

## **Exploring the Potential Usage of Mobile Technologies Among the Hearing-Impaired Students in Learning English as a Second Language (ESL)**

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**Abstract**—The proliferation of mobile technologies has created a great impact in the education field. Numerous studies are conducted on the usage of mobile technologies among the special needs students including their acceptance towards the technologies, its advantages as well as the obstacles on the utilisation of mobile technologies. However, fewer studies are done on the usage of mobile technologies among the hearing-impaired (HI) students in ESL teaching and learning session. There is a need for more studies on that as the number of hearing-impaired people are increasing continuously around the globe. Hence, the aim of the study is to explore the potential usage of mobile technologies among the HI students in learning ESL. In-depth interviews are conducted among the selected ten hearing-impaired students from four different secondary schools in Malaysia and the notable finding demonstrates the majority of them believe that mobile technologies assist them in learning. This study provides the insights for the education stakeholders, especially the policy makers and inventors to create the solutions and improvise the features of mobile technologies that are more user-friendly towards the hearing-impaired students.

**Keywords**—mobile technologies, hearing-impaired students, ESL, perspectives

### **1 Introduction**

Mobile technologies have permeated in today's education [1] and become one of the crucial elements that accelerates not only the performances of the students but also boosting the instructional design to be more engaging and meaningful [2]. In fact, the utilisation of mobile devices, such as smartphones, (iPhone, Galaxy), personal digital assistants (PDAs), iPods and tablets has started to cascade into the field of special needs education [3]. Undeniably, with the increasing number of hearing-impaired (HI) people around the world, mobile technologies have been identified as the assistive technologies that aids in their learning and daily life [4]. Plus, the inclusion of the element of connectivity within the usage of mobile technologies permits them to grasp boundless information regardless of time and from any parts of the world [5].

For the past decades, there are various studies on the usage of mobile technologies among the hearing-impaired in learning. [6] invents a mobile application software that converts the motion of the Arabic Sign Language into the perceivable Arabic text which permits hearing people to understand. Meanwhile, [7] create the mobile applications for the hearing-impaired to learn the basic mathematical concept for the hearing-impaired students. It improves the students' performances in Mathematics. Furthermore, mobile technologies have been seen as the tools that creates excitement in the classroom and increase the students' engagement towards the lesson. [8]

There are also studies conducted for the HI student's improvement in learning in Malaysia. For instance, [9] have produced the learning module for the deaf students in a higher institution using Padlet while [10] design the sign language module application (m-ISHARAH) content for special education undergraduate students. Meanwhile, [11] invent the mobile dictionary apps which comprised pictures, audio, words and the sign language for the HI students to learn vocabulary in Malay language. It is created to help the students learn at their own pace and effectively. Even though there are studies on the usage of mobile technologies, most of them utilise their national language as the medium of learning and only a few discussed on the usage of mobile technologies in ESL learning.

### **1.1 The role of English in Malaysia education**

In Malaysia, there are about 4072 hearing-impaired students enrolled under the special needs education programmes which are special education schools, the Special Education Integrated Programme (SEIP), and the Inclusive Education Programme [12]. They experience the same syllabus learnt by the typical hearing students. In other words, English language has become the compulsory subject that need to be learned besides the national language, Malay language for all students including the HI students. Plus, English has also attained the status of the second language in Malaysia. It is considered as the third or foreign language for the hearing-impaired students. Their first language is their mother tongue and Malaysian Sign Language (MSL) is posed as the second language which has been used officially in the special schools [13] and English language (Sign Exact English) posits as the third language for them. In addition, the pivotal roles of the English language in today's life have urged the students including the hearing-impaired to master the language of the world as it allows them to be the competitive employees in the future [14]. In fact, one of the objectives of special needs education is to equip them with life skills as a preparation for working life [12].

However, [15] find that hearing-impaired persons are facing one of the major problems in employment which is lacking of communication skills that may impede their chances to be accepted by employers. Plus, the academic performances in the national high stakes examination such as UPSR, PMR and SPM among the HI students in all subjects including English were far from satisfactory level. Most of them hardly achieved A and B in all subjects including English [16]. Moreover, a lot of researches emphasize on the proficiency in Malay language (national language) and only a few of them are conducted for the betterment of the English language among the HI students. Additionally, with a lot of languages that they need to comprehend, it also creates confusion [17] and demands more hard work from the students.

Therefore, interventions or improvisations in English learning need to be done in order to accelerate the performances of the HI students as well as empowering their social skills for a better life in the future.

## **1.2 The integration of ICT in Malaysian schools**

In relation, mobile technologies have been seen as the interactive instructional tool that could empower the students' performances in learning [18]. Importantly, leveraging the usage of ICT has become one of the eleventh shifts in Malaysian education system to ensure the objectives of the ministry which are uplifting the educational standard that is recognized internationally and establishing the future Malaysians who meet the needs of 21st century workforce. Seeing the potential of these devices, the Malaysian education ministry also started to inculcate the usage of ICT by delivering not only computers but also the tablets and smartphones to the students and teachers [19]. Moreover, maximizing on the students' outcome for every 'ringgit' spent is also among the eleventh shifts that has been highlighted by the ministry [19]. It means the budget should be carefully allocated on the programmes that demonstrates the positive outcomes. Hence, choosing the suitable and feasible ICT devices is the mandatory act to ensure the education transformation a great success.

With numerous benefits that mobile technologies could offer, especially in learning ESL, it is fundamental to analyze the prospect of these technologies towards the students [20]. Hence, exploring the potential usage of mobile technologies in learning ESL among the HI students is the main objective of the current study. Moreover, it is crucial to highlight their opinion and recommendations on the usage of mobile technologies as it could be one of the benchmarks for further researches and inventions to increase the HI students' proficiency in English language.

This paper is organized as follows. First, further explanations on hearing impaired students in learning English, problems in ESL, the usage of mobile technologies in ESL classroom as well as related past studies are gathered in the literature review. Then, the methodology of the study is described concisely. Next, the findings are presented based on the main objective and the discussion is done based on that. Lastly, conclusion is narrated together with the reliable suggestions for future action.

## **2 Literature review**

### **2.1 Hearing-impaired students in ESL classroom**

Hearing-impaired (HI) is considered as the full or partial loss of the ability to access the receiving sounds, [21] which are caused by several factors including biological and environmental factors. Most of them rely more on the visual ability rather than the other senses [22]. Plus, there are multiple ways on how the HI people communicate. The modes of communication are sign language [21], lip reading [23], cued speech [24], oral communication [25], finger spelling [26]. The modes of communication are different depending on the students' preferences or the language that they are familiar with. However, the most used mode is the sign language [27],[28].

The hearing-impaired students are deprived not only in hearing but also in learning. [29] asserts that the hearing-impaired students experience the heavier cognitive load than the normal students as their social life is limited and less exposure towards the surrounding due to their disability. As a result, teaching and learning session turns out to be difficult for the students with physical impairments and they tend to be passive and have low self-esteem [29].

## **2.2 Linguistics difficulties faced by the HI students**

In the ESL classroom, the students encountered various problems in learning. Vocabulary has been identified as one of the main challenges that the students encountered when learning the language. [22] assert that the problems among the hearing-impaired students are not only regarding on their incompetency in accessing the audio component of the language, but to understand the meaning of the words that are presented whether in written text as well as verbal. [22] also stresses that “learning and teaching a foreign vocabulary is of the utmost significance as it breaks the most annoying barrier that is met in education by the D/HH students.” [30] demonstrate the mutual facts that vocabulary learning is considered the essential elements of literacy. By possessing the L2 vocabulary, it assists the process of understanding the word signed, uttered or written, as well as indirectly boost the motivation of the students to learn the language.

Other than vocabulary, the hearing-impaired students also experience the problems in grammar. Articles, prepositions, conjunctions, pronouns, verbal auxiliaries, and inflectional and derivational suffixes are among the most persistent and pervasive sources of error observed in their written English [31],[32]. Grammar is considered as the predominate part of the language learning in the past, but the importance of learning the vocabulary has slowly became the frequent topic discussed among the educationist such as in the teaching approaches and techniques [22].

## **2.3 Mobile technologies in ESL learning**

The integration of mobile technologies in learning ESL is no longer a foreign strategy used by the students nowadays. It has been stated in the earlier chapter that mobile technologies have created the great impact in education, especially in the ESL classroom. The term ‘mobile technologies’ is defined as the devices that are portable [33]. In addition, [34] state that the term mobile normally associated with something that is portable and personal. The students are able to learn in the different settings and not only sticking within the traditional four wall classroom. Video call (VC), WhatsApp videocall, Google Meet, Zoom, Line and Skype are among the videoconferencing tools [35] that can be used via mobile devices. Plus, [34] asserts that one of the elements of mobile technologies which is connectivity permits the online activities to happen via smart phones, PDAs, tablets, wireless laptop PCs, mini notebooks or netbooks, and handheld gaming devices [36]. Moreover, the large screen displays, high resolution, lightweight, user-friendly and ergonomic design, short start-up time, multimedia content viewing ability are among the favourable features on mobile technologies. [37]

## **2.4 Advantages and disadvantages of mobile technologies in ESL learning**

Other than that, mobile technologies are also known for the significant positive outcomes in increasing interest in learning. A study conducted by [38] find that most of their respondents who are the polytechnic ESL students admit mobile technologies elevate their interest in learning English as it is fun and interesting. In relation, motivation is the fundamental key that could enhance the students' proficiency in the second language. [39] The educational online-games such as Kahoot! and Quizziz is one of the elements that ameliorate the motivation among the students [40]. Besides, the colourful text and picture, videos also create excitement for the students to learn [41]. Therefore, mobile technologies can be considered as the stimulant or the external motivation that aids the student to excel in their learning.

Mobile technologies encourage the students to take control of their self-paced learning. They could use online dictionaries, interactive applications for learning, searching information through Google and reading the e-books [42] without restricting it during the school hours. Moreover, it provides the environment for the students to enhance their writing skills. [43] demonstrates the usage of Mobile Instant Messaging namely WhatsApp in intensifying the student's understanding towards grammar.

Despite of its bright prospect, there are some flaws that might hinder the usage of mobile technologies in learning ESL. In fact, without a proper guideline in using mobile phone to learn the English language, the students are 'lost' in their own world. [44] in their quasi-experimental study have identified that the group of students who is given mobile technologies with guided activities shows the greater improvement in English language than the other group. [45] states that students with HI need to be assisted and trained to consume ICT devices in order to overcome the difficulties and eliminate the fear of using the technologies. Hence, the students need to be guided on how to use the mobile technologies meaningfully.

In term of the gadget itself, the screen size, battery life, and limited storage have been considered as some constraints encountered by the students when using the mobile technologies [38]. In addition, the limited internet connection or unavailable internet access together with distractions such as social media and games are among the challenges faced by the ESL learners when using mobile technologies in teaching and learning session [38]. In addition, difficult words and complex sentences were also the issues highlighted by the students when using mobile technologies [33]. It is difficult for them to understand the tasks or instructions that appears via mobile technologies and it leads to negative perspective towards the usage of mobile technologies in learning [38]. These are among the barriers that could limit the usage of mobile technologies in learning.

## **3 Methodology**

### **3.1 Research design**

The study employs the qualitative design and in-depth interviews were utilised by researchers as it intends to explore the students' perspectives on the usage of mobile

technologies in the ESL classroom. Plus, it is related to the statement by [46] who agree that qualitative studies allow the researchers to gain as much as information in detail and understand more on the particular situations that happened in the classroom.

### 3.2 Participants

It was a purposeful sampling that involved 10 hearing-impaired students aged 14 till 19 from four different secondary schools in Malaysia. They were chosen in order to gain a range of data related to the targeted theme. This type of sampling offers the researchers to study and understand the central phenomenon of selected individuals and sites [46]. Table 1 demonstrates detailed information of the participants (pseudonyms are used to ensure their confidentiality).

**Table 1.** Demographic information of participants

| Students | Gender | Age | English Grade | Types of Mobile Technologies Used |
|----------|--------|-----|---------------|-----------------------------------|
| A        | Female | 16  | D             | Smartphone                        |
| B        | Male   | 14  | D             | Smartphone                        |
| C        | Female | 18  | E             | Smartphone                        |
| D        | Female | 16  | D             | Smartphone                        |
| E        | Female | 17  | F             | Smartphone                        |
| F        | Female | 15  | D             | Smartphone                        |
| G        | Male   | 18  | E             | Laptop                            |
| H        | Female | 18  | D             | Smartphone                        |
| I        | Female | 19  | D             | Smartphone                        |
| J        | Female | 15  | D             | Smartphone                        |

### 3.3 Instruments

The instrument used for this study was adapted from [47] based on the Technology Acceptance Model by [48]. There were eleven initial questions. The questions were divided in two different sections which are the demographic background of the students including their name, age, the utilisation of mobile technologies and English grade in Section A while the Section B was on the student’s acceptance towards mobile technology in learning ESL. The instrument was validated by the expertise who were the lecturers in Special Needs Education and ICT. The experts suggested that the questions should be translated into Malay language (mother tongue) as most of the students are not really proficient in English language. They added several recommendations which were rephrasing the questions using simpler words and eliminated the redundant question. Finally, there are nine questions for the interview. Section A consisted of three questions while six questions were in Section B. Therefore, after

the validation process, the instrument was sent to the Malay language expertise to be translated.

### **3.4 Data collection**

Before the interviews were conducted, the researchers obtained permission from the Education Planning and Research Division (EPRD) and the State Education Departments. It is a requirement for the researchers before collecting the data in schools. The interview was conducted via Goggle Meet. It was done due pandemic COVID -19 and the government has restricted the students to have the online learning at home. There are five sessions for this interview and it was conducted with the help of sign language expert. Two students with the researchers were involved in each session and it was held approximately 30 minutes for each student. The interview was recorded using Google Meet. After obtaining the consent from the participants, the interview started.

### **3.5 Data analysis**

The data from the recorded interview were transcribed manually and after that it was translated from Malay language to the English language in order to facilitate the process of data analysis. Next, the written transcripts were returned to the participants for final checking as well as the verification on the accuracy of the content. Later, the data were then analyzed using 14 stages of Burnard's methods of analysis [49].

## **4 Findings and discussion**

### **4.1 Participants' background information on the usage of mobile technologies**

On the initial stage of interview, the participants were asked about their usage on mobile technologies. Most of them use the technologies to communicate with their family members and friends using WhatsApp and Telegram. They were also the active users of social media such as Facebook, Instagram, Twitter and YouTube. Playing games and online learning are the additional activities done by the participants via mobile technologies.

Apart from that, the duration on the usage of mobile technologies to learn ESL in a week were explained by the participants. Most of them allocated approximately an hour in a week to use mobile technologies. The results were summarized in Table 2. Participant C spent the most hours as she was experiencing 30 minutes English classes everyday through video call (VC) and the remaining 1 hour and 15 minutes were used to complete the English homework using Google and online dictionaries. Based on the information above, it can be concluded that participants are familiar with the social media and the applications. However, they spend roughly less than 10 minutes per day to learn English using mobile technologies.

**Table 2.** Most frequent activities on mobile technologies and minutes/hours used to learn English in a week

| Students | Most Frequent Activities on Mobile Technologies                     | Minutes/ Hours Using Mobile Technologies to Learn English in A Week |
|----------|---|---|
| A        | WhatsApp, Playing games, Telegram                                   | 30 minutes  |
| B        | WhatsApp, Playing games, YouTube, Facebook and Twitter              | 1 hour  |
| C        | WhatsApp, Instagram, Facebook, YouTube                              | 3 hours and 45 minutes  |
| D        | Online class, WhatsApp, YouTube, Instagram                          | 15 minutes  |
| E        | Instagram, watch movies, Facebook, WhatsApp, YouTube, Playing games | 1 hour  |
| F        | WhatsApp, Playing games, YouTube, Facebook and Instagram, Telegram  | 30 minutes  |
| G        | Playing games, Google, Learning                                     | 30 minutes  |
| H        | WhatsApp, YouTube, Facebook, Playing games                          | 1 hour  |
| I        | WhatsApp, YouTube, Facebook, Playing games, Instagram               | 1 hour  |
| J        | WhatsApp, YouTube, Instagram, Facebook.                             | 30 minutes  |

#### 4.2 What are the potential usage of mobile technologies among the HI students in learning ESL?

This section presents the findings based on the above-mentioned research question (RQ). The main objective of the research is to explore the potential usage of mobile technologies in ESL learning among the HI students. The findings were divided into several themes which were:

**Facilitate ESL learning.** Most of the participants pointed out that mobile technologies help them in facilitating their ESL learning. Since they were experiencing the online learning at home due to Covid-19 pandemic, they believed that their smartphones and laptop are the important tools that assist the learning especially in English language. In fact, they even stated that the English homework contributes most of their times in learning the language. Student B described *“I learn English when I have VC (Video Chat) with the teacher during the English lesson, quiz from the teachers, the teacher asked me to search the English words in the dictionary.”* In addition, student A stated that she utilised her smartphone in order to accomplish the exercises given by the teachers *“The teacher gives the exercises via telegram. There are multiple choice questions and sentences that the students need to answer in telegram.”* Telegram has been used by her English teacher as a medium of instructions for teaching. Plus, student C stated that she attended the English classes using video chat with the teacher. *“Every day, I learn English with my teacher via VC about 30 minutes.”* Meanwhile student D told the interviewers that she also used WhatsApp application to learn English as well as dictionary application. Google Translate was chosen as one of the learning platforms



used by most of the participants via mobile devices to learn English. For instance, Student J told that *“I use my phone to have online learning, VC with the teacher, using dictionary apps and google translate.”* One of the participants, Student B expressed that Video Chat (VC) helped him in learning. *“Yes, it is easier to understand via VC rather than Telegram as you can see the sign language clearer.”*

It is aligned with [8] that states mobile technologies provide a platform for more engaging teaching and learning session. Plus, with the existence of VC, it caters the need of HI students who rely more on the visual input in their daily life [21]. VC has been identified as the videoconferencing tools [35] that allows the HI students to see and use the sign language with their English teachers and friends. It is also viable option which creates the convenient environment for the students to learn. In fact, the mobile application such as WhatsApp and Telegram are among the instructional tools that were used by the English teachers to deliver the tasks and lesson. [43] has also stated that WhatsApp magnified the ability of the ESL students in writing grammatically.

**Easy, practical and fast.** Besides that, the usage of mobile technologies has been identified as easy by a few students. Dictionary app is one of the most common mobile applications used by the hearing-impaired students in learning ESL. It offers the students the chances to translate the words that are new for them. In fact, Student D did mention *“Dictionary apps is easy. Dictionary apps is easy to use.”* Another participant utilised both printed and the online dictionary. However, when the researcher asked the students to compare those two versions of dictionary, Student B stated *“dictionary apps is easier to use.”* He also added that *“... you can use the phone even while you are going out ...”* which means mobile devices are practical and can be used anywhere regardless of time and places. In addition, mobile technologies provide the fast and efficient search engine. Student C said, *“It is easy and fast for me to search the information on the work given by the teacher.”*

Based on the findings, most of the participants utilise dictionary apps and Google translate to find the meaning of the words. This show that vocabulary is the crucial element that assist the hearing-impaired in learning ESL. It is aligned with the statement by [22],[30] that vocabulary is important for the hearing-impaired students to learn English as it acts as the key that leads to further understanding of the text and lesson. Moreover, mobile technologies allow the users to experience learning session everywhere and not necessarily in the classroom. [42] also agree that with the element of connectivity, the students would be able to experience the online from all different places.

**Elevates student’s motivation.** In addition, the participants were asked on the usage of future mobile applications for English learning. The majority of them were excited if there were applications that could assist them in learning the language. Several elements were highlighted by the participants such as educational games, quiz, videos that are related to the English learning, communicating with friends and teachers in English, translation and sign language. For instance:

*I want the application that has games, videos on English lesson, dictionary, translation* (Student H)

*It should have movements, games, videos, translation and dictionary.* (Student G)

*I want the apps that include games, column for English chatting, learn with the teachers, quiz, pop-quiz.* (Student C)

*I want more videos, sentences, with voice, as I can hear little, I hope there should be wording, sentences, short sentences.. sentences with pictures. It helps.* (Student A)

The participants also attracted to bright and vibrant colours such as yellow, blue and green that can be used for the future apps. Student E mentioned, “*I want the blue, yellow, bright colours for the apps. I like it.*” It is good to emphasize that the HI students used more on their visual rather than the audio. Mobile technologies provide more options on visuals like moving things, colourful pictures which enhance their motivation in learning and also accelerate their attention and understanding towards the lesson [40],[41]. In fact, there were participants who want the video with sound as they could hear a little. Hence, these are among the features that need to be considered in designing the educational applications for the HI students.

**Poor internet coverage interrupts the virtual classroom.** Majority of the participants projected their concerns on the internet connection. The limited internet connection and not having internet access are the prime challenges faced by the hearing-impaired students in learning the language. These problems distract the learning session. According to Student I, the internet has been identified as the major problem that makes her favour less in using mobile technologies in learning the English language. “*I don’t really like using my smartphone to learn English because the internet connection was extremely poor.*” Student H added that “... it was **hard for me to stay focus on the online learning with the teachers because of the internet connection which is too slow and sometimes broken.**” In fact, Student C preferred to ask her parents for further assistance on the work given by the English teacher due to this problem. “*Sometimes, the problem is with the internet. It is not really good. It is too slow and it turned out to be difficult to use it*” and when she was asked on the usage of mobile technologies in learning ESL, she said “*Not so much. Moderate. But my mother helps me a lot.*” Furthermore, due to poor connection, the participant did not understand the lesson delivered by the teachers. Student G mentioned, “*I cannot see the sign language made by the teachers during VC as the line (internet) was unstable. Therefore, it makes me stress as I did not understand on the lesson.*”

In order, to establish a successful teaching and learning session, the access of the internet should be good and stable. Plus, it is supported by [38] that problems with the internet connection may hinder the success of the usage of mobile technologies in the ESL classroom. For this study, all of the participants expressed their dissatisfaction on the internet access. It is difficult for them to have a smooth and clear VC with their teachers and this affects their interest in learning.

**Difficult English words.** Most of the participants highlighted on the difficulties in understanding the long sentences with the difficult words. Some of the participants stated that it was difficult for them to understand the long sentences that consist words which were new and foreign for them. In fact, there were students complained on how they consumed a lot of time in searching new words in order to interpret the long sentences. Student A expressed on her difficulties in understanding the English learning materials as it uses the high level of English words. “*When it comes to sentences. Long sentences. I don’t understand. The words are difficult*”. Other than that, Student D mentioned on the need of having the suitable pictures that describe the words or sentences as it creates better understanding towards certain passages or tasks. “*Difficult. Because it is hard to understand. Do not understand and then,*

*the dictionary does not provide pictures for me to understand. I don't like the long sentences. I do not understand the long sentences.*" Another participant who was Student E also told that she did not favour the long sentences in the exercise as it was difficult to understand and consumed a lot of time to translate the words. "*I get tired easily because it demands me to always look for the words on it.*" In relation to that, some of the participants prefer to learn English with their teachers as they can assist them to understand the difficult words.

Being the third language among the hearing-impaired students, there should be a consideration when it comes to preparing the teaching materials. [29] has made a statement that the hearing-impaired students have the heavier cognitive load than the hearing students. In fact, vocabulary has been listed as one of the linguistics problems faced by the HI students. By giving more difficult words and long sentences, it affected the students' motivation in learning the language [38]. Eventually it will affect the usage of mobile technologies in learning English language.

**Lack of exposure towards the usage of mobile technologies in learning.** The participants mentioned that they did not browse and make use of educational applications and websites because they were not exposed on these. Some of them did not know how to search the English educational applications and even to use it. Student C mentioned "I did not use other application. I do not know how to do it. I only know to use dictionary apps and do the homework given by the teacher." Plus, Participant D stated "*I never use the apps (other than dictionary app) or search anything online because I do not how to do it.*"

In relation, students need to be guided in order to use the mobile technologies. Although they are the active users on social media, it does not convey their abilities in choosing the appropriate online applications, games and videos that could accelerate their proficiency in English language. In fact, [44],[45] proved that without the relevant guidance, the academic performances of the students remained stagnant. The students need to be exposed on how to utilise the suitable and feasible educational applications or website that could enhance their academic performances.

## 5 Conclusion and recommendations

The purpose of current research is to explore the potential usage of mobile technologies among the HI students in learning ESL. Thus, based on the main finding, mobile technologies demonstrate the huge potential in assisting the HI students learning ESL. The students utilised mobile technologies mostly on Google translate, dictionary application, homework that was given by the teachers through WhatsApp, Google Classroom, Telegram, e-mail and video chat with their English teachers. In other words, it only involved in completing the tasks given by the English teachers. They were not exposed to the usage of mobile technologies in order to learn English independently. As a teacher, there is a need for them to be well equipped with the knowledge of ICT as it would eventually aid the teachers to introduce multiple of interesting ways for the students to learn English especially via mobile technologies. In addition, with the current situation of the COVID-19 pandemic that affects the people around the world, pivotal steps need to be taken by the teachers to vary their instructional designs which involve the usage of mobile technologies to be more meaningful and the HI students are not left behind.

In fact, the students themselves suggested on the interactive English applications which impart educational games, videos, translation, sign language, word with pictures that may accelerate their attention and boost their understanding on the language. It demonstrates that the students were amiable towards the usage of mobile technologies in learning. Therefore, this study also embarks another route for the education stakeholders, especially the teachers as well as the software inventors to understand more on the student's needs in learning specifically on the usage of the mobile technologies among the HI students. In relation to that, there is also an urge for the standardized app evaluation tool which is not only assist the software inventors to create the reliable apps, but also helping the teachers and parents to choose the suitable apps that meet the need of the students within a shorter period of time [50],[51],[52]. More relevant educational applications are needed especially in learning English as they relied more on their visual senses. It also encourages future researches to explore more on the usage of mobile technologies not only among the HI students but also to the special needs education teachers in ESL classroom.

This study also stipulates the handful information for the ministry education to consider. It is undeniable that mobile technologies promise the great potential towards the HI students. Nonetheless, the conscientious and diligent plans need to be done to ensure the successful integration of ICT especially mobile technologies in special needs education. The teachers should have the profound knowledge on the usage of mobile technologies in teaching and learning session. Plus, they should be exposed on creative ways of teaching using mobile technologies. Therefore, proper training and optional courses on mobile technologies in teaching should be conducted to enhance the teachers' ICT skills.

Besides, the poor and unstable internet coverage is recognized as the main issue that could hinder the potential usage of mobile technologies among the HI students in learning. It distracted the process of learning such as online classes through Google Meet and even searching information through the internet. This issue may affect the students towards motivation towards learning ESL and may create resistance on the usage of mobile technologies.

As a conclusion, mobile technologies offer various potentials in maximizing the student's performances especially in ESL learning. It depends on how the education stakeholders namely ESL teachers, policy makers and inventors to manipulate the technologies for the betterment of the students.

## **6 Limitations**

The researchers are aware of several limitations of this study. Despite of rigorous research procedures were employed; this study has a few limitations that could be highlighted in future studies. First, the sample size was rather small so that reported results should be interpreted with care. Next, the participants were from only four states out of fourteen states in Malaysia. The findings would be more varied if the future researchers include a larger number of participants from all around Malaysia.

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