluate the effectiveness of smartphone applications in the ESL classroom. According to Gay, Mills, and Airasian, it is also known as "the triangulation mixed methods design...data are equally weighted and are collected concurrently throughout the same study" (2011, p. 486). It is further explained by Creswell and Creswell that "In this design, the investigator typically collects both forms of data at roughly the same time and then integrates the information in the interpretation of the overall results" (2018, p. 52). A set of questionnaires with 36 items focussing on motivation, attitude, and classroom participation was constructed based on the ARCS and Gardner's AMTB models to obtain the quantitative data. This questionnaire was created using the Survey Monkey platform, and the link was shared with 48 students to answer the questionnaire through their smartphones. The 48 students were chosen based on the purposive sampling because this population is selected based on certain criteria, such as the ESL course they are enrolled in that semester where this study is conducted.

For the qualitative method, interview questions were adapted from Liu (2014) and Guo (2015), and six students voluntarily participated in the interview sessions. 15 questions intend to investigate the students' motivation, attitude, and classroom participation after using selected smartphone applications in the ESL classroom. The interview was one-to-one and took about 30 minutes, and it was recorded using a video

camera with permission and approval from the management and the participants. The questionnaire and the interview questions were validated by a professor from a Malaysian public university.

The smartphone applications used during the ESL classroom teaching and learning are EDMODO, TED Videos, Cambridge Advanced Learner's Dictionary, Sounds (Macmillan), Thinglink, Lettrs, Speaking Pal English Tutor, Busuu, and Speak English (Kaplan).

Research Process

This study adopted the mixed-method design that combines the quantitative and qualitative approaches to understand the research thoroughly. This design is also known as triangulation mixed methods design, where both approaches are weighted equally. According to Gay, Mills, and Airasian (2011, p. 486), "The fully integrated QUAN-QUAL approach is the most challenging type of mixed methods research because it requires that the researcher equally value concurrently collected quantitative and qualitative data and that the researcher looks critically at the results of the analysis to determine if the sources revealed similar findings." Thus, the research process of this study involved 8 steps to ensure a smooth flow of this study. The steps are:

Step 1: Selecting the gap/research area from the regular ESL classroom practice.

Step 2: Formulating research objectives and research questions.

Step 3: Reading and reviewing the literatures to support the study.

Step 4: Preparing the Research Design.

Step 5: Selecting the instruments for the mixed-method research design.

Step 6: Collecting the data through an online questionnaire and face-to-face interviews.

Step 7: Data analysis by using software for quantitative and qualitative data.

Step 8: Interpretation of the data and report writing.

Data Analysis Procedures

The data analysis procedures are an essential aspect of every study. It has guided the researchers to collect, analyze, and interpret the data findings and answer the research questions.

Quantitative Data

In this method, the descriptive statistics data obtained from the questionnaire were analysed to understand the selected smartphone applications' exposure to the participants in the ESL classroom. The statistical tests applied in this study are frequency, mean and standard deviation. The procedures started by identifying the participants in the chosen institution. Purposive sampling method was used in this study. Once the participants were confirmed, the questionnaire was constructed and distributed online using the Survey Monkey platform. The data obtained from the questionnaire were analysed by using SPSS version 25 software. The data were interpreted by analysing the frequency, mean, and descriptions of the data spread through standard deviation.

Qualitative Data

This data collection is non-numerical and collected through face-to-face interviews and recordings. This qualitative data provides further information to the quantitative data, strengthening the value of a study. The procedures in collecting the qualitative data collection started with identifying the participants for the interviews. The participants were determined by using the purposive sampling method. Next, a list of semi-structured questions for the interview was constructed. Once completed, the interviews were conducted face-to-face with the participants involved, and the entire process was recorded. The data collected through the verbal interviews were then transcribed and analysed using the thematic analysis method with the guide of NVIVO R1 software.

RESEARCH FINDINGS & DISCUSSION

This section discusses the findings of the students' classroom participation, motivation, and attitude towards learning the English language with smartphone applications in the classroom. These findings were derived from the data that were collected through the questionnaire. Figure 1 and Figure 2 show the thematic analysis of the benefits and the effectiveness of the smartphone applications in the ESL classroom. In addition, some of the students' responses were included and discussed to support the thematic analysis of the qualitative data.

Table 1

Findings of the students' classroom participation towards learning the English language with the aid of smartphone applications

Question	Scale	Frequency	Percentage	Mean	Standard Deviation
Project Orientation 1. I learn best in class when I can participate in class activities by using the smartphone applications	Strongly agree	9	18.7	1.94	0.56
	Agree	33	68.7		
	Neutral	6	12.5		
	Disagree	0	0		
	Strongly disagree	0	0		
2. I understand things better in class when I participate using my smartphone applications	Strongly agree	5	10.4	2.0	0.46
	Agree	38	79.1		
	Neutral	5	10.4		
	Disagree	0	0		
	Strongly disagree	0	0		
3. I enjoy learning English in class when I participate using my smartphone applications	Strongly agree	6	12.5	2.02	0.53
	Agree	35	73		
	Neutral	7	14.6		
	Disagree	0	0		
	Strongly disagree	0	0		
4. When the teacher tells me the instructions on how to use the smartphone applications to do the assignments, I learn better in class	Strongly agree	6	12.5	2.02	0.53
	Agree	35	73		
	Neutral	7	14.6		
	Disagree	0	0		
	Strongly disagree	0	0		
5. I learn more about the English Language when I can make something for a class project from the smartphone applications	Strongly agree	7	14.6	1.98	0.53
	Agree	35	73		
	Neutral	6	12.5		
	Disagree	0	0		
	Strongly disagree	0	0		
Group Activity Orientation				1.96	0.58
6. I enjoy working on an assignment with more than two of my classmates	Strongly agree	9	18.7	1.96	0.58
	Agree	32	66.7		
	Neutral	7	14.6		
	Disagree	0	0		
	Strongly disagree	0	0		
7. I get more work done when I work with my other classmates	Strongly agree	7	14.6	2.08	0.65
	Agree	31	64.5		
	Neutral	9	18.7		
	Disagree	1	2.1		
	Strongly disagree	0	0		
8. I learn best when I am working with others by using smartphone	Strongly agree	6	12.5	2.0	0.55
	Agree	37	77.1		
	Neutral	4	8.3		

applications in class	Disagree	1	2.1		
	Strongly disagree	0	0		
9. I prefer to study with other classmates than studying alone when I use the smartphone applications	Strongly agree	7	14.6	2.13	0.64
	Agree	28	58.3		
	Neutral	13	27.1		
	Disagree	0	0		
	Strongly disagree	0	0		
10. I learn more when I study with a group	Strongly agree	10	20.8	1.94	0.60
	Agree	31	64.5		
	Neutral	7	14.6		
	Disagree	0	0		
	Strongly disagree	0	0		
Individual Activity Orientation				2.19	0.67
11. When I study alone with my smartphone applications, I learn better	Strongly agree	6	12.5		
	Agree	28	58.3		
	Neutral	13	27.1		
	Disagree	1	2.1		
	Strongly disagree	0	0		
12. I learn more by reading and listening to the materials in the smartphone applications than by listening to lectures	Strongly agree	8	16.7	2.27	0.79
	Agree	21	43.7		
	Neutral	17	35.4		
	Disagree	2	4.2		
	Strongly disagree	0	0		
13. I understand better when I read instructions by myself	Strongly agree	5	10.4	2.23	0.66
	Agree	28	58.3		
	Neutral	14	29.2		
	Disagree	1	2.1		
	Strongly disagree	0	0		

The findings in Table 1 show that with smartphone applications, the students enjoyed and learned better when given project-based activities. They could work with team members as they understood better when the teacher gave a task. When the students were given a task individually, there were mixed reactions as some of them disagreed that they learned better when alone. The mean scores for each question suggested that most students agreed that smartphone applications allowed them to participate better in the classroom whenever the projects were given, whether as group work or individual activities. On the other hand, most of the students strongly disagreed when asked about working alone with smartphone applications for the studies. This is because they felt that they performed better when working with their peers or in groups when using smartphone applications in the ESL classroom.

Table 2

Findings of the students' motivation towards learning the English language with the aid of smartphone applications

Question	Scale	Frequency	Percentage	Mean	Standard Deviation
14. It is clear to me how the content of the applications is related to things I already know	Very true	1	2.1	2.71	0.80
	Mostly true	20	41.6		
	Moderately true	20	41.6		
	Slightly true	6	12.5		
	Not true	1	2.1		
15. These smartphone applications that are	Very true	2	4.2	2.46	0.77
	Mostly true	28	58.3		

related to the English language are eye-catching	Moderately true Slightly true Not true	12 6 0	25 12.5 0		
16. There were explanations, visuals, and examples that showed me how these applications could be necessary to other language learners	Very true Mostly true Moderately true Slightly true Not true	3 27 16 2 0	6.25 56 33 4.2 0	2.38	0.67
17. Completing the assignments successfully by using the applications on my smartphone was essential to me	Very true Mostly true Moderately true Slightly true Not true	4 24 16 3 1	8.3 50 33 6.25 2.1	2.44	0.82
18. The assignments given via the applications was hard to keep my attention on the lessons	Very true Mostly true Moderately true Slightly true Not true	2 13 15 13 5	4.2 27 31.2 27 10.4	3.13	1.06
19. As I worked on the assignments given, I was confident that I could learn more about the English Language	Very true Mostly true Moderately true Slightly true Not true	3 29 14 2 0	6.25 60.4 29.2 4.2 0	2.31	0.66
20. I enjoyed the lesson so much that I would like to know more applications that are used to learn the English language	Very true Mostly true Moderately true Slightly true Not true	3 27 14 4 0	6.25 56.2 29.2 8.3 0	2.40	0.74
21. The assignments and exercises given via the applications were too difficult	Very true Mostly true Moderately true Slightly true Not true	2 11 13 14 8	4.2 23 27.1 29.2 16.7	3.31	1.13
22. I enjoyed my ELC 150 Course because the usage of the applications had stimulated my interest in the lesson	Very true Mostly true Moderately true Slightly true Not true	7 27 12 2 0	14.6 56.2 25 4.2 0	2.19	0.73
23. The variety of applications introduced in my ELC 150 course helped keep my attention on the lesson	Very true Mostly true Moderately true Slightly true Not true	4 26 16 2 0	8.3 54.2 33.3 4.2 0	2.33	0.69
24. The content of the applications was helpful for me to learn the English language	Very true Mostly true Moderately true Slightly true Not true	6 26 14 2 0	12.5 54.2 29.2 4.2 0	2.25	0.73
25. The excellent	Very true	7	14.6	2.31	0.80

organization of learning ELC150 course with the aid of selected smartphone applications helped me to be confident that I will score better in tests and examination	Mostly true	22	46		
	Moderately true	16	33.3		
	Slightly true	3	6.25		
	Not true	0	0		
26. I enjoyed studying this ELC 150 course with the usage of smartphone applications	Very true	6	12.5	2.21	0.71
	Mostly true	28	58.3		
	Moderately true	12	25		
	Slightly true	2	4.2		
	Not true	0	0		

Table 2 above shows the students' motivation after some of the selected smartphone applications were used during the teaching and learning in the English language classroom. The findings in Table 2 indicated very positive feedback for all the 13 items given to evaluate the students' level of motivation. Machmud and Abdullah (2017) attested that "the use of smartphone in the teaching and learning process contributes a positive impact to the increase of learning achievement in English...when the students are taught using smartphone integrated model of teaching" (p. 16).

The findings of this study further add evidence for teachers to integrate smartphone applications in their classroom teachings. The devices bring about benefits such as giving confidence for the students to learn, keeping their attention throughout their lessons, and bringing enjoyment in the English language learning. A study done by Ying, Kehing, Mohamad and Melor (2022) also supported this finding as they have stated that the integration of smartphone applications in their classroom has also "...eases students in doing their preparation for their oral presentation and this indirectly increases their confidence and motivational level. This approach has proven to be helpful to the students to learn at their own pace while the instructor acts more like a facilitator and provides guidance whenever necessary" (p. 1335).

Table 3
Findings of the student's attitude towards learning the English language with the aid of smartphone applications

Question	Scale	Frequency	Percentage	Mean	Standard Deviation
27. It is important to use English in government offices and other places as it helps to carry out tasks more effectively	Agree	47	98	1.02	0.14
	Disagree	1	2		
28. English should not be a compulsory subject in higher institutions in Malaysia	Agree	13	27	1.73	0.45
	Disagree	35	73		
29. English should be the medium of instruction at the higher institutions in Malaysia	Agree	43	89.5	1.10	0.31
	Disagree	5	10.5		
30. Learning English in the university is a waste of time	Agree	2	4.2	1.96	0.20
	Disagree	46	95.8		
31. I have always had a strong desire in learning and experience the English Language because it is fun	Agree	46	95.8	1.04	0.20
	Disagree	2	4.2		
32. I work hard in learning the	Agree	43	89.5	1.10	0.31

English Language	Disagree	5	10.5		
33. My family and friends helped me in acquiring the English Language	Agree	43	89.5	1.10	0.31
	Disagree	5	10.5		
34. I usually give up learning English whenever I find it difficult in understanding anything in English	Agree	6	12.5	1.88	0.33
	Disagree	42	87.5		
35. All the subjects in this university should be taught in English	Agree	30	62.5	1.40	0.49
	Disagree	18	37.5		
36. I always look forward to new issues and methods in my English Language classroom	Agree	37	77.1	1.23	0.42
	Disagree	11	22.9		

Apart from the students' class participation and motivation tested in this study, their attitude towards studying the English language with smartphone applications was also analysed, as shown in Table 3. The findings in Table 3 strongly indicate that the student's perception of English language learning is very positive. They mostly agreed that English should be used more in the educational context. Only a minority of the students (27%) did not agree that English should be compulsory in Malaysian higher institutions.

Alfi (2020) noted that by using mobile application in the ESL classroom tend to gain better results in the students' participation, attitude and motivation as it gives the students the freedom and authority to participate in the classroom activities. Furthermore, Alfi (2020) added that smartphone applications "can enhance the students' learning performance, boost their involvement in classroom activities and promote a positive attitude toward the potentials of MALL" (p. 216). That is the reason why we can see that majority of the students who were involved in this study agreed that the usage of smartphone applications in language learning boosts their motivation and positive attitude and encouraged them to be more participative in the classroom activities.

Kim and Kwon (2012) explained that "mobile learning provides students with some advantages to facilitate productivity and effectiveness by allowing them to be more flexible, accessible and to personalize their learning activities," as cited by Nurhaeni and Purnawarman (2018, p. 44). When learning is flexible, students will be motivated to learn at their own pace, promoting autonomous learning.

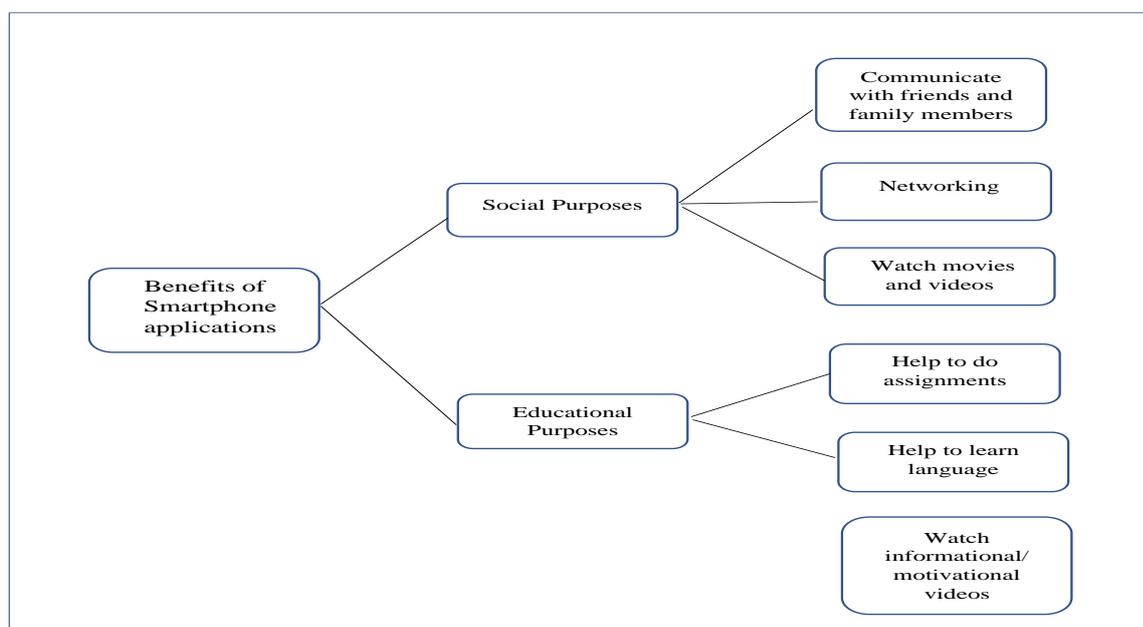


Figure 1: Tree diagram of the benefits of smartphone applications

The thematic analysis in Figure 1 shows the benefits of smartphone applications in the English language classroom as reported by the participants. The two important keywords deduced from the interviews were social and educational purposes. The findings from the interviews suggested that these students primarily used their smartphone applications to communicate with their friends and family members and build a network among their project members and students at other universities. In addition, they also downloaded a few applications for entertainment by watching movies and videos. Some students primarily used smartphone applications for educational purposes to help them to do their assignments, watch informational videos related to their studies, motivational videos, and other applications that facilitate their English language learning.

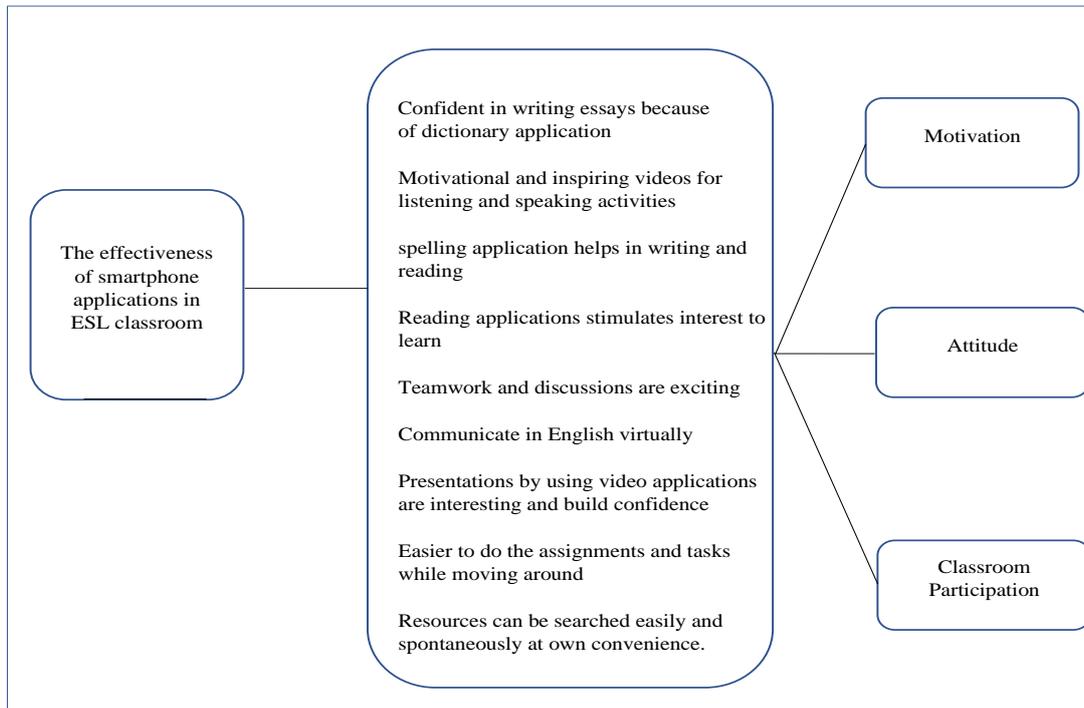


Figure 2 Tree diagram of the effectiveness of smartphone applications in the ESL classroom

The second tree diagram in Figure 2 depicts the effectiveness of smartphone applications in the ESL classroom. After the usage of smartphone applications in the teaching and learning of the English language in the classroom by their teachers, it was found that the students were more confident in writing essays and spelling the words correctly by using the dictionary and spelling applications. Other than that, the students admitted that the video applications have helped them strengthen their listening and speaking skills, especially some of the applications that enabled them to communicate virtually and reading applications that stimulated their reading interest. In addition, several students mentioned that some of the applications that were integrated into their classroom activities were interesting. They were asked to do presentations using video applications and other assignments. At the same time, they moved around with their smartphones.

Moreover, they did mention that most of the tasks given in the class were easier to complete with the help of the applications that provided resources that can be searched quickly and spontaneously at their convenience. Similarly, Farrah and Abu-Dawood's (2018) study found that "mobile applications are likely to present an additional valuable outcome on learning in this challenging, yet fascinating, and motivating learning environment" (p. 63). The researchers also further concluded that "...using mobile applications in the teaching and learning process might have a noteworthy effect on the students' academic progress" (2018, p. 63). Undeniably, the findings from the students' interviews clearly showed that the integration of smartphone applications in their English classes had motivated the students by encouraging more positive classroom participation and a change of attitude on how they perceive learning the English language. In support to this,

Jeong (2022) in his study mentioned that “the learners have a positive intention to use mobile phone applications for English learning in the future implies that using mobile phone applications has a potential value for language learners’ self-directed learning in making their learning experience more sustainable” (p. 11). When learning is sustainable, it will tremendously increase students’ motivation and autonomy in learning, especially when acquiring language learning.

Below are some of the responses taken from the interviews to show how the students' welcomed the use of smartphone applications in their ESL classroom. The students are named R1 – R6 to refer to the number of students interviewed in this study. Regarding the benefits of integrating smartphone applications in the ESL classroom, most of the students mentioned that smartphones are portable and more accessible to be carried anywhere, especially when we need to search for some information.

R1: Like traditional methods like using chalk and board, it was so dull....by using mobile applications, teamwork or a group assignment, it will be more exciting, and it will discipline them to do their work on time. And, I do think it is more interesting because they can just discuss with, like their own style.....They can just search for what they want.

R3: It is the effective way to learning, because it is new for us learning in using smartphone instead of using books. It's quite boring because we have to turn the page over and over again, and it will make us sleepy and fall asleep in the class sometimes. But, we are using smartphones it's quite new and interesting for us.

R3: It is easier for us to do our assignment because we don't have to write our assignment on the paper and we send it to you.

R6: You can access. It means that we can bring our phone anywhere and use it in our class when we have the Internet, and Wi-Fi, in faculty we have UniFi so we can just use it and just use the application using phone.

R5: By using mobile phone apps, I think easy. For example, in group assignment, we can communicate easily. We don't have to meet everyone in one place to discuss anything about our assignment so it is easy to communicate.

R6: Smartphone is an effective tool to learn.

In terms of the smartphone applications' effectiveness in their ESL classroom to boost their motivation, attitude, and classroom participation, the students reported the following.

R2: I started to use WeChat because we can communicate with strangers. So that because most of students really shy to talk with their friends, so a way to talk in English so maybe you can just talk to strangers just like want to learn something...

R2: It will a change for them, maybe they like to learn but they are kind of shy, maybe just like me, again. For me, just need to read many things, like short stories, to improve. Like Watt Pad, really helps a lot to improve the skills of language. So by the time when they started to improve, they have mastered the skills in English, and then they can speak in front of the people.

R3: Aa... What to say... English Grammar Test helped me to improve my grammar because I will answer the question and it will go out like why it is wrong to use the tense in the sentences, and apart we have to use, why we should that verb in that sentence.

R3: Dictionary in hand phone is easier for us like we can just write down what we want to search the word that we don't know. But, like the real challenge is big and heavy so it's quite boring to turn the page over and over again.

R4: The new one that intrigues me is Edmodo. Because it's the first application that I've ever encountered that it's an app that contains everyone. I mean, it's a classroom, it's a virtual classroom that when you post something instead of posting to groups, you can post to the Edmodo then Edmodo saves it. So, it fascinates me.

R5: For our assignment, in electrical lab, we can search some information about the circuit, operation and how to go...

The findings from the interviews strongly suggested that integrating smartphone applications in the ESL classroom are effective in the teaching and learning scenario. However, the interviewees shared some limitations that needed to be addressed. The problems they have encountered throughout the learning process are internet connection problems, technical glitches, and lack of space/storage in their phone due to the type

of smartphone devices the students own. On top of that, the students also mentioned that some students might end up playing games or chatting if they were not supervised. This can distract or influence other students. All the students agreed that their self-discipline was crucial, and they needed to take responsibility in the learning process when they were given the freedom to use smartphone applications to learn in the classroom.

IMPLICATION

This study focused on the importance of using smartphone applications in the English language classroom. Although some participants mentioned problems arising due to memory storage, transfer speed, and high data usage, they still agreed that smartphone applications were convenient, interactive, and helpful during lessons. This method can be used to teach various courses. It can be expanded to school students who are currently undergoing 'Home-Based Teaching and Learning (PdPR) classes during this COVID – 19 pandemic in Malaysia. To move forward, it is important to know the readiness and the acceptance of the teachers and the students to integrate smartphone applications in their teaching and learning scenarios. This supports the new norm of learning that can be learned at 'anytime' and 'anywhere.

CONCLUSION AND RECOMMENDATION

Using smartphone applications in the English language classroom enables the learners to have a comprehensive scope in learning and exploring new opportunities in the English Language classroom. In this study, the researchers investigated how some of the selected smartphone applications can enhance the students' motivation, attitude, and classroom participation in the English language classroom at a higher institution. As the study revealed, the selected smartphone applications are likely to give positive outcomes in the English language classroom as an additional teaching tool. It helps motivate them, change their attitude and actively participate in classroom activities. Most of the available studies focused on the acceptance and readiness by the students and teachers on the use of smartphone applications in the classroom. Karunasri, Damodar and Ravikumar (2022) mentioned in their paper that “Mobile Assisted Language Learning curriculum will enhance students' ability to comprehend course material and give possibilities for outside-of-classroom participation in the course” (p. 51). According to them, MALL has the potential to experience real-world learning activities by breaking the barrier of traditional teaching in the classroom.

This study paid attention to how the selected smartphones impacted the students' performance and behavior. According to Bidin and Ziden (2013), some factors need attention in terms of the usage of smartphone applications in the classroom setting, such as features of the devices, usability, functionality, ownership, privacy, control of learning, and flexibility. The primary concern of this study is to pull the students' attention towards English language lessons in either physical or virtual classrooms. As supported by Hossain (2018), "Learning English Language with the help of smartphone and apps is indeed quite enjoyable, time-saving and cost-effective. It can ubiquitously take place" (p. 2). Therefore, some of the issues that need further considerations on the usage of smartphone applications in the classroom are the pedagogical aspects aligned to education 4.0 and teachers' acceptance and readiness to use these smartphone applications as part of their classroom activities. This study can also be replicated in public and private universities, colleges, and schools in Malaysia to understand better the feasibility of integrating smartphone applications in the teaching and learning process, especially in this COVID-19 pandemic.

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