Effectiveness of Mobile Assisted Vocabulary Learning Applications (MAVL) as a self-learning tool for ESL learners in Sri Lanka

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Abstract

The advancements in mobile technologies have changed how teaching and learning processes are conducted in the higher education sector. Mobile-Assisted Vocabulary Learning (MAVL) is a part of Mobile Assisted Language Learning (MALL) which is now a demarcating element in the ESL (English as a Second Language) classroom for the language improvement of the learners. MAVL applications are used widely in international language education, yet in Sri Lanka, language learners are limited to printed materials which are not enough to maximize their updated vocabulary knowledge. MAVL applications are used among Sri Lankan ESL learners hardly less than printed material to learn vocabulary and enhance it, which creates the research gap in this study. The research aims to introduce professional and practical MAVL applications to enhance vocabulary, introduce MAVL applications as a helping tool, and enhance their vocabulary and writing competence. The research has experimented with a mixed-method approach, with a sample of twenty ESL learners and five ESL teachers from the university sector. The questionnaire, interviews, and two tests were conducted for the data collection. The results revealed that students found the MAVL application practical, motivating, and helpful. Further, the participants had the potential to use the applications independently, and it made teachers conduct lessons efficiently in the classrooms. The results illustrated that MAVL applications contained positive attitudes toward making mobile-assisted vocabulary improvements. It can be concluded that using MAVL Applications as a self-learning tool would improve ESL learners' vocabulary and the teaching-learning process.

Keywords: ESL Classroom, MAVL Applications, Mobile Learning, Self-learning, Vocabulary Learning

INTRODUCTION

Emerging changes in the technological world have empowered the ESL teaching and learning system in the world. Traditional approaches to language learning, including teaching and learning in a structured classroom setting, are under strain due to these dramatic changes. Mobile-Assisted Language Learning (MALL) is a vital phenomenon vastly spread over language teaching and learning, including numerous technicalities. MAVL can be mentioned as a subpart of MALL, as it is related to mobile learning in the ESL classroom, which has become a trending language learning procedure. The research is based on the MAVL applications and their effectiveness for ESL learners to use it as a self-learning tool to enhance their vocabulary in language competence. Vocabulary improvement is efficient in language learning as it directly affects writing, reading, listening, and speaking.

The usage of MAVL applications is used by ESL learners worldwide, yet, the usage takes a lower percentage in the Sri Lankan context. The ESL learners in the ESL context practice their language and vocabulary enhancement with the printed media, which gives them knowledge of the course in a conventional classroom along with its outdated methods and considering the mobile applications to a limited amount of usage. In this context, learning vocabulary in the target language is the critical core phenomenon, as it is very effective in authentic situations with idioms and new terms with up-to-date meaning. If the learner is unaware of the new terms/idioms and sounds unnatural, it might affect the language learning process and lead to communication problems (Cooper, 1998). Though Mobile-Assisted Vocabulary Learning applications have been invented over the past decades, Sri Lankan learners are still stuck to the printed dictionaries, which do not offer them novel updates on the words or their updated meanings with relatable examples. So that by using the MAVL applications, the learners can become digital natives and be proficient in the target language (with the advantages offered by the MAVL applications) to get a good command of English in the ESL classroom (Boers et al. 2006).

Mobile phones, tablets, computers, and many other information technologies are being used in today's language learning contexts, and MAVL applications are no exception. In education, the invention of wireless technology and the advancement of mobile technology have acquired immense attraction among learners in the world. Connectivity, social involvement, context-sensitivity, portability, and originality are all aspects that mobile devices have, that desktop PCs do not, as mentioned by Klopfer, Sheldon, Perry, and Chen in

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the research conducted in 2012. By making learning portable, real-time, and cooperative, mobile devices have changed the way students learn and broadened their perspectives (Kukulska-Hulme, 2009). In light of these, the study signifies the advances and the growing interest in Mobile-Assisted Vocabulary Learning worldwide. Sri Lankan ESL students should be exposed to Mobile-Assisted Vocabulary Learning, which offers benefits and new ways to study the language more conveniently than traditional methods. People's awareness and use of mobile phones (smartphones) in their daily lives have improved as communication technologies have advanced. As a result of that, it can be signified the usage of the modernized language strategies and the MAVL applications can be mentioned as a better option for the undergraduates in Sri Lanka to improve their vocabulary and use them in advanced contexts to practice, which further makes them familiar with the language.

The selected research topic should be addressed as it creates the research gap, highlighting that Sri Lankan ESL learners should upgrade their vocabulary learning methods in technological and mobile ways with current innovations. The MAVL applications can access mobile learning with smartphones, tablets, and other Android-powered devices. University learners are familiar with the technical devices in the 21st century, (with the outbreak of COVID-19) and making this procedure convenient and practical for learning and researching new words in their dictionaries, would help them to archive modest ways to improve their vocabulary. The research aimed to introduce effective and practical MAVL applications, selected and approved by the ESL teacher to enhance vocabulary for ESL learners in the university sector. With the introduction and integration of MAVL applications as a helping tool for ESL learners, it would make them do self-explorations and learn vocabulary that is appropriate for both inside and outside the classroom, which would enhance their writing, listening and speaking competence.

The study is expected to analyze the research questions on the benefits of MAVL applications for Sri Lankan ESL learners in the university sector. The research further elaborates the objectives precisely, and the general objective is to introduce MAVL applications to enhance vocabulary for university undergraduates. Further, how the mobile applications can be conducted as a helping tool to improve their vocabulary and language to accomplish the overarching objective in the study, the specific objectives can be considered as follows. The factors that can hinder the MAVL in Sri Lanka, the benefits of MAVL applications for the ESL learners in the Sri Lankan university context, how they can self-improve and explore their language and vocabulary competency using mobile applications, and the ESL teacher's opinions on the usage of mobile applications, and their effectiveness for the learner's improvement based on their perspectives. Moreover, this research aimed to find out what students think about the effects of a Mobile-Assisted Language Learning application on their vocabulary acquisition process, because of the lack of technological advancements in the current language teaching-learning context.

LITERATURE REVIEW

Mobile Assisted Language Learning (MALL) and Its Dimensions

With the association of mobile devices and applications, the ESL learning system has empowered new methodologies to enhance and upgrade learner autonomy and motivation in self-learning. Even though learning on a mobile device could take longer than learning on a computer, learners enjoy more choice over their time and location, allowing them to take advantage of the downtime by studying a second language wherever they are. The term "Mobile-Assisted Language Learning" (MALL) refers to the application of mobile technologies to learn languages. Azli (2018) investigated the application of MALL in a vocational college and found that it improved teaching and learning. The research shows that MALL is a viable strategy for teaching English as a second language because it is participatory and learners are independent. The study advises stakeholders such as instructional designers and educators to use mobile phones and applications as a learning tool.

Unlike traditional classroom instruction, MALL does not require students to sit in a classroom or at a computer to obtain learning materials. MALL is a great way to overcome time and location-related limitations to language learning. Researchers are investigating how to employ mobile technology to improve language acquisition due to its many benefits, including flexibility, low cost, compact size, and user-friendliness (Huang et al., 2012). However, there are also evident drawbacks, such as reliance on networks that could not always offer high transmission capacity and might be vulnerable to various disturbances. Despite these drawbacks, Thornton and Houser (2005) demonstrated that mobile devices can be helpful tools for giving students access to language learning materials.

Self-Directed Learning and its Importance of It

Self-directed learning is directed by metacognition, strategic activity, and a desire to learn. Self-learning is defined as controlling and analyzing one's behaviour in the classroom (Butler, & Winne, 1995). In contrast to teacher-centered traditional learning, which always takes place in classrooms, self-learning is student-centered and much freer for students to set what they learn and where they learn. With MAVL applications as a tool, the learners get freedom and self-efficacy to use it the way they want. Moreover, they do not feel pressured or doubtful about receiving meaning from the teachers in the classroom, which also provides teachers with the benefit of keeping the flow in the lesson with fewer interruptions. Self-learning has qualities such as self-efficacy, self-monitoring, self-regulation, and collaboration between teachers and students, according to Ormrod and Ellis (2009). Preparing, performance management, and self-reflection are the three steps of the self-learning process, according to Zimmerman (1989). Further, according to Nunan (1999), training students to infer words from context and teaching them how to use dictionaries are significant components of independent vocabulary learning. He thought learning a language from circumstances after experiencing it there was preferable. Self-directed language learning requires students to set aside time to study outside of the classroom. They gain knowledge of their needs and wants.

M-Learning and Definitions

Most university undergraduates use mobile devices for learning and daily activities since they provide easy ways to complete their tasks. Mobile learning (m-learning) is a type of e-learning known as distance learning. Facilitators can use m-learning to encourage students to learn within and without the classroom. According to Quinn (2000), M-learning is a new learning technique that involves mobile devices. Kinash et al. (2012) also claimed that m-learning benefits educational objectives. Mobile learning plays a crucial role in education in both teaching and learning. Meanwhile, mobile

applications provide learners with many resources and information to explore and improve their learning results, including language learning. Experiments with mobile phones have been conducted at some schools and institutions in learning and teaching.

Even though research on mobile phones in language acquisition is new and restricted, the findings indicate that they positively impact learning. Students can take free online transferable classes with smartphones through a Cyber University in Japan, launched in 2007. There are around 3.5 billion smartphone users today, 45.15 percent of the global population. In a world of digital natives, mobile learning can thus be regarded as the young generation of e-learning in many aspects. Mobile devices have prompted educational activities to evolve with the advancement of information and technology. Mobile phones/smartphones and tablets are rising in popularity as they benefit people's lives by learning and working. According to Sharples (2005), m-learning is an outgrowth of e-learning. M-learning can also be defined as acquiring any knowledge or skill via mobile technologies, anywhere and anytime. Mobile phones have recently become less expensive, lighter, and more powerful, attempting to make their way into language acquisition.

New Self-Learning Devices Used in The World

Many pupils, however, find it challenging to acquire new words, as they are trying to become more familiar with the native language even when they try to learn the target language. Most learners understand English words by reading and writing them repeatedly, and they lack skills for memorizing new words. They do not develop a habit of reviewing words regularly and do not read English periodicals, novels, newspapers, and other materials (Ma, 2007). A thorough understanding of words is needed for learning to increase vocabulary learning and teaching. Vocabulary is significant for student academic success, especially for ESL students who have had limited exposure to their target language. The linguistic components must fall into place to make a coherent and grammatically correct phrase, with grammar and vocabulary being the most important (Orawiwatnakul, 2013). L2 learners require at least 95% coverage of the running words in the input (Nation, 2001).

As technology advances, more academics are turning to modern-technology tools like computers, mobile devices, and other devices to learn languages. Previously, multimedia packages, written texts, and vocabulary programs were the mainstays of CALL-based vocabulary learning systems (Stockwell, 2007). However, compared to a decade ago, technology has drastically altered people's ways of life and learning. As a result, it makes sense to develop a creative strategy to use smartphones to help students overcome their issues with vocabulary learning.

In the past and present, Mobile Assisted Vocabulary Learning has been improved to assist ESL users in improving their language proficiency through vocabulary. According to Hashim (2017), adopting mobile technologies to learn English as a second language would improve teaching and learning. The device's portability allowed the students to learn whenever and wherever they wanted. Mobile devices, which students frequently utilize, can be used in education and can be viewed as motivating. This study also noted that employing MAVL may result in constraints, but it was found that it may result in more benefits than constraints. As a result, if used effectively and productively, the mobile device can be a valuable tool for students. A contemporary quantitative study argued that a mobile phone might be a helpful learning aid. Wu 2015 designed a mobile app called Word Learning-CET6 to teach vocabulary to Chinese college students (70 students), which is a recent study used cell phones. The experiment's post-test findings revealed a substantial difference between the two groups, with the experimental group surpassing the control group. Experiments using various sorts of mobile learning aids, ranging from SMSs to applications built to teach vocabulary, have all been shown to help learners compared to more traditional learning modes, as seen in the research stated above.

The efficient utilization of MAVL applications is a part of the broader picture of MALL, and the study undertaken based on MALL is also related to the efficient use of MAVL applications, both indirectly and directly. In 2016, Cavus did an additional study on the usage of mobile devices to teach children's stories to English as second language users. It was an experiment to see if utilizing an interactive mobile application to improve learning skills like listening, comprehension, pronunciation, and vocabulary without the help of an instructor could be beneficial. The study's findings showed that the experimental group improved in all the stated competencies. As a result of this research, young children who were interested in strengthening the four skills (listening, understanding, pronunciation, and vocabulary) found the mobile application as a fun and beneficial tool for language learning. The study by Zaki (2015) focused on mobile technology in academic texts and how it might help the teaching and learning process. As its accessibility, portability, and privacy, mobile learning encourages educators and students to use mobile applications. It also encourages self-directed learning because it might provide spontaneous and rapid data to the debate. Mobile learning may be an engaging learning tool. The effect of the mobile dictionary on lower-intermediate language learners was explored in Rahimi's (2014) study, which demonstrated that mobile phones are valuable learning tools in language learning because the experimental group outperformed the control group who utilized a printed dictionary. Compared to those who used a printed dictionary, ESL students who utilized a mobile dictionary to learn English as a Second Language advanced their language proficiency. It is also stated that using mobile dictionaries aids in acquiring vocabulary and saves time.

The country's information and communications technology (ICT) usage has increased over the past two decades, and urban infrastructure has improved; the new digital divide is a rural-urban dualism. Gaiani and others (2009) stated, the commercial capital Colombo and its surroundings on the west coast, as well as significant towns like Kandy and Galle, are the only places on the island of Sri Lanka with computerization and internet access. Over 75% of the population resides in less densely populated non-urban areas, where the infrastructure situation is different, and the digital divide is a reality (Hansson et al., 2010). Following the closure of all educational institutions in March 2020 due to the COVID-19 epidemic, Sri Lanka accomplished a stunning transition to online tertiary education. The biggest issue for students utilizing smartphones and mobile data plans that many couldn't afford was the lack of consistently reliable, high-speed internet connection. However, as all internet service providers allowed free access to university web servers until 17 August 2020, the situation in Sri Lanka was significantly better (Hayashi, Garcia, & Maddawin, 2020). But using a smartphone to access a digitalized education system restricts what students can read, write, and do for tests.

METHODOLOGY

The study was done based on the effectiveness of MAVL application usage as a self-learning tool for ESL learners to enhance their vocabulary knowledge in English. Learning was, therefore, focused on information or content delivery via mobile learning with novel technology. In this study, vocabulary learning applications that were considered effective and professional had been recommended for learner usage for vocabulary improvement of the ESL learners. The research was conducted as a mixed-method approach and incorporated aspects of qualitative and quantitative data. The study comes under a sequential Exploratory mixed method, as a more significant focus has led to qualitative data. By combining the advantages of both methodologies, mixed methods can help create a complete picture than a solitary quantitative or qualitative study. Both data types (interview data, observations, questionnaire data and data from the pre/post-tests) were collected and processed concurrently but as part of a more comprehensive qualitative design. This is a wise course of action given the time and resources available. The study was organized as an experiment, in which the two groups were named control and experimental. The reasons smartphones were chosen in this program are: the popularity and convenience of smartphones among students made it possible to learn via smartphones. In addition to communication, the smartphone is also a significant source of information for most people in daily life.

The sample was purposive, as the researcher needed the participants to have experience and awareness and adjust to the environment soon. The purposive sampling approach aids the researcher's study since it enables the "selection of individuals for study because they can consciously inform a knowledge of the research topic and central phenomenon in the study" (Creswell, 2013). The questionnaire targeted twenty university undergraduates and five ESL teachers from the university sector who were chosen for the interview sessions. The learners (participants) were intermediate level; most were from the Modern Languages Department, and the rest were from other departments. Nevertheless, especially, the students were purposively chosen from the ESL course, which was mandatory for the Faculty of Humanities undergraduates. The ESL teachers were selected based on the following factors (purposive sample).

1. Three years of experience in teaching university undergraduates
2. Well aware of the new methods used in ESL classroom
3. Experience in the usage of digital materials with ESL students in the teaching-learning process

The data for the quantitative section was received by holding pre and post-tests, in which twenty learners were grouped into two, randomly containing ten participants. The experimental group received the MAVL applications, and the control group received the printed dictionaries and vocabulary-based books. The questionnaire was distributed among the twenty undergraduates after the post-test. Via the questionnaire, qualitative data were gathered, as they had a brief understanding of what they went through for three weeks with the mobile applications and were aware of their developed language skills. The research procedure was conducted for three weeks to gather data. The questionnaire was distributed among the participants in the final week of the research project to have a brief understanding of the process they had been participating in and would answer the questions honestly. The learners faced two tests during the research, and the results of the tests were considered for the final analysis. The questionnaire carried twenty questions based on MAVL applications and how they interacted with them for the three weeks to enhance their vocabulary learning and development. The pre-test was conducted on the first day, and on the same day, the ESL teacher introduced the MAVL applications for the experimental group. On the other hand, the same test was conducted for the control group of learners who did not receive any introduction sessions on MAVL applications but continued to use conventional vocabulary learning methods. The experimental group received mobile phone applications for vocabulary enhancement and was allowed to use other web applications for the next three weeks. The questionnaire was distributed on the final day after the post-test. Almost all the students provided sufficient answers for the data discussion.

The ESL teachers (interview sample) were currently teaching in the state universities for different departments, and all were teachers of English. During the three weeks, the ESL teachers were interviewed with more than fifteen questions, and most of them were answered positively. As the researcher wanted a wide range of classroom practices to acquire a comprehensive understanding of various types of classroom dynamics, teaching and assessment methodologies, and responses to learning with MAVL applications, this was the goal of the teacher interview sessions. Teachers must also be open to sharing their anecdotes and perspectives on using MAVL applications in the classroom so that they won't feel pressured to give a prepared response during the interview process but rather willing and motivated to talk about their experiences.

The researcher further observed the language level of the learners' vocabulary in their regular classroom performances in the first session. The two classroom observations were virtual sessions in which the researcher monitored how the learners used the language in their tests and the regular classroom activities. The observations, on the other hand, were carried out because they allowed the researcher to "collect extensive detail about each individual studied" (Creswell, 2013) throughout the period and regarding how they behaved, which is crucial to show their progress as a result of the research. The two classroom observations were conducted on the first day when the MAVL application introduction was completed. The final observation was finished on the last day of the post-test.

In the analysis process, the results were graphed into bars and charts. The data were divided into a questionnaire, interviews, test results, and observations, which were analyzed separately. To "get through the data, to a category, and work with all the data segments concerning the category," the researcher was aware of similar themes among the interviewees, divergences in the data, as well as null data (Richards, 2005). The project's principles and outcomes and what was significant about the acquired data were then examined (Richards, 2005). The "Findings" portion of this research report contains the conclusions. Furthermore, the discussion went along with the data gathered from the classroom observations.

ANALYSIS, RESULTS, AND DISCUSSION

Learner Preference for MAVL Applications

The majority of the ESL learners (95%) approved that they found the use of MAVL applications to be very effective.

They also agreed to learn via mobile phones (Mobile learning) than computers as the portability was practical anywhere anytime for them to join the classes or find anything helpful to the language classroom. Moreover, learners found new mobile vocabulary learning applications for their PCs and other applications including *BliuBliu, Vocabulary Builder, Improve English: Vocabulary, Quizlet, Words Booster, Vocabulary.Com, and Word Store* for their smartphones or devices than the teacher recommendations.

Further, some of the learners installed vocabulary-improving game applications, including *Brain games, Word of the day, Wonster Words for children, Word Collect, and Words of wonder*, which made them play during their free time and created the ability to develop new words in enjoyable ways. Also, those who were unfamiliar and not interested in using the application were not used them much apart from the teacher mentioned applications. The students had a slight idea of the improvement from the experimental group, yet, in the control group, some of the learners agreed to the convenient use of mobile applications than printed books and dictionaries. They also confirmed that, even though they have used the books for the research duration, they usually use the mobile applications of e-dictionaries, smart dictionaries, word games, and other applications related to language learning. In conclusion, the questionnaire results depicted that the learners found it convenient and effective as it helped them get new words along with their updated meanings, which the printed dictionaries did not provide. The following chart (figure 1) shows the learner's preference for mobile application usage both inside and outside the classroom, as the teacher has already recommended the applications to be used. However, the researcher has asked about their preference for new applications as a general overview, according to the questionnaire they went through (figure 2).

Figure 1: Overall Leaner preference of the MAVL Applications (inside and outside the classroom)
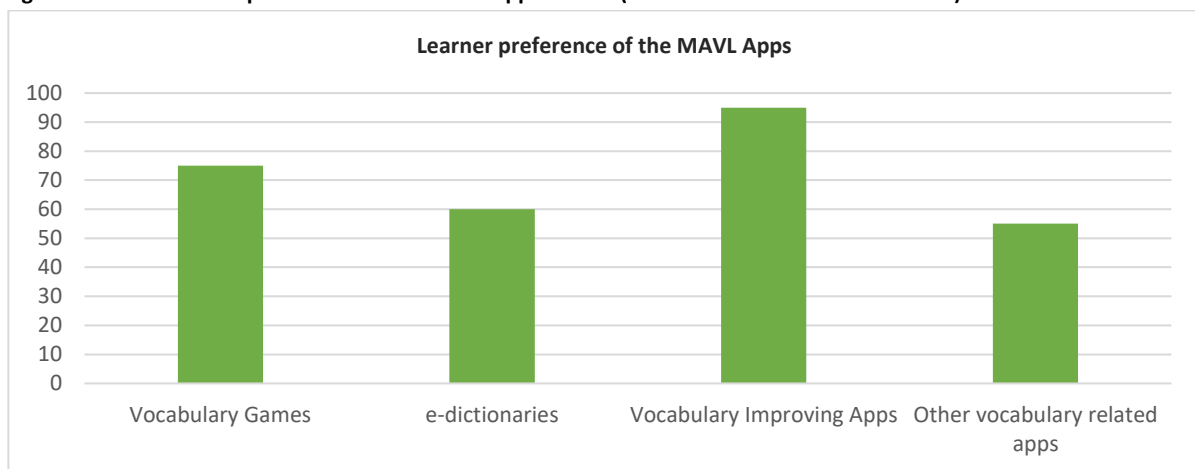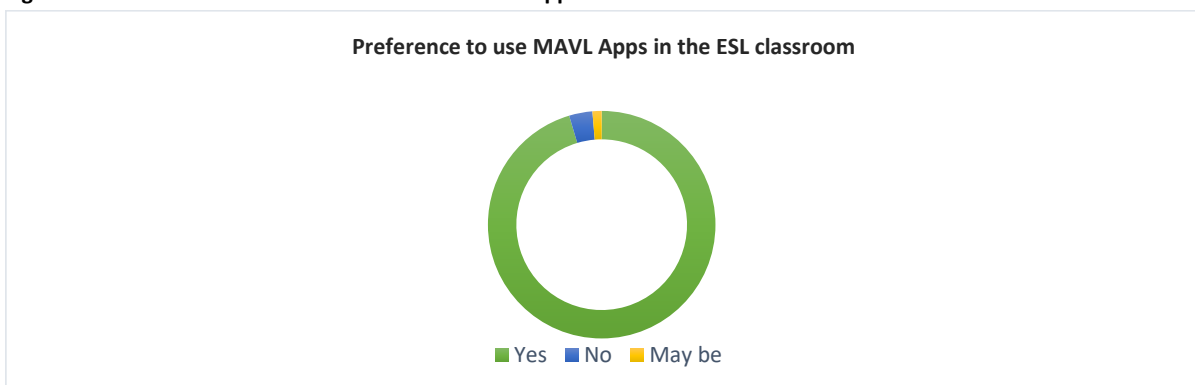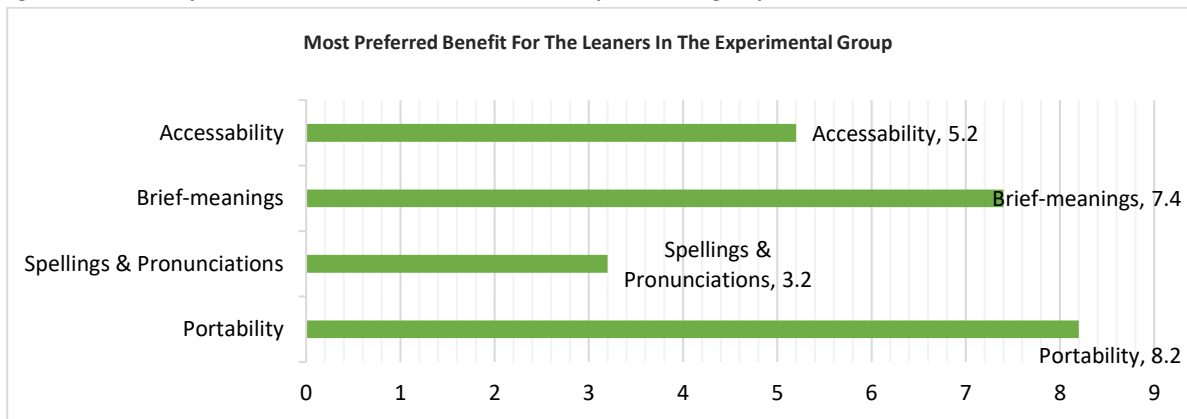

Figure 2: Preference of the learners to use the MAVL applications in the classroom.

Classroom Observation

The researcher observed the chosen classroom two times, in the first and last week. In the first week, the researcher observed the vocabulary level of the learners by distributing them with a pre-test, in which the scores carried in different levels. The students were randomly selected for the control and experimental groups, not based on their scores. Further, the score level of each learner showed that some learners needed to get improved, and some learners were at a good level of their English proficiency related to vocabulary. In the last week, the post-test scores depicted that the experimental learners had improved their scores compared to their pre-test scores. The researcher further observed their classroom performances and them doing their activities as individuals, in groups, and in pairs, in which their proficiency level was increased rather than the first week. Further, the advantages of the applications mattered in the classroom observation as they affected the tests. The following figure (3) depicts why students appreciated using it in the classroom.

Figure 3: The most preferred benefit of the leaners in the experimental group

Most Preferred Benefit For The Leaners In The Experimental Group

Accessability, 5.2
Brief-meanings, 7.4
Spellings & Pronunciations, 3.2
Portability, 8.2

Teachers' Opinions on MAVL Applications Being Effective

The ESL teachers depicted that using the MAVL applications would be effective for learners who were weak in their language proficiency and learners who did not like to mingle in group activities. Moreover, most of the teachers said that the applications were accessible for the students because teachers also find them easy to use, and they needed updated meanings of the words and novel terms when they were teaching. However, they also stated that the use of mobile phones in the classroom and learners getting addicted to the easy ways would harm their creativity of thinking, leading to time waste. However, teachers conveyed that, due to the technical usage and the changing world, the learners have to catch up with the changing even in the education sector, and the use of mobile applications for their vocabulary learning would aid them.

Moreover, the teachers revealed that the learners who did not support volunteered to answer the questions and did not tell the meanings and spellings of the words in the classroom were started to answer the questions after they exposed to the MAVL applications, which was a noticeable change in the classroom. They further said that the exposure to the MAVL applications made students find the meanings of the words with no hesitations or laziness, unlike they flip the pages of a dictionary or guess the meanings of an unknown word. Moreover, the ESL teachers stated that when the teachers were unaware of the meanings or spellings of some words, the learners provided the answers with no hesitations after exposure to the MVAL in the experimental group. In contrast, the control group learners flipped pages to find the meaning or guessed the spellings or meanings (correct or wrong), and sometimes they did not provide answers at all.

Figure 4: The score difference of the learners in the experimental group before and after the test.

Test score diffrence in the experimental group
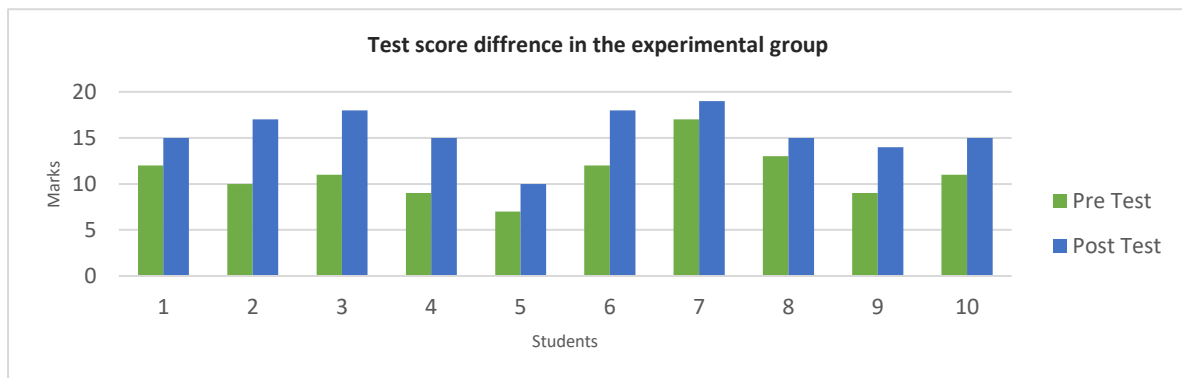
Figure 5: The score difference of the learners in the control group before and after the test.

Test score difference in the control group
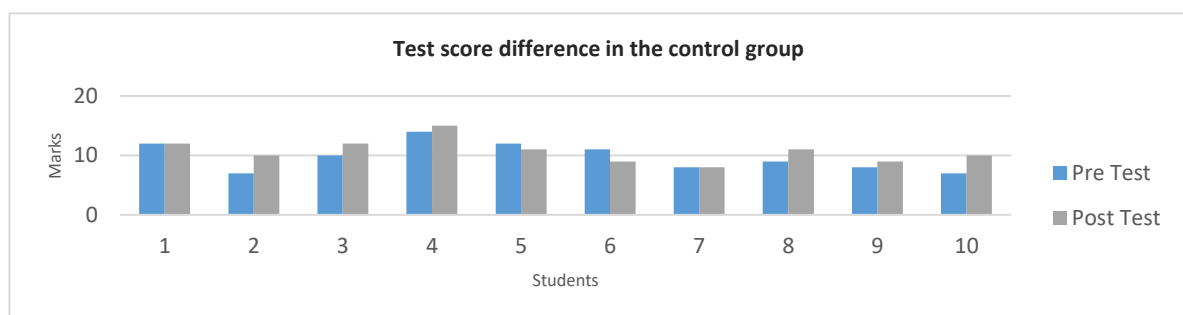
The score tests conveyed that; the experimental group scored more marks due to their enhancement with the mobile applications than the learners who have studied with printed books. The above charts (figures 4 and 5) show the difference between the experimental and control groups' marks before and after the test. Considering the scores of the students, the teachers mentioned a visible change in the use of MAVL.

DISCUSSION

In the process of finding themes and subthemes, a thematic analysis of the qualitative data was used. Further, for the quantitative data, a descriptive study is done. Even though mobile phones are forbidden in many conventional language classrooms (particularly in Asian countries), educators believe that the usage of mobile phones or applications is an intrusive phenomenon that may distract students from learning. Many studies demonstrate that mobile phones can help students learn by creating a pleasant learning environment (Cobcroft, Towers, Smith, el. al. 2006), and learners have a favourable attitude toward using mobile phones for educational purposes (Cavus & Ibrahim, 2009). However, vocabulary is a talent that is greatly enhanced by this type of technology. As a result, the use of mobile phones for vocabulary learning is on the rise, according to Zhang, Song, and Burston (2011).

Mobile devices, including smartphones, and portable and light devices with powerful functions, were chosen for this research with MAVL applications. Students gain interest and time to engage in language learning individually and enthusiastically rather than in the conventional ways of studying languages in the classroom with the association of these digital applications. MAVL applications are available for anyone, and the learners are combined with the technical learning system. Exposing them to the MAVL applications can keep another step forward with technicality and language development. The researcher suggests including or exposing ESL learners in the university sector with teacher guidance or not, to the MAVL applications, because of its numerous benefits to studying independently. According to the new teaching curricular methods, teachers have to engage in the interactions in the classroom to a limited extent, yet, students have to work a lot on their own to develop their language proficiency. The benefits of the MAVL applications have the potential to make leaner explore new words and their meanings in a way that creates them a self-learning tool in the mobile learning environment.

Moreover, it was signaled among all the mobile devices to assist with vocabulary learning. It can take the best advantage of the learners' fragmented time to increase their learning efficiency. According to the questionnaire, 95% of the learners preferred to use the applications to explore new words with their meanings. This indicates that learners have a strong desire to use this new vocabulary learning mode. These findings show that the learners' overall attitude toward this new vocabulary learning mode is positive, as they looked forward to new ways of language learning via smartphones yet were not allowed by their educators. This challenges the conventional language teachers, and the learners who still favor printed dictionaries. In the questionnaire concerning the methods of vocabulary learning assisted with smartphones, among the four given choices, 75% of the learners chose to learn with vocabulary applications on mobile/smartphones. It indicates the significant way vocabulary learning is on phones, and 20% percent chose how

the teacher teaches words through passages or the lessons regularly. The rest of the 5% chose other options, which possibly included printed dictionaries and different types of books and media. The researcher observed on the first day of the classroom, that the learners in the experimental group were interested in using the applications recommended by the teacher, even though some learners were not familiar with them.

Busuu was one of the MAVL applications on which the experimental learners practiced their vocabulary and explored words. The program was designed to help memorize vocabulary, sentence structure, and conversational skills in nine languages. The learners might use the app on their own or join a community to practice the language skills with other learners or native speakers. Moreover, *Duolingo* was one of the other applications that language learners use locally and internationally. The learners had free access to practice vocabulary and pronunciation, which had audio and video facilities to ease their language learning. *WordUp* is not a vocabulary-improving application, yet it can be considered an e-dictionary that can be used as an English dictionary. *WordUp* is the most efficient way to learn English words and understand them deeply. It uses a scientific language learning method and entertaining examples from YouTube, Word pictures, famous quotes, news, etc. Further, *VOCABULARY* and *Oxford Online Dictionary* were also suggested by the teacher for the learners in the experimental group.

One of the advantages of MAVL applications is its community system that learners can communicate with other users through the internet. They can share their homework and gain online access to gain opportunities to converse with a native speaker to improve their skills. For instance, *Busuu* is more beneficial for beginner and intermediate language learners because there are no systematic grammar courses. They can learn the ability to have some simple conversations with others. The learners in the experimental group were able to explore new words, apart from the teacher's talk/input in the classroom further with updated meanings. In contrast, control group learners did not have access apart from teacher talk and printed dictionaries, which were their primary vocabulary learning sources. Moreover, with the use of MAVL applications, learner autonomy can be developed, which is, according to Little, the ability to take charge of one's learning effectively (1991).

The MAVL applications and the vocabulary practice developed their formal and informal word knowledge, which can be mentioned as another benefit for the learners in the experimental group. Nevertheless, the control group students were rarely exposed to the informal word lists, and they were majorly faced with formal words and explanations. The dictionary app can also be linked to various lexical concordances allowing students to see real-life examples of how to use the word(s). The convenience, portability, and accessibility of smartphones and mobile learning were among the advantages provided to ESL learners via MAVL applications. It also serves them as a self-learning tool, as the teacher has to interact a little in the classroom teaching vocabulary. The graph (figure 3) shows the most preference benefit of the learners in the experimental group, and the majority of them voted for brief meanings and portability. During the experiment, learners participated in the activities conducted by the teacher, and they were able to expand their vocabulary effectively. In addition, learners could follow the requirements of this experimental study and improve their vocabulary continuously even after the experiment inside and outside the classroom.

The analysis is associated with the interview and questionnaire data for the second research question. The MAVL applications acted as a learning tool for the ESL learners in Sri Lanka, and the learners got vast exposure to the vocabulary, unlike the learners in the control group. According to the teacher's point of view, MAVL acted as a helping tool for the learners in Sri Lanka because they had the potential and the accessibility to explore vocabulary apart from teacher instructions and teacher talk in the classroom. A study (Yao-Ting Sung, 2015) on the effects of learning other languages with mobile devices found that including mobiles in teaching and learning methods improved learning outcomes. The teachers agreed that the teacher input in the classroom should be less, which does not really do a vast exposure for the learners to get to know many words during a single lesson. However, with the association of mobile phones, mobile applications, and technology, their ideas and interests can be developed to learn the target language quickly and enthusiastically. Further, the learners agreed that they were more fond of using mobile applications than printed books and the teacher talk in the classroom.

The test score of the experimental group shows that the learners have acquired language proficiency and vocabulary enhancement during three weeks. Their pronunciation and the spelling system have improved from their previous level (pre-test) before using the mobile applications. Furthermore, the data revealed that ESL students who used a mobile dictionary to learn English as a Second Language developed their language skills more than those who used a printed dictionary. It is also stated that using mobile dictionaries aids in acquiring vocabulary and saves time. The iPad was employed as a mobile technology tool in one of the experimental investigations (B.T Wang, 2015) to assist learners of English vocabulary, and positive findings were further obtained.

The charts (figure 4, 5) show that, compared with the scores of the experimental group, the learners in the control group have not received or improved drastically. The control group learners used printed dictionaries, teacher talk, and the words they already knew, and some learners used to read extra materials and searched for new words during the three weeks. In contrast, the experimental learners explored new words with novel ways of experiencing video and audio graphics and flashcards based on their chosen applications. Furthermore, learners in the control group could not listen to the words' pronunciations and be instructed only to use a printed dictionary, which made it difficult for the students because of phonetic symbols. The traditional method of following the phonetic symbols in the dictionary appeared to be more challenging for the learners than the learners in the experimental group, which worked with technical or prerecorded pronunciations and enthusiastic methods that encouraged the learners to learn more about the language.

Chun believed it was vital for language teachers to incorporate technology into their classrooms, but she also examined the repercussions (2016). When teachers and students use technology wisely and purposefully, it will certainly engage them in critical reflection of their learning. Communication technologies now provide valuable and meaningful resources for language learners to become conscious of and actively reflect on discursive practices. Furthermore, MAVL applications as a self-learning tool would benefit ESL learners by allowing them to explore words using unique techniques that would aid language competency both inside and outside the classroom. Teachers do not need to teach them; they do not have to ask the learners to by-heart the lexicon

or ask for synonyms since learners' desire to develop their language in terms of vocabulary can be developed independently by relying on MAVL applications. Mobile communication is naturally integrated into many learners' lives and has become a daily commodity. MAVL developers should develop more and more applications, particularly lexical tools and concordances, compatible with mobile learning specifically for ESL learners, who should get more familiar with them to improve their language competency in all four skills of the target language.

CONCLUSION

The findings reported that integrating MAVL applications via mobile phone benefits Second Language learners because learning words via mobile phone is much faster than the conventional ways. The students could also use the mobile phone to conduct advanced searches on the word's usage, derivation, photos, and pronunciation. The association of mobile phones, mobile applications, and technology can sharpen their ideas and interests and to self-learn the target language quickly. Further, the learners agreed that they were more fond of using mobile applications than printed books and the teacher talk in the classroom. Students can use internet resources accessible or browsable anytime to study and enhance their vocabulary knowledge. Further, using a cell phone as a pedagogical tool will undoubtedly improve teaching-learning. With practically limitless programs addressing various parts of language acquisition, this would be an excellent way to learn a specific aspect of the language, such as vocabulary. This study's findings showed that smartphones could be helpful for vocabulary development; due to the limited time and flaws in the experiment. Furthermore, MAVL applications as a self-learning tool would benefit ESL learners by allowing them to explore words using unique techniques that would aid language competency inside and outside the classroom. Moreover, MAVL applications as a self-learning instrument can help students learn English more effectively since it uses more time and effectively increases students' vocabulary through autonomous learning. This empirical study demonstrates the importance of vocabulary improvement using mobile vocabulary learning applications, which investigates the effectiveness of smart/mobile learning, which offers learners a wide range of benefits as a self-learning tool.

There is still so much room for improvement, and the learners' desire to continue it and ESL teachers' approval of it as a better alternative make the MAVL applications a far better tool for learners to engage in their vocabulary development. As for the recommendations, curriculum designers should consider how technology—specifically multimedia—should be used in ESL courses in today's environment, where it permeates every area of life. More particular, multimedia annotated vocabulary education has to be emphasized in light of the findings of this study (with the use of mobile phones). More online coursebooks and supplemental materials (mobile-oriented) should be created, and well-considered annotations should be inserted into relevant sections. This requires practitioners and designers to consider the need for appropriate annotations for the target word. In addition, several combinations of annotations (text+picture, text+audio, etc.) should be provided depending on the learners' preferred learning techniques, whether they are simultaneous or linear.

Finally, different findings can offer an additional study in this area. As a way forward, future studies investigating how

self-learning could be provided for students to facilitate their MAVL should be focused more on their out-of-class interactions. Further, informal learning should be focused, because learners have to engage in the external world/communities more than inside the classroom procedures:

1. The content can be expanded, and the students' viewpoints on the advantages of mobile-assisted language learning can be examined using a qualitative research design.

2. Another investigation into the impact of various annotation types on vocabulary learning might be conducted.

3. Longitudinal research that uses the software for longer may be performed to observe the effects.

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