Developing OCEAN as a Game based on English Learning in Teaching Vocabulary

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Abstract This study applied Research and Development (R&D) study, which developed game application-based English learning. This study aims to improve the learner's vocabulary and reduce their anxiety about mastering English. Vocational maritime students had problems memorizing vocabulary, and based on the result of the need analysis, they need a media that can ease them in learning English. This study followed some steps in developing the game application: assessing need analysis, writing performance objectives, instructional strategy development, instructional materials development and selection, and implementation of formative and summative evaluation. The instrument of this study was questionnaires and interviews to gain students' responses in the need analysis process and evaluation. OCEAN can catch learners' attention and decrease their anxiety in learning English. Most students agree that if the game improves their motivation, they can enjoy playing it. The development of this game as an educational game has had a good impact and responses, even though some improvements are needed.

Keywords: OCEAN, Media, Game, Vocabulary

1. INTRODUCTION

Vocabulary cannot be separated from language because having enough vocabulary is necessary for people to produce any utterance or sentence. As a foreign language in Indonesia, English is challenging for many students. The essential part of foreign language learning is vocabulary learning, and the meaning of new words, whether in books or classrooms, is very often emphasized (Alqahtani, 2015). For foreign language students, vocabulary is the key to mastering English because more vocabulary is needed for students to improve their comprehension. There is a close relationship between vocabulary and comprehension because vocabulary mastery contributes to helping the students comprehend the texts. Furthermore, individuals needing more vocabulary have problems understanding written text (Joshi, 2005; Furqon,2013). To build this relationship, the teacher needs an appropriate method, media, and strategy because teaching vocabulary is challenging.

Teaching vocabulary is a big problem to deal for foreign language teachers, and there are a lot of theories and media used by every teacher. Teaching vocabulary is not only about asking students to memorize the words but also about how the students can use the words in sentences or utterances. Most words are learned through classroom instruction because of the lack of second language input, which makes vocabulary learning restricted (Chanturia & Webb, 2016). One indicator that influences learners in mastering English is vocabulary; with vocabulary, someone can understand an idea when they are listening, reading, or even speaking. Most Indonesian teachers only focus on teaching knowledge rather than improving skills. Language teaching is different from teaching another course because language education is about informing information and teaching skills (Gultom, 2015). Most Indonesian students only know information on English grammar day by day and need more motivation to practice the language itself. Therefore English become the most dangerous subject for students, and they only want to learn because they want to get the highest score or certificate. These phenomena happen in most school levels in Indonesia, and they must be changed to improve the student's skills. To overcome this problem, the media has a vital role in changing students' motivation and stereotypes.

Media is used to introduce the source to the recipient, bringing up thoughts, attention, readiness, and feeling to engage the learners. (Hamid, et all, 2020). Media cannot be separated from the English teaching-learning process since its role is significant for teachers in delivering knowledge and information. Not only as a tool in delivering knowledge and information, media in the teaching-learning process can describe abstract things into real things (Ekayani,2017). In teaching English, media helps students describe abstract things such as words, phrases, and sentences. Nowadays, teaching media is increasing rapidly, and some have multiple functions. Since the coronavirus spread worldwide, all teachers have fought to find interactive media for teaching English. Media has changed, and most have used the internet because the pandemic forced people to limit their physical contact with others. This situation improves teacher creativity in creating media, and one of them is media that uses gamification.
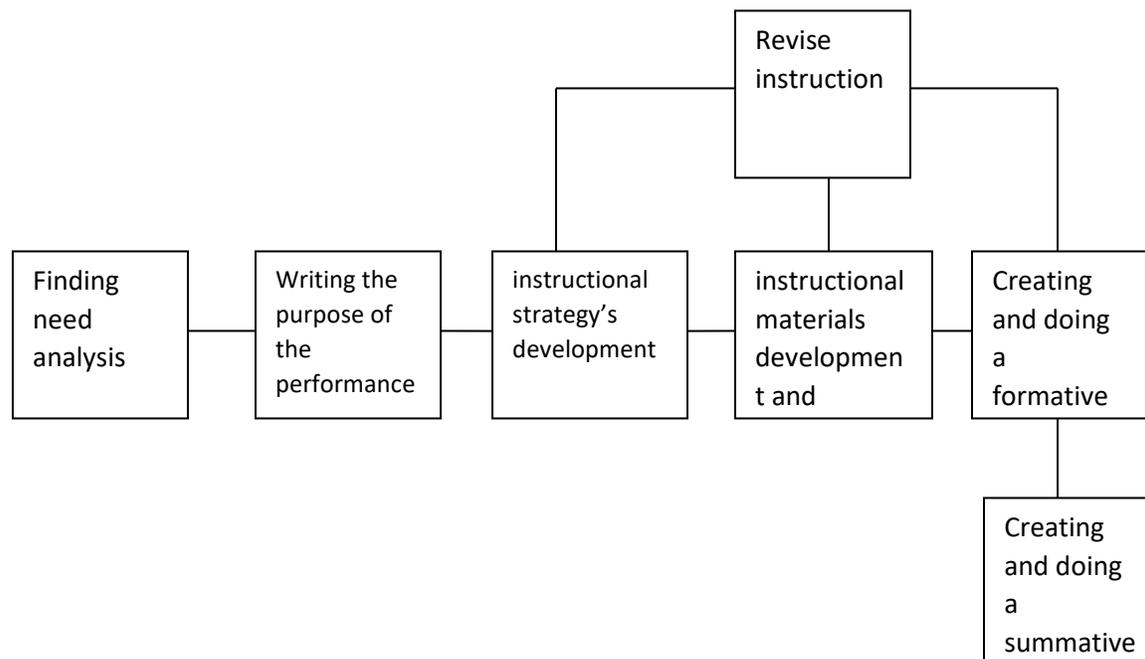
Gamification is a term used to describe the implementation of game mechanics in other fields to improve the processes and the experience's involvement (Caponetto, 2014). The perceptions and opinions on English proficiency materials that used a platform based on games as a media to enhance English proficiency were favorable (Hadi & Athallah, 2021). Various studies about games' effectiveness in teaching English have been explored over a few decades. All the studies showed that games can improve students' motivation to learn English, and students enjoy playing games and avoiding bored in their learning process (Nurhayati, 2015; Elaish, 2019; Ramadhaniarti, 2016). The combination of sound, pictures, and movement in the game applications can catch students' attention and avoid boredom. Today, it cannot be denied that technology and game are two inseparable parts, so the development of game applications has become a new trend among English educators.

The implementation of Android applications as a medium in teaching-learning is something interesting. Android application has brought a new vibe for learning media development. Implementing this media can change the stereotype of teaching-learning activities from boring activities into interesting activities. However, android applications must have a purpose to enhance students' motivation and must be able to stimulate students always to remember the learning material. Therefore, the implementation of an Android game as a learning tool must cover several requirements. Thorns. W, in Hujair A.H Sanaky's book (2013:208), proposes some requirements for measuring gamification media. The media is easy to use, which means that media must be simple, neat, and eye-catching. There is cognitive content, knowledgeable and informative. The two criteria above are to measure the content of the application itself, whether the application has met the learner's needs or not. The third is that the media must be able to unify all aspects of the purpose of the learning, the topic learned, the use of method variation, and the student's ability. The fourth is it can attract students' interest; media programs must be aesthetics and eye-catching. From all explanations above, the main point of all criteria is that the program itself must provide the learning desire of the students. Thus the students will feel that they get something comfortable and pleasantly from the program after using it.

Based on the explanation above, this study focuses on the development of a media OCEAN (Obsess to Communicate as Native) that is based on an Android system to improve students' vocabulary. The media was developed in order to meet the need analysis of the students'. Regarding the need analysis, it was found that students need media that can be brought everywhere and avoid boredom to drill their vocabulary outside the class. The developed media consists of a combination between pictures, touch, and words. In bridging the students' and the teacher's needs, this media was designed like a game with the definitions for each word.

2. METHOD

This study aimed to develop an application based on an Android system which used to boost students' vocabulary. This study was a development study using research and development (R&D). According to Gall (2003), education research and development is a process of product development and validation into a new product that needs evaluation, revision, and measurement. This study adopted the research and development concept from Dick and Carry (2009).

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Gambar 3.1 *Research and development's concept (*adopted from Dick and Carry. *The systematic design of instruction (7th ed.)* 2009)

The results of the application were implemented to students to find out student responses toward the use of OCEAN (Obsess to Communicate as Native) application in a qualitative descriptive approach. Based on the concept, two steps have been done in this study: need analysis and product development.

The need analysis stage was the initial stage of this study. At this stage, the data from the need analysis was analyzed. The questionnaire was used to collect information from students about learning English. Questionnaires were distributed to 50 respondents taken from ship engineering students of the shipping diploma program. The objectives of this questionnaire were: knowing the learner's response toward the learning process, knowing the learners' difficulties in learning English, investigating student needs for teaching methods and the media used by the lecturer, knowing the type of media that students prefer, and writing Performance Objective.

Program objectives were written after identifying needs by conducting a previous needs analysis. This stage was a critical stage to determine the appropriate activities and media based on the needs that have been investigated.

The product development stage included several aspects: developing a learning strategy, developing learning materials and media then developing an evaluation of the media's implementation. At this stage, OCEAN application was developed, and summative and formative product evaluations were developed by implementing the product to students on a small scale.

Research Instruments

The first instruments were a questionnaire and semi-structured interview used at the need analysis stage, which included; student responses to the process of teaching and learning, students' difficulties in learning English vocabulary, learners' satisfaction with the method and media used by lecturers, and the kinds of media which students prefer. The second instrument was a questionnaire for validators, including; product design, product suitability, product content, product suitability with student targets, and product validity. The third instrument was a questionnaire given to students during product evaluation, including; clarity of the material, ease of understanding the material through the product, student interest in the product, and student difficulties in using the product.

Research procedure

In this study, data were obtained from formative and summative evaluations. This evaluation aimed to seek students' responses. A formative evaluation was carried out to identify and remove deficiencies and errors in the product and collect students' responses to the product. This evaluation was carried out in 3 stages, namely, one evaluation conducted on 1-2 students, a small-scale evaluation conducted on 6-12 students, and a field trial conducted on 30 students. The summative evaluation was conducted to identify the product's effectiveness for the target learner. This evaluation was carried out on 50 students. Questionnaires were given to students to determine student responses to the products that had been developed. Questionnaires were made using a Likert scale, and descriptive analysis will be used based on the questionnaire's results. The product's tryout was done four times after finishing the product. To analyze this data, the percentage formula was used as follows.

P=f/n x100%

Information:

P = the percentage

F = the frequency

N = student's population

100% = fixed number

After the calculation, descriptive analysis was used.

3. RESULT AND DISCUSSION

Need analysis result

The result of need analysis as the initial research and development process is important in designing the product. Based on the result, it was found that most students in the class had a problem with the teaching-learning process. The questionnaire result showed that 68 % of students strongly agreed, 20 % agreed, 1% were neutral, 8% disagreed, and 3% strongly disagreed. Based on open-ended interviews, some said that the process was confusing and that they were afraid to speak. Furthermore, students also have difficulties in learning English vocabulary. The result showed that 78 % of students strongly agreed, 15 % agreed, 1% were neutral, 3% disagreed, and 3% strongly disagreed. It means that most of them have difficulties in memorizing and understanding vocabulary. Students' satisfaction with the media used by the lecturer was also measured as the initial information, and it was found that most of them were unsatisfied with the media used by the lecturer. It was found that 75% strongly agreed, 1% agreed, 4% were neutral, 10% disagreed, and 10% strongly disagreed. The result showed that lecturers needed to improve their media to catch students' attention. Considering the military education system that students are carrying out, the lecturer should provide them with interactive media. In this case, digital media that incorporates electronic text, charts, moving pictures, and voice into a structured digital computer environment and enables user interaction is known as interactive media (England, 2011). Based on the semi-structured interviews, most students said they liked the online games or game applications and could spend their time playing the game. Some students said that learning English in class was very stressful because they had speaking anxiety about producing words or sentences in English. Speaking anxiety can appear for some reasons: the anxiety of being in public, the anxiety of negative response, and the anxiety of speaking incorrectly (Zhiping & Paramasivam, 2013). Almost 60 % of students said that they need a media which can reduce their anxiety and help them learn English outside of class.

Performance Objective

Based on the need analysis result, the performance objective of this study was designing an Android application to improve students' vocabulary. The application can be accessed by the students anytime, combining sound, picture, and touch to catch students' attention longer. It was also designed with a leveling system, so the students cannot access the next level if they have not finished the former level yet. The vocabulary used in this application was taken from maritime English vocabulary, which provided a definition.

PRODUCT DEVELOPMENT

This application was developed through three stages: instructional strategy development, instructional materials selection and development, and formative and summative evaluation. During those stages, some revisions were done to ease the student's understanding of the vocabulary. The instructional material and strategy were created based on student's needs, and all the vocabulary was related to students' majors. The result of product development was designed as follows.

Picture 1. OCEAN Login page

This page was designed as the opening page of this application. On this page, there was the title, greeting, and login bottom using Gmail so the user could access the application in a simple way.

Picture 2. OCEAN Vocabulary Menu

This page was designed as a vocabulary menu, and in this menu, there were ten levels with each challenge in it. Students can only play the second level after they can finish the first level, and so on. This page functioned as a challenge for students. Therefore, the students have their motivation to complete all levels.

Picture 3. OCEAN Game

This page is the highlight page of this application because, on this page, the students can play a game by touching the correct object on the picture based on the words given. Five objects are hidden in the picture, and the students must find all the objects. Those who can find all objects in the picture can continue to play to the next level.
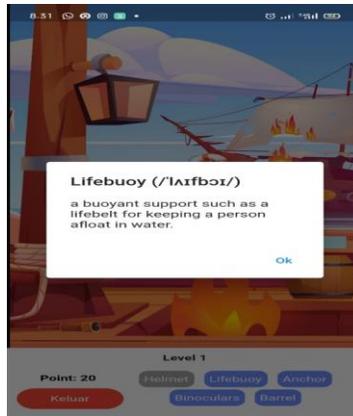
Picture 4. OCEAN Word's Definition

This application also provided the meaning of each word to improve the student's understanding of the meaning of the word. The menu also helped students know the word's pronunciation because it was provided with the pronunciation word.

This application was tested formatively and summative to know students' response and revise it. Formative evaluation is continuous monitoring during the learning process, which investigates the performance during the process and improves it. In contrast, summative evaluation is performed at the endpoint, such as completing a unit or a course in which a final graded achievement to judges if the learner has attained the learning objectives (Mubayrik, 2020). A formative evaluation was carried out in 3 stages, namely evaluation conducted on 1-2 students, a small-scale evaluation conducted on 6-12 students, and a field trial conducted on 30 students. In the first stage, the evaluation was conducted on two students, who were curious and excited about playing the game. Some problems occurred when they played the game: the objects they had to find could not move when their answer was correct, there were some errors when they moved to the next level, and the application could not be opened on other phones. In the second stage, 70 % of students were happy with the application, but 60 % were bored because there were no sounds and the picture did not fit well on their phones. As many as 30% of students cannot play the next level because of some errors. The last stage was conducted on 30 students, and in this stage, 80% of students were happy playing the game because it was provided by sound, and the picture fit well on all types of phones. Some errors have been fixed, and there were no errors at all. In this stage, 40% of students need a challenge when they play the game. The game was revised, and the challenge was put in the unlocked level. In this game, they can only play the next level after completing the former level, and the students also can understand the definition and pronunciation by clicking each word.

The summative evaluation was done on 30 students to know their responses to the application. In this stage, it was found that 90% of students were happy playing the game, and 70% of students could learn the pronunciation and also the definitions. Some students said that the application could be improved by giving sounds to pronounce the word. The picture of the game

was revised and can be opened on another phone with different brands, and 78 % of students agreed that the picture is excellent and eye-catching. Furthermore, the students can keep their attention on the objects they must find. The sounds improved their motivation to play the games, and 79% of students agreed that the sound caught their attention in playing the game. By playing this game, 85% of students can memorize the words automatically and reduce their anxiety in pronouncing them.

In this study, the application is developed successfully with good student responses. Improving students' motivation is the most essential part of this application. In line with the statement before that games can improve the student's motivation in learning English and students enjoy playing games and avoiding from bored in their learning process (Nurhayati, 2015; Elaish, 2019; Ramadhaniarti, 2016), this application can help students in learning English effectively. Based on students' responses in summative evaluation, the game gives them a fun experience, and they can memorize the vocabulary automatically after playing it. Besides that, the challenge gives them motivation and curiosity to learn. Research Shows Motivation Plays a Key Role in Improving Language Acquisition (Cerasoli et al. 2014; Kavita 2014; Liu and Chu 2010; Tsau and Hao 2010). The game-based learning approach effectively enhances the student's learning motivation and achievement (Tsai et al., 2017). The game application is one media that can motivate students to learn English and catch their attention longer. It has been proven by their positive response and curiosity when they played the game and the game is effective in improving students' motivation and achievement in learning English. Through playing the game, students can memorize the words automatically without any threat or pressure.

4. CONCLUSION

The OCEAN application is a mobile game application based on English learning which was developed using the need analysis of vocational maritime students. The development process uses research and development from Dick and Carry and gets a positive response from students. The game can catch their attention and reduce their anxiety about learning English. Most students agree that if the game improves their motivation, they can enjoy playing it. The development of this game as an educational game has had a good impact and responses, even though some improvements are needed. The game can be one alternative media that can help educators teach vocabulary, especially for vocational maritime students. However, this application has some limitations, including the pronunciation sound, and needs improvement in the number of words. Adding more challenges to the game is also important because some students need more challenges when they play the game.

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