ESL Students' Perceptions Towards Vr 360^0 Learning Application To Enhance Vocabulary Learning

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***Abstract*—In today's ever-changing world, there are many new technologies used in education settings to improve the language learning process. However, English vocabulary acquisition is a challenge for ESL or EFL learners to be proficient in the language. The aim of this paper was to explore ESL students' perceptions towards the use of VR 360^0 Learning application for English vocabulary learning enhancement among lower secondary school students in Kuala Lumpur, Malaysia. Thirty respondents which consisted of twenty male students and ten female students participated in this study. Survey questionnaire was used to gather the data for this study. The findings revealed that the students had positive views towards the use of VR 360^0 Learning application for English vocabulary learning enhancement. Thus, the VR 360^0 Learning application is suitable to be implemented as learning and teaching tool in classroom to improve the language learning process, especially for English vocabulary learning enhancement.**

Keywords— English as Second Language (ESL), Technology, Virtual Reality, Vocabulary Enhancement, Vocabulary Learning

I. INTRODUCTION

In today's globalized world, English language plays important roles in our daily lives. It has been widely spoken and used by the people around the world as a medium of communication and instruction in the education [1]. Having a good command of English language is also essential for employment opportunities. As stated by [2], many international corporations as well as multinational business organizations have a need for individuals with good command of English language. The same goes for job advertisements in local market and other variety of jobs such as travel guide and media manager. With the awareness towards the importance of the language, English has become a second language to countries, especially ex-colonies of the United Kingdom or the United States such as India, Philippines, Nigeria and Malaysia [3].

However, learning a second language is not easy. One of the aspects that caused learners to face challenges in learning English as a second language is lack of vocabulary [1]. It is crucial for learners to have vocabulary knowledge because lack of vocabulary in a second language hinders a successful communication [4]. There are reasons for learners' inability to acquire vocabulary successfully. According to [5], an individual nature of expanding one's personal lexicon through personal reading is one of the main challenges to vocabulary acquisition. The teachers are also not confident about the best practice in vocabulary teaching and do not know where to start in forming an instructional emphasis for word learning [6].

Vocabulary mastery is essential in second language learning. With the advance of technology, many applications have been developed to assist learners in vocabulary enhancement. These applications include Word reference (a dictionary app), Quizlet (vocabulary flash cards app) and others. Learners can use these applications via their mobile phone or computer. Subsequently, the vocabulary learning can occur at anywhere and anytime. Based on the explanation above, the researchers then conducted a research about ESL students' perceptions towards VR 360^0 learning application to enhance vocabulary learning. Thus, this study aim to explore the perception of ESL students towards the use of VR 360^0 Learning application for English vocabulary learning enhancement.

II. THEMES

A. Vocabulary Learning

Vocabulary learning is a crucial step in learning a second language. This is because vocabulary is the heart of second language acquisition and without it, any language skills will cease to exist [7]. How can the term 'vocabulary' be defined? Past researchers have provided many definitions for the term 'vocabulary'. For instance, [8] mentions that vocabulary are the words that we must know to ensure an effective communication. They are words in speaking (expressive vocabulary) and words in listening (receptive vocabulary). This means learners need to have vocabulary knowledge with good understanding of the meaning(s) of words used to express themselves and respond naturally.

Furthermore, Hatch and Brown (1995, cited in [7]) refers 'vocabulary' as a list or set of words for a particular language and which individual speaker of language might use. This

means vocabulary has a high number of words in a language and can be used in many ways. Similarly, [9] defines 'vocabulary' as the words of a languages which include single items, phrases, and chunks of a few words that are able to convey a meaning just like individual words. In other words, vocabulary not only includes single or individual words with specific meaning(s), but also phrases or chunks. The similarity that can be seen from the definitions above is vocabulary not only entails a set of individual words as well as phrases or chunks of several words that give meaning(s), but also requires the proper usage of the words in the contexts given.

As for vocabulary learning, it can occur in both ways, namely incidental and intentional learning. Incidental vocabulary leaning means vocabulary is acquired unconsciously through independent listening or reading activities [10]. Similarly, [11] states that incidental vocabulary leaning refers to acquiring new words without explicit instruction from various contexts. This indicates that learners learn vocabulary without specific focus of attention. They focus on understanding the meaning of reading and listening contexts instead of intentional vocabulary learning [12]. Therefore, learners who have good reading skills can improve their vocabulary indirectly as they read a variety of English texts. They can also improve their vocabulary through listening to English songs. These strategies lead to incidental vocabulary learning.

On the other hand, intentional vocabulary learning means vocabulary is acquired through direct conscious study [10]. This means learners have the intention to acquire vocabulary through proper instruction. Reference [13] defines intentional vocabulary learning as any activity that has the purpose of storing lexical information in the human brain as memory. This means learners will store words that they have learned in their memory. According to Laufer (2005, cited in [5]), intentional vocabulary learning is a necessity for a better chance of retention and mastery of specific vocabulary along with incidental learning as a complementary.

B. Virtual Reality

Virtual reality technologies have been rapidly recognized as valuable tools for the study, assessment, and rehabilitation of cognitive processes and functional abilities [14]. What does the term 'virtual reality' mean? According to [15], 'virtual reality' can be defined as a whole simulated reality that is built with computer systems by using digital formats. The hardware and software used need to be powerful enough in creating a realistic immersive experience. For example, VR helmets or dedicated glasses and 3D software. Similarly, [16] define 'virtual reality or VR' as visual, aural and tactile stimuli from the virtual world generated by computer-based technology in real time. Thus, we can say that 'virtual reality' involves the process of building or creating an alternative reality, also known as virtual world with the use of computer technology which includes hardware and software.

Virtual reality technologies have also been used in the education field for the process of teaching and learning. These virtual reality technologies are able to show the teaching content and subsequently create an immersive teaching environment effectively. As a result, the students' learning process and the teaching quality can be improved [14]. Thus, the application of virtual reality technologies is beneficial for the future development of education. As for technique, virtual reality has a way in selecting your own view and it based on your interest and the importance of the scene. If you are watching VR (Virtual Reality) video by mounting headset in your eyes, you need to move your head around and you can see a single video shows from up, down, and all around you in every angle you want to see.

There are several studies done on vocabulary learning through virtual reality technology as well as computer in the past few years. Reference [17] had conducted an experimental study to explore the perception of EFL students towards learning vocabulary collaboratively with computers. The participants of this study were 91 eighth-graders from a junior high school in Taiwan. They also came from three intact classes. Each class was divided to learn individually without computers, collaboratively without computers and collaboratively with computers respectively. The data collection methods used in this study were survey questionnaire and interview as further support. Based on the quantitative findings, students who learned collaboratively with computers did not outdone in vocabulary tests that were designed for individual study. However, they were shown to have better retention and outperforming as compared to others in the delayed post-test. As for the qualitative findings, more than 70% of the students in the computer group were found to have a positive attitude and anticipation towards learning vocabulary in such environment. The nature of tasks, sharing of computers as well as grouping were also found to be effective for their learning approaches.

In another study conducted by [18] examined the effectiveness of virtual reality headsets in helping 20 Saudi female ESP postgraduates with retaining vocabulary related to their field. The students had interacted with virtual objects through watching 360 degrees videos which were related to basic skills in counselling and a few cases that required consultation as well as referral for six weeks. The scores from both pre and post tests were compared with the use of a paired sample t-test in examining the effect of the virtual reality videos on their vocabulary retention. The findings showed that there is a high significant difference between the two tests. The mean scores between both tests showed that an alteration in favour to the post test where the students had shown the most improvement. Thus, the findings revealed that virtual reality videos helped the ESP postgraduate students with their vocabulary retainment and subsequently their competency level development.

Reference [19] investigated the impacts of virtual reality game, namely 'House of Languages' on the ESL vocabulary acquisition as well as how virtual reality technology helps in improving the ESL vocabulary skills. This study employed a quasi-experimental design to determine the impacts of the virtual reality use intervention on the learning process over the traditional method for ESL vocabulary acquisition. A total of 64 intermediate school students in Saudi Arabia were involved in this study. The participants were randomly divided into two groups, namely an experimental group and control group with each group contained 32 students and their teacher. The findings indicated that the students who had been using virtual reality game 'House of Languages' showed greater achievement in vocabulary learning than those who were using the traditional method. The findings also further indicated that the students in both the experimental group and control group

scored higher in the post-test compared to their pre-test scores. Moreover, both teachers and students perceived virtual reality as useful in the learning process from the surveys that had been carried out.

III. METHODOLOGY

This section describes the design of the VR 360^0 Learning application and the adaption of survey questionnaire to explore the perception of lower secondary school students towards the use of VR 360^0 Learning application for English vocabulary learning enhancement.

A. The Design of VR 360^o Learning Application

In order to encourage lower secondary students' English learning motivation especially vocabulary learning, the researchers designed an applications which introduces vocabulary in English, namely VR 3600 learning application. In which, there are 4 units designed that followed ten English words as example and each word using virtual reality videos.

The Google's Android operating system was used in the application design in this research.

With an Android system, the researchers are able to customize the look of the app. The process of designing the VR 3600 Learning application are shown in Fig. 1, Fig. 2, Fig. 3, Fig. 4, and Fig. 5.

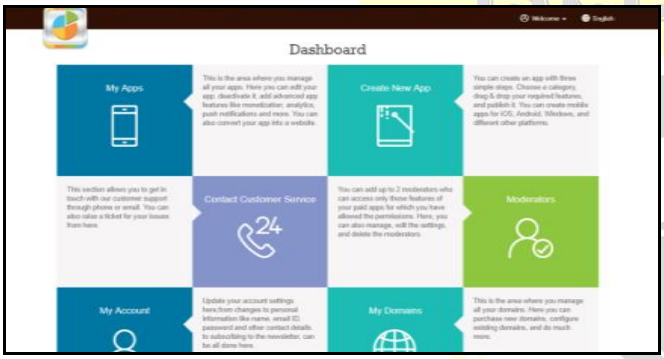

Fig. 1. The Process of Designing the Application.

Firstly, in Fig. 1, the researchers searched the web page, "www.appypie.com." Then, click on create new app menu.

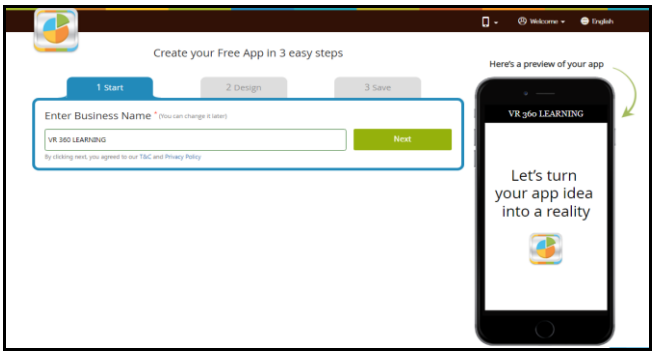

Fig. 2. The Process of Designing the Application.

Secondly, in Fig. 2, the researchers started to create the name of application, and click "next".

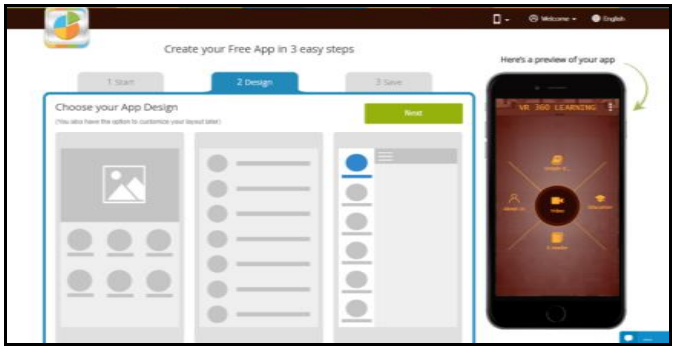

Fig. 3. The Process of Designing the Application.

Next, in Fig. 3, the researchers choose the design of application, and then make the application based on the researchers needs.

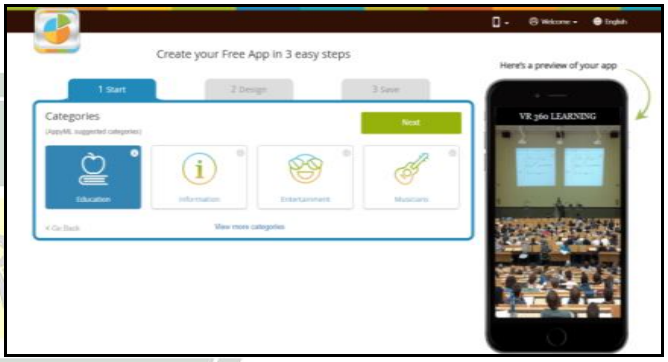

Fig. 4. The Process of Designing the Application.

In the Fig. 4, the researchers choose the categories of application based on the plan.

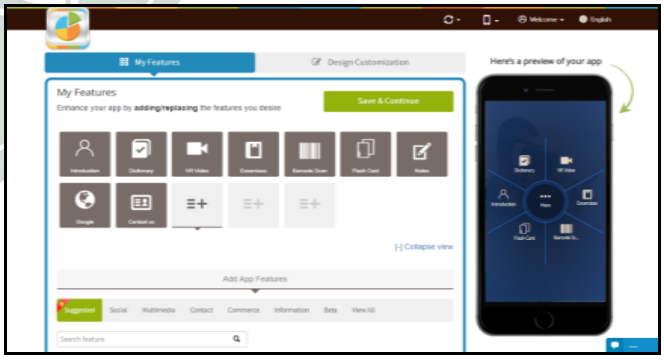

Fig. 5. The Process of Designing the Application.

Lastly, in the Fig. 5, the process of designing the application, the researchers add the features for application.

Then, the researchers made the virtual reality videos to be included in the VR 360 Learning application. It can be seen in Fig. 6.

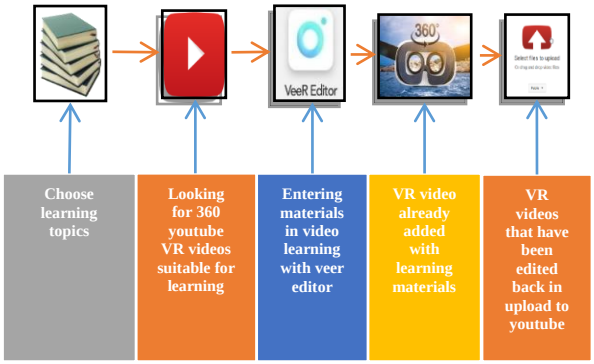

Fig. 6. The Videos Making Process.

The researchers designed the features which include the brief introduction of the application, VR videos, exercises, dictionary, flash card, barcode scan, notes, and contact us.

The features of the application are presented in Fig. 7.

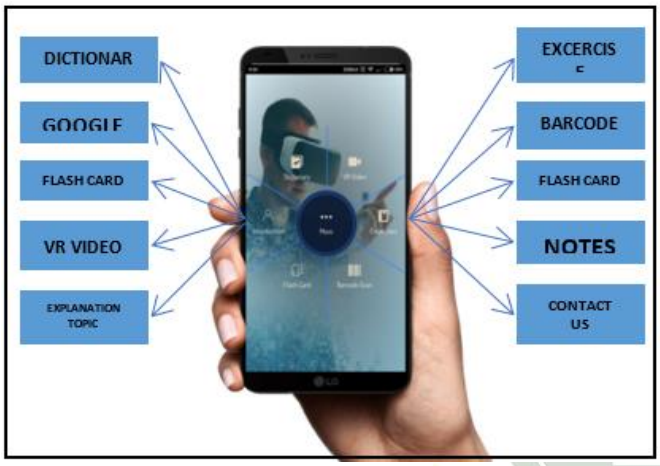

Fig. 7. The features of designed application.

This research was conducted on lower secondary school students in Kuala Lumpur, Malaysia. The respondents were thirty (n = 30) students. There were 20 males (66.67%) and 10 females (33.33%) who participated in this study. This research focuses on quantitative approach. The quantitative data collected were calculated and tabulated manually in terms of frequencies counts and percentages for descriptive statistics.

B. The Questionnaire of Students' Perceptions Towards VR 360 ^{0} Learning Application

To collect data from the sample, the researchers used survey questionnaire as instrument. The survey questionnaire was adapted from [17]'s survey questionnaire. Based on this survey questionnaire, seven items were adapted to collect data related to perception of ESL students towards the use of VR 360^0 learning app for English vocabulary learning enhancement. Thus, there were seven items in the survey questionnaire. The respondents were required to tick (√) on the 'Agree' or 'Disagree' option that best reflects their opinions about the statements.

In collecting the data, the researchers gave a brief introduction to the students regarding the VR 360^0 learning applications and its features in enhancing their English vocabulary in the class. Then, the researchers demonstrated to the students on how to use the app effectively on the laptop and mobile phone. Once the students had gained understanding about the app, four students were called out by researchers to test the app. This test out took about 40 minutes. After that, the survey questionnaires were distributed to students with a brief explanation before they started to answer the questions. The survey questionnaires were collected back after a duration of 15 minutes. Both researchers expressed their thanks to the students for their cooperation.

IV. FINDINGS AND DISCUSSION

This study explored the perception of ESL students towards the use of VR 360^0 Learning application for English vocabulary learning enhancement. The findings were presented in the following table followed by the report of the findings and discussion.

TABLE I. THE PERCEPTION OF ESL STUDENTS TOWARDS THE USE OF VR 360^0 LEARNING APP FOR ENGLISH VOCABULARY LEARNING ENHANCEMENT

No.	Items	Agree		Disagree	
		N	*%*	*N*	*%*
1.	I like to learn vocabulary with the use of VR 360 Learning app in English class.	30	100	0	0
2.	I think the vocabulary exercises in the VR 360 Learning app can help me in improving my English vocabulary.	30	100	0	0
3.	I think using VR 360 Learning app in English class can enhance my interest in learning vocabulary.	30	100	0	0
4.	I think the vocabulary exercises through the use of VR 360 Learning app enhance my memory for English vocabulary.	30	100	0	0
5.	I think learning English vocabulary with the use of VR 360 Learning app is suitable for me.	30	100	0	0
6.	I am looking forward to the future opportunity of using VR 360 Learning app in English class.	30	100	0	0
7.	In general, I feel satisfied with the experience of learning vocabulary through VR 360 Learning app in English class.	30	100	0	0

The findings from table 1 revealed that all the students (100%) agreed that they "like to learn vocabulary with the use of VR 360 Learning application in English class". With respect to the second item, that is, "I think the vocabulary exercises in the VR 360 Learning application can help me in improving my English vocabulary," it was found that all the students (100%) agreed with this statement. All the students (100%) also agreed that "using VR 360 Learning application in English class can enhance my interest in learning vocabulary". The students (100%) further agreed that "the vocabulary exercises through the use of VR 360 Learning app enhance my memory for English vocabulary". The students (100%) agreed that

"learning English vocabulary with the use of VR 360 Learning application is suitable for me. The students (100%) also expressed their agreement for "looking forward to the future opportunity of using VR 360 Learning app in English class". As for the item "In general, I feel satisfied with the experience of learning vocabulary through VR 360 Learning application in English class," all the students (100%) expressed their full agreement with the statement.

As explained previously, this research was done on lower secondary students in Kuala Lumpur, Malaysia. Before carrying out this research, the researchers analyzed the way for students to learn English especially in vocabulary learning. After analyzing, the researchers found that the students get bored with traditional ways of learning. In order to overcome the students' problem, the researchers introduced VR 3600 learning application to explore the perception of ESL students towards the use of VR 360^0 Learning application for English vocabulary learning enhancement. Based on the results of this research, the researchers found that the students had positive views towards the use of VR 360^0 Learning app for English vocabulary learning enhancement.

The findings from this research correspond with the findings from the past studies especially on the positive impacts of the use of virtual reality for English vocabulary learning enhancement. Reference [17] who had conducted an experimental study to explore the perception of EFL students towards learning vocabulary collaboratively with computers found that students who learned collaboratively with computers were shown to have better retention and outperforming as compared to others in the delayed post-test. Moreover, more than 70% of the students in the computer group were found to have a positive attitude and anticipation towards learning vocabulary in such environment. The nature of tasks, sharing of computers and grouping were also found to be effective for their learning approaches.

In another study conducted by [18] who examined the effectiveness of virtual reality headsets in retaining vocabulary, the findings from the comparison of both pre and post tests scores with the use of a paired sample t-test revealed that there is a high significant difference between the two tests. The mean scores between both tests showed that an alteration in favour to the post test where the students had shown the most improvement. Thus, the virtual reality videos indeed helped the ESP postgraduate students with their vocabulary retainment and subsequently their competency level development.

Similarly, the findings from a study conducted by [19] who investigated the impacts of the virtual reality game, namely 'House of Languages' on the ESL vocabulary acquisition as well as how virtual reality technology helps in improving the ESL vocabulary skills indicated that the students who had been using the virtual reality game showed greater achievement in vocabulary learning than those who were using the traditional method. The findings also further indicated that the students in both the experimental group and control group scored higher in the post-test compared to their pre-test scores. Moreover, both teachers and students perceived virtual reality as useful in the learning process from the surveys that had been carried out.

V. CONCLUSION AND IMPLICATIONS

As a conclusion, there are several perceptions of lower secondary school students towards the use of VR 360^0 Learning app for English vocabulary learning enhancement. Firstly, the students able to have an authentic learning environment with virtual reality application. Secondly, the students able to understand and memorize better on the vocabulary usage with virtual reality application. Then, the teachers can encourage "anywhere, anytime" vocabulary learning among the students with virtual reality application. Lastly, the teachers need to provide guidance to students on the effective use of the virtual reality application so that they can actively engage in vocabulary learning. The research findings provide valuable insight into English learning app used by ESL student at the lower secondary school in Kuala Lumpur, Malaysia. The result obtained revealed that the students had positive views towards the use of VR 360^0 Learning application for English vocabulary learning enhancement. Therefore, the VR 360^0 Learning application is suitable to be implemented as learning and teaching tool in classroom to improve the language learning process, especially for English vocabulary learning enhancement.

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