DEVELOPING ANDROID-BASED ENGLISH VOCABULARY LEARNING MATERIALS FOR PRIMARY SCHOOL STUDENTS

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Abstract: *This study intended to develop an android-based application for English vocabulary learning for primary school students. By implementing Design and Development design model, the researcher underwent three main stages namely; 1) Design, 2) Development, and 3) Evaluation. Through the use of questionnaires and interview guide, the needs were assessed. The results showed that the primary school students need more time to learn English and emphasize more on vocabulary learning. The primary school students need a smartphone application which provides vocabulary practice, test and entertainment about the topics learnt in the class. The smartphone application was developed in Android Package Kit (APK) format designed by using Microsoft Power Point. Contrasted to others, this smartphone application provides vocabulary practices, quizzes, and games for all topics that 4, 5, and 6 graders need to learn. The smartphone application was tested and evaluated by 5 English teachers and 2 technology experts to find out the quality. The results showed that the application has a very good quality and ready to be installed and used in Android smartphone. An effective use of the application with meaningful learning activities for vocabulary learning for young learners are strongly suggested.*

Keywords: *APK; Primary School Students; Smartphone Application; Vocabulary English Learning.*

INTRODUCTION

Compared to higher levels of education such as secondary school or university, most teachers nowadays find several challenges in teaching English in primary school. According to Abrar (2016),

teaching English to young learners especially primary school students might come with many problems or constrains encountered by teachers. The problems lay on numerous teaching components, among others curriculum, learning environment, students, and teaching or content delivery. In addition, it is important to understand the student diversity in the classroom. In line to this, Santosa (2017) states that a complex mixture of factors including the centralized mechanism, teaching practices, learning behaviours and social contexts, currently shapes the English teaching and learning context.

Regarding the problems above, many researchers have conducted some studies and revealed some ways to overcome those problems. One of them that many researchers have indicated to be successful is the use of technology. Ahmadi (2018) states that with technology being part of our everyday lives, it is time to rethink the idea of integrating technology into the curriculum and aim to embed technology into teaching to support the learning process.

One of the technologies that is suitable to be used for learning English is smartphone, since smartphone provides some interactive applications that let the user learn English in there. Wang (2017) asserts that using mobile phone applications in teaching and learning provides positive ideas and benefits that motivate students to learn and understand better.

Some researchers have conducted studies about the use of smartphone in students' English learning. Suwantarathip and Orawiwatnakul (2015) conducted a research and stated that there were two groups; the first one used mobile phone applications, but the second one used the traditional way. The result showed that the first group outperformed the second one. Elfeky and Masadeh (2016) carried out a study in order to look for the impact of using mobile phone on students' achievements and improvements. The result indicated that learning through mobile phone had important effects on the students' achievements and skills. Zou and Li (2015) conducted a study in order to investigate how mobile phone applications can be

integrated into the process of teaching and learning English outside and inside the classroom. The results showed that mobile applications can be used inside and outside the classroom. From all studies above, it can be concluded that smartphone applications bring positive outcomes for the students in learning English. They encourage the students to have active and independent learning. Therefore, the teacher can facilitate the students with mobile phone application to encourage the independent and active learning.

Nowadays, children spend most of their time by playing with their smartphone. Because of the numerous presences of smartphone applications, it changes the children learning style and learning environment these days. In order to have these children learn, teachers need to understand how to cultivate their learning motivation more instead of forbidding them for using smartphones. Teachers can consider this phenomenon as an advantage by providing their students a learning environment that incorporates the use of smartphone to the learning process. The students can also get entertained during their English learning process.

The extensive usage of mobile devices has fetched loads of mobile application in English language teaching (Gangaiamaran, 2017). It means that a large number of smartphone applications for English learners have emerged by the presence of smartphones. Although smartphones can provide inexpensive and portable access to learning and practice opportunities for ESL students, the challenge is to find tools that are compelling, engaging, effective, and complementary to classroom learning (Zilber, 2013). Therefore, it is important for educators to choose or create effective and interesting smartphone applications, in this case, android application, for the children in learning English.

This study intended to find out the needs of primary school students in learning English and to develop a smartphone application in the form of APK (Android Package Kit) that is used by primary school students for their English learning. APK is the collection of various small files, source codes, icons, audios, videos etc. into one

large file for the distribution purpose, which is the file format that supports Android OS only (Benson, 2018). Thus, to have the application installed successfully on smartphone, the file format should be in the form of APK. Then, by the presence of the application, it is expected that the English learning can be successful and interesting.

LITERATURE REVIEW
Vocabulary Learning

In most elementary schools in Indonesia, teachers begin the English class by learning English vocabulary first, as it is believed that the children will find it easy to learn other language, skills such as listening, reading, writing, and speaking because they are rich of basic thing of language that is vocabulary. Richards (2002) defines vocabulary as the core component of language proficiency and provides much of the basis for how well learners speak, listen, read, and write. According to Linse (2005), vocabulary entails a collection of words in language which is known, learnt, and used by the speakers. Thus, vocabulary provides basic supports to all language skills.

According to Cameron in Alqahtani (2015), vocabulary is one of the knowledge areas in language, plays significant role for learners in acquiring a language. Learners need vocabulary as the basic knowledge to be mastered, such as learning about words, before they learn more complex knowledge, such as forming phrases, creating clauses and sentences. Harmon, et.al in Alqahtani (2015) further adds that learners' vocabulary development is an important aspect of their language development. This means that when someone's language develops, his/her vocabulary also develops which eventually develops the possibility to improve language capacity.

In addition, Diamond and Gutlohn in Helena (2007) state that vocabulary is the knowledge of words and their meanings. It means that without establishing a strong vocabulary base first, comprehension and the use of a language will not be achieved. Based on statements above, it can be concluded that vocabulary acts as the

main role in the successful particular subject learning, since it gives the basis terms and concepts of particular subjects in the learning process. Therefore, teacher should give more attention towards vocabulary instruction in the classroom in the very beginning of the school, which means young learners should get vocabulary instructions to make good basic concept about the words. However, some authors state that vocabulary instruction was traditionally undervalued and teachers gave little attention to the techniques to help students learn vocabulary as well (Helena, 2007). Regarding to the issues, the teachers nowadays are suggested to give vocabulary instructions for the students in early age to maintain their interest to learn.

Teaching English to Young Learners (TEYL)

English for young learners has been the best way to learn the basic knowledge of English. The primary level are cognitively primed to acquire language skills in ways that lend themselves to an integrated skills and content-based experiential approach (Imaniah & Nargis, 2017). Bay, Husain, and Mamu (2018) further state that because the developmental period mostly happens throughout the primary level, primary school teachers are urged to cooperate with the learners in understanding the shift in the cognitive development of these learners. Thus, English teachers should be prepared with learning resources, strategies, and methods to support the development of the learners.

Teachers of young children should understand the children, find out what they need and offer them the materials in a way that they take them with interest (Cameron, 2001). Besides, teaching English for young learners are different compared to teaching English to adults or young adults learners; they are more enthusiastic in the classroom (Habibi & Sofwan, 2015). Ratminingsih (2012) emphasized that young learners are active learners who tend to learn new language or pattern while they are playing and having fun with movement. Thus, teachers should provide their students with interesting learning environment. Children find it easy to acquire new

language when they are involved with concrete objects. Cameron (2001) adds that when introduced into the L2 classroom, they (young learners) need very concrete vocabulary that connects with objects they can handle or see. When learners can have the real representations of objects in their learning, it is easier for them to process the information in English.

Mobile Assisted Language Learning (MALL)

In this 21st century, the emerging of technology one learning trend. Utilised with the use of mobile device, mobile learning is then considered as the acquisition of knowledge or skill through using mobile technology, anywhere and anytime (Geddes, 2004 in Hashemi, Azizinezhad, Najafi, & Nesari, 2011). El-Hussein and Cronje (2010) explains that the features of mobile technology like the portability and information accessibility play a major role in the enhancement of English language teaching and learning. Mobile devices are designed for all kinds of learners, even for users with disabilities (García and Fombona, 2015) and therefore may assist learning more effectively.

The widespread use of mobile devices led the use of mobile tools for learning, normally called as Mobile-Assisted Language Learning (MALL). According to Kukulska-Hulme & Shield (2008), MALL use of personal, portable devices enable new ways of learning, emphasizing continuity or spontaneity of access across different contexts of use. Its practice can improve idiomatic skills and support a foreign language class, and there is a positive sense in the learners' perceptions towards mobile-based learning (Kim, 2013).

The use of mobile phone in learning allows the students to experience quick information access. Santosa (2017) states that there is rich information available with quick access and teaching and learning process should be directed to a critical perspective rather than receptive one only. Liu, Navarrete, and Wivagg (2014) state that studies of MALL with children found that mobile devices uplift children learning. Based on the statements above, it can be concluded

that Mobile Assisted Language Learning has positive outcomes on students' learning.

Empirical Review

Several studies have highlighted the use of applications in learning English, including vocabulary. Farrah and Abu-Dawood (2018) investigated the use of mobile phone applications in teaching and learning processes within the Business English course context. By using questionnaire and interviews, it was found that most students responded positively to using mobile applications in teaching and learning processes. Students also understood and learned better when learning using the applications. In the English learning context, Asnadi, Ratminingsih, and Myartawan (2018) explored the teachers' and 6th grade students' perception of the of ICT-based English interactive game toward their learning motivation and English achievement. The results showed that both teachers and students showed a positive perception with regard to the use of ICT-based English interactive game toward their learning motivation and English achievement.

Wang (2017) in her study presented a pilot study and aimed to develop a mobile app to improve college students' English vocabulary learning with both English and Chinese descriptions. The target of her study was low-level students in college. The questionnaires were used to collect students' opinions toward the app. The pilot study and the use of mobile app expect to motivate students' learning and study habits. Nushi and Eqbali (2017) in their study employed a mobile language learning application of Duolingo, and explored the possibilities this app offers for learning a second language. This mobile app has unique features in which the target of user can be of any age, children to parents. With four main exercises that are provided in this app, which are namely, translation, matching, pairing, listening, and speaking, the user can learn English in fun way.

A study to check the effectiveness of mobile learning using application has been conducted by Elfeky and Masadeh (2016) on the development of the academic achievement and conversational skills of English language specialty students. The results showed that mobile learning had quite significant effect on both students' academic achievement and conversational skills. Relating to the present study, the results of the previous study are helpful to the development of the smartphone applications since it showed positive effect on students' achievement. However, it is necessary to find out the result of using the smartphone application to the children.

The previous studies have utilised mobile phone applications in their learning applications, especially in the field of English, including vocabulary context. The positive effect, perception, and development obtained from the earlier existing studies support the present study and provide additional information for the product development aimed in this research. However, specific subjects and settings employed in this study may address different results and potentials. Therefore, it is necessary to conduct the present study to develop an android-based application for English vocabulary learning for primary school students.

METHOD

This study was designed in *Design and Development* design model (Richey & Klein, 2014). In implementing this model, the researcher underwent three main processes, which are namely, Design, Development, and Evaluation. Design is the process of conducting needs assessment where the researcher analysed the needs of the primary school students in learning English and the syllabus of grade 4, 5, and 6 to find out the English topics that are suitable to be used in the developed product. Later, the needs of the students and the English topics were used as the guidance in designing the gameplay and the layouts of the product. Development is the process of developing the product where the researcher used the results of the need analysis as the basis or the reference for

developing the product. In this process, some sub-processes were done by using computer applications to develop the product. Finally, Evaluation is the process of judging the quality of the product where two kinds of evaluation, namely qualitative and quantitative evaluation were used to assess the strengths and weaknesses of the product. Some revisions were also done due to the evaluation results.

The subjects of this research were 75 primary school students of grade 4, 5, and 6 in one school in Denpasar, 5 English teachers in elementary schools in Denpasar, and 2 technology experts. The students were selected with purposive sampling technique.

In collecting the data, there were several instruments used, namely questionnaire, interview guide, and product evaluation sheet. The questionnaire was distributed to 75 grade 4, 5, 6 students in one primary school in Denpasar to find out the needs regarding to the problems they usually face in learning English, the learning process they expect, and their attitudes towards mobile phone applications. An interview guide was used to support the questionnaire data on the students' needs, the teachers' opinion about the learning problems and difficulties, and the smartphone application. The interview was done to an English teacher in elementary schools in Denpasar. To find out the quality of the product, two kinds of evaluation sheet, namely quantitative and qualitative product evaluation sheet were given to the English teachers and the experts.

The data collection was conducted in several steps, namely 1) asking permission from the school, 2) spreading the questionnaire, 3) conducting interview, and 4) conducting data analysis. The first step was giving the consent letter to the headmaster of the selected school and asking for the permission to conduct the study there involving the students of grade 4, 5, and 6. The second step was distributing the questionnaire to student respondents. The third step was conducting interviews to the English teachers of elementary school by using the interview guide. The interview was conducted face-to-face, and recorded with audio recorder. The last step was conducting the analysis process of the obtained data.

A questionnaire was given to the students and an interview was conducted to the teacher. The result of the questionnaire and interview were analysed descriptively based on the emerging themes. The data of needs, current learning situations, and problems from the students and teacher were gathered from the survey and interview and used as the reference for developing the Android Package Kit (APK) product. In developing the product, several software were utilised, namely *Microsoft PowerPoint, iSpring 6.0,* and *Andaired.* In a simple note, the material contents of the APK were created using *Microsoft PowerPoint,* published into HTML using *iSpring,* and converted into APK using *Andaired.* The evaluation sheet was given to the teachers and the experts to examine the product's quality. The quantitative evaluation sheet was calculated by using Microsoft Excel to find the mean score, while qualitative evaluation sheet was analysed by using descriptive qualitative analysis.

FINDINGS

From the data collection, several interesting findings can be reported in this section. Data include needs of students and teachers obtained from the survey and interview, findings on design and development process, and the quality of the product assessed by the English teachers and experts by using product evaluation sheet. The findings follow the design model proposed by Richey and Klein (2014).

Primary School Students' Needs in Learning English

From the data, it was found that the needs of the primary school students in learning English are the need to have more time to study English, the need of more vocabulary learning, and the need to be involved in MALL activities.

Regarding the first need, the questionnaire results showed that 38 (50.7%) students think that the time allocation for studying English in the class is insufficient. It means that half of the students think that they need more time to study English at school. It also shows that 44

(58.7%) students seldom spend their time to study English at home. It means that more than a half of the students have insufficient time to study English at home. The questions on the interview asked the teacher's opinion about students' understanding of the material from the teacher and course book. The teacher said that that the material that the students learn at school should be learnt again at home.

From the interview result, teachers found that some students still do not understand the material and pay attention while not being motivated at the same time. Thus, that results to their English learning process to be left behind from others. Moreover, it was said that the problem leads to students lacking skills in English, especially vocabulary, because the students might not be paying attention when the teacher teaches new vocabulary/words.

Regarding to the third need, the questionnaire results showed that 75 (100%) students are able to operate smartphone, and 50 (66.7%) students often use their smartphone at home. 75 (100%) students think that smartphone is beneficial for learning English, and 70 (93.3%) students agree to use MALL for learning English. Thus, it means that the smartphone application is really needed to be developed and soon be used by the students for learning English.

Android Package Kit (APK)-based Application Development

There were three main processes that were conducted to develop the product, namely; 1) Design, 2) Development, and 3) Evaluation. The 'design process' was conducted to design the content and the appearance of the application regarding to the needs of the students. The 'development process' was conducted to develop the application based on the 'design process'. The 'evaluation process' was conducted after the product was done to find out its quality.

In 'design' process, there were several steps done, namely; 1) deciding the gameplay, 2) selecting the topics, and 3) designing the layout. The gameplay of the application was providing four modes, namely; 1) vocabulary, 2) practice, 3) quiz, and 4) games. The topics of the application were selected by analysing the syllabus, and

discussing with the teacher. The selected topics were shown in Table 1.

Table 1 Selected topics of the application

Grade	4		5		6	
Topics	1	Numbers	1	Greetings	1	Directions
	2	Alphabets	2	Introducing Self	2	Illness
	3	Color and Shapes	3	Family	3	Activities
	4	Fruits and Vegetables	4	Body Parts	4	Time
	5	Animals	5	Jobs	5	Fairy tales
	6	Clothes	6	Food and Drink	6	Grammar
	7	Location	7	Transportations	7	Comparison
	8	Days and Months	8	Weathers and Seasons	8	Public Places
	9	Adjectives	9	Things at School	9	Earth and Space
	10	Feelings	10	Things at Home	10	Sports

In 'development' process, there were some main processes, namely; 1) main characters making process, 2) interactive slideshows making process, and 3) PowerPoint to APK converting process. The main characters making process was done by using *Adobe Photoshop Cs5*, by modifying the original picture taken from the Internet, and making the animated characters by using *AVS Video Editor 7.0* and a website named *ezgif.com*. The result is shown in Picture 1.

Picture 1 Original picture and the modified picture

The 'design' and 'development' process were summarized to a table that shows the profile of the product. The profile of the product was seen by the English teacher of one of the schools in Denpasar to be asked for the agreement before producing the product. The profile of the product is shown in Table 2.

Table 2 Profile of the product

No	Item	Details	
1	Title	Ori English Learning	
2	Format	Android Package Kit (*.apk)	
3	Modes	Vocabulary, Practice, Quiz, Games	
4	Picture Type	Cartoon (semi authentic) created in Adobe Photoshop Cs5, and downloaded in free picture sites namely; clker.com, vecteezy.com, and clipart.com	
5	Icons	Shapes in Microsoft PowerPoint 2013 and iSlide	
6	Sounds	Self-recording	
7	Languages	English and *Bahasa* Indonesia	
8	Topics	Grade 4	Numbers, alphabets, color and shapes, fruits and vegetables, animals, clothes, location, days and months, adjectives, feelings
		Grade 5	Greetings, introducing self, family, body parts, jobs, food and drink, transportations, weathers and seasons, things at school, things at home
		Grade 6	Directions, illness, activities, time, fairy tales, grammar, comparison, public places, earth and space, sports
9	Contents	624 vocabularies, 4 grammar rules, and 3 comparison rules	

In the slideshows making process, *Microsoft PowerPoint 2013* was used. One of the appearances of the slideshows is shown in Picture 2.
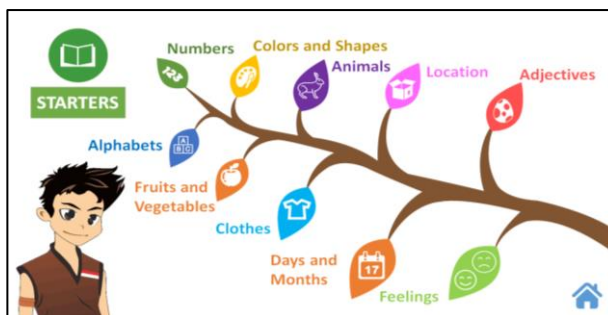
Picture 2 Sample slideshow of the application

Finally, the last process in developing the application was converting the PowerPoint slideshows to APK by using *iSpring 6.0* and *Andaired*. The final product was in Android Package Kit (APK) format and ready to be evaluated by the judges.

Picture 3 Story mode of the application

The application provides story mode to let the students have contextual use of the vocabularies that they learn previously. The appearance of the story mode of the application after being installed on the smartphone is shown in Picture 3. The application also provides game mode to let the students experience fun learning. The appearance of the game mode of the application after being installed on the smartphone is shown in Picture 4.

Picture 4 Game mode of the application

In the 'evaluation' process, the developed smartphone application was evaluated by 5 English teachers of elementary school and 2 experts in technology. The APK-based application was first installed on an Android smartphone. Then, the smartphone was given to the English teachers and the experts to test the application. Based on the results of the qualitative product evaluation sheet above, it can be concluded that the Android Package Kit (APK)-based application can be used on smartphones and it is suitable to be used by the students of grade 4, 5, and 6 to learn English, especially enriching their vocabulary.

Developed Android Package Kit (APK)-based Application Quality

In finding out the quality of the developed smartphone application, the researcher used the quantitative product evaluation sheet. The 5 English teachers and 2 experts of technology were asked to give scores on the evaluation sheet to evaluate the quality of the product. The result of the product evaluation sheet is shown in Table 3.

Santosa, M.H., Pratama, I.P.S, & Putra, I.N.A.J. (2020). Developing android-based English vocabulary learning materials for primary school students

Table 3 Product Evaluation Sheet Result

| Evaluators | Item Numbers | | | | | | | | | | | | | | | Mean | |
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Expert 1	5	5	4	4	4	5	4	4	4	5	4	5	5	4	5	4.47	
Expert 2	4	4	5	5	4	4	4	4	5	5	5	5	5	4	4	4.47	
Teacher 1	4	4	4	5	5	4	5	4	5	5	4	5	5	5	5	4.60	
Teacher 2	5	5	4	5	4	5	5	4	5	5	5	4	4	4	5	4.60	4.60
Teacher 3	5	5	5	5	5	4	4	4	4	5	5	5	5	5	5	4.73	
Teacher 4	5	5	5	5	4	5	5	5	4	5	5	4	5	4	4	4.67	
Teacher 5	4	4	5	5	5	4	5	5	4	4	5	5	5	5	5	4.67	

The product evaluation sheet result shows that the mean score for the product evaluation sheet about the smartphone application was 4.60. As the criteria, 4.60 was categorized as very good. Thus, the quality of the smartphone application was very good.

DISCUSSION

The primary school students need to manage their time to learn English in order to have complete understanding about the topics taught in the class. In line with this study, Lynch (2008) states that one of the most crucial problems of English language teaching and learning classroom is the insufficient time. Therefore, to be able to adjust the learning time, the students can use the smartphone application as the additional time for them to learn English.

The primary school students need to have more vocabulary learning in order to understand the material when the teacher is teaching and be active in the learning process. In line to this, Hussein & Elttayef (2018) state that students are unable to understand and use English because they lack of necessary vocabulary items. Therefore, the smartphone application designed to enrich students' vocabulary items should be applied in the students' English learning.

The primary school students need to get involved in Mobile Assisted Language Learning (MALL), because they are not only able to operate smartphone and use their phone frequently at home, but they also manage to use the smartphone for learning English. According to Kukulska-Hulme and Shield (2008), Mobile-Assisted

Language Learning (MALL) enables new ways of learning, emphasizing continuity or spontaneity of access across different contexts of use. Therefore, the smartphone application enables the students in effective way to get involved in MALL and help the teacher in such a way in the teaching process.

The primary school students need to be well-guided in having MALL in teaching and learning process in the classroom. In line to this, Khaddage et al. (2011) state that instructors can adapt activities, practice teaching, and reinforce assessment and feedback. Therefore, providing good teaching strategies, including the instructions and follow-up activities in the process of MALL should be done by the teachers.

In conclusion, the primary school students' need in learning English vocabulary was the smartphone application which provides the vocabulary, practice, test, and entertainment about the topics learnt in the class. Supported by Wang (2017), using smartphone applications in teaching and learning provides positive ideas and benefits that motivate students to learn and understand better. In addition, Elfeky and Masadeh (2016), state that learning through smartphone application has important effects on the students' achievement and skills.

There were three main processes conducted during the development of the product. The processes are namely; 1) Design, 2) Development, and 3) Evaluation. The content of the application consisted of the gameplay and the English topics in syllabus. In line to this, Imaniah and Nargis (2017), state that English for young learners at the primary level are cognitively primed to acquire language skills in ways that lend themselves to an integrated skills and content-based experiential approach. Therefore, the purpose of providing English topics as the content of the application is to let the students acquire the integrated skills in English.

The gameplay of the application was tapping on one of four modes, namely; 1) Vocabulary, 2) Practice, 3) Quiz, and 4) Games. In Vocabulary mode, the users can learn new vocabulary of certain

topics. The English topics in the application were analysed from the syllabus of primary school students of grade 4, 5, and 6. From the analysis result, it was found that there were 30 topics that were going to be used in the application.

The process of selecting the vocabulary for each topic was done. It was found that there were 624 vocabularies, including 4 grammar rules, and 3 comparison rules. In line to this, Cameron (2001), adds that when introduced into the L2 classroom, young learners need very concrete vocabulary that connects with objects they can handle or see. Therefore, the application provides the vocabularies with the pictures as the concrete objects to ease the students to process the information in English. Furthermore, the vocabulary selection was contextual by considering the students' background and prior knowledge.

In Practice mode, the users are provided with several practices to enhance their understanding about the topic. In line to his, Kim (2013) states that MALL practice can improve idiomatic and support a foreign language class, and developing listening abilities for instance. Therefore, the practice mode was made to improve the students' understanding and skills.

In Quiz mode, the users are given several questions related to the topic to test the users' understanding. In line to this, Khaddage et al. (2011) state that smartphone application helps instructors determine students' difficulties and misunderstanding. In addition, instructors can adapt activities, practice teaching, and reinforce assessment and feedback. Thus, the Quiz mode in the application can provide the assessment for the students.

In Games mode, the users are provided with interesting game related to the topic. In line to this, Zilber (2013) states that games and game-like activities are the most obvious examples of engaging applications. Therefore, the Games mode in the application should engage and entertain the students' interest towards the topics.

The process of developing the product in 'Design' process was continued to designing the layout of the application. The researcher

used Microsoft PowerPoint 2013 to design the layout. Microsoft PowerPoint 2013 was also used in the development process of the application. In line to this, Rieber et al. (2009), states that although there are certainly much better design tools for designing application, some believe that harnessing PowerPoint for designing the application is a practical way to bring the design into the classroom.

In development process, it was not only Microsoft PowerPoint 2013, but the researcher also used some additional applications to develop the smartphone application. In other words, technology was effectively used in improving the learning and teaching process. In line to this, Ahmadi (2018) states that with technology being part in our everyday lives, it is time to rethink the idea of integrating technology into the curriculum and aim to embed technology into teaching to support the learning process. The additional applications were namely; Adobe Photoshop Cs5, AVS Video Editor 7.1, and a website named ezgif.com.

The additional applications above were used to create the main characters in the application. The main characters and other objects in the application were made in cartoon, while some of them were made in cartoon animation. The purpose of this was to get the students' interest to using the smartphone application. In line to this, Hussein and Elttayef (2018) states that curriculum designers should take into their account the importance of technology use, and cartoon pictures and linked pictures which play the vital role in students' motivation.

The layouts / appearance in Design process were developed in Development process to make the interactive slideshows by using Microsoft PowerPoint 2013. The purpose of using Microsoft PowerPoint was not only as it was the procedure for making the APK-based application, but also it is easy to use. In line to this, Rieber et al. (2009) state that PowerPoint has three distinct advantages: it is already available in most classrooms; its use by teachers in any form is directly associated with technology integration; and teachers like using it.

The converting process from PowerPoint Presentation to APK-based application was done by using iSpring 6.0 and Andaired. The final result of this process was an Android Package Kit (APK) file. In line to this, Benson (2018) defines APK as the collection of various small files, source codes, icons, audios, videos, etc. into one large file for the distribution purpose, which is the file format that supports Android OS only. However, it does not mean that the smartphone application can be used only on Android. The researcher uploaded the developed smartphone application on Google Play and App Store. Thus, the students who have Apple smartphone can also use the application.

The evaluation process was done to the developed APK-based application to find out the agreement of the English teachers and the experts of technology to the appropriateness of the smartphone application to learn English for primary school students, and the suggestions and comments to the smartphone application. The strengths and weaknesses of the smartphone application were also analysed. Based on the results, it was found that the smartphone application has interesting appearance, and it is appropriate to the students for learning English as it is entertaining and engaging the learning. In line to this, Gangaiamaran (2017) mentions the benefits of mobile application in education that include; 1) more social, 2) entertainment, 3) round the clock availability, 4) effective utilization of leisure hours, 4) alternate modes of learning, and 5) fun and informal. In addition, Zilber (2013) suggests teachers look for apps with the following considerations, namely; 1) designed in small segments, 2) engaging, entertaining, and addictive, 3) highly focused and complementary to classroom learning, 4) specifically designed for smartphones. The developed smartphone application has fulfilled the considerations and included the benefits as stated above.

The researcher used the qualitative product evaluation sheet to be scored by 5 English teachers of elementary school and 2 experts in technology to find out the quality of the product. From the result of the evaluation sheet, the mean score of the smartphone application

was 4.60. From the criteria of the product quality, the smartphone application was categorized 'very good'. Thus, it can be concluded that the developed APK-based application to learn English for primary school students has a very good quality. In line to the result above, Hashemi et al. (2011) defines mobile learning as the acquisition of any knowledge or skill through using mobile technology, anywhere and anytime.

The smartphone application supports the mobile learning as the students can acquire the knowledge or skill, in this case the vocabulary mastery. In addition, Wang (2017) asserts that using mobile phone applications in teaching and learning provides positive ideas and benefits that motivate students to learn and understand better. The smartphone application motivates the students to learn, and it is supported by the judges' evaluation that agreed to the statement 'The application can motivate the students to study English'. El-Hussein and Cronje (2010) adds that the features of mobile technology such as the portability and information accessibility play a major role in the enhancement of English language teaching and learning. The developed smartphone application also has portability and information accessibility features, and it is supported by the judges' evaluation that strongly agreed to the statement 'The application can be used anywhere (at home or at school), and 'The application can be used at any time, and the duration in using the application can be adjusted'.

CONCLUSION

Learning English can be done in various ways. One of them is by using smartphone application. Smartphone application was not merely for entertaining purpose. The smartphone application designed and developed for education purpose can actually be used for learning English. The smartphone application was designed to fulfil the students' need that is to learn new vocabularies about the topics they are learning at school.

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