



# The Effects of Online Quiz Application on Students' Vocabulary Mastery at a Vocational School in Bangkok, Thailand

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## Abstract

Vocabulary is one of the English language components that students should be master in order to master the four English skills. However, students in high vocational schools have difficulty in remembering and understanding the meaning of the words due to the teaching methods and materials are not attracted. Online quiz application is one of the technology which matches with students' ability in this digital era. Therefore, this study aims to investigate the effectiveness of Kahoot! application in improving diploma 1 students' vocabulary mastery and to investigate the factors that influence students' intention to use Kahoot! application. The data were collected from diploma 1 students in high vocational school in Bangkok who study English for communication subject through pretest, posttest, and questionnaire. The participants were asked to do pretest before Kahoot! as a treatment was used in the class and posttest was given after Kahoot! has been implemented in the class. Questionnaire was given right after the posttest. The findings show that using Kahoot! application has significant effect in improving students' vocabulary mastery and competitiveness (CO), enjoyment (EN), and challenge (CH) as gamification elements have significant effect on students' opinion on using Kahoot! application.

**Keywords: Gamification, Kahoot! Application, Vocabulary Mastery**

## 1. Introduction

English is considered as a foreign language in Thailand, but it is mandatory in every school's curriculum as well as English for communication subject. The subject is taught in the second semester of diploma one students in high vocational school in Thailand. High vocational school students usually face difficulties in learning English especially, vocabulary. They have difficulty in remembering the words, meanings, when, and how to use the words due to the teaching methods and materials. It can be challenging for students in high vocational school to master vocabulary. Vocabulary is one of the essential elements in learning a language, [1] where vocabulary is the main foundation of mastery of the language itself. Vocabulary is one of the language components that effects the four English skills which are reading, listening, speaking, and writing. [2] Vocabulary in speaking and listening are words that we must know to achieve an effective communication. Moreover, [3] vocabulary can be defined as a significant predictor of meaning comprehension and students' performance [4]. [5] When students know a lot of words, they can be able to read more complex texts and sentences and they can compose more difficult sentences. To learn English skills effectively, one of the elements that students should be mastered is vocabulary. Without mastering vocabulary, students cannot be mastered in English language [6]. [4] found that students who have high level of vocabulary mastery got higher score on achievement test than students



who are lack of vocabulary. However, students in high vocational level have less interest in learning English subjects and learn new vocabulary. According to [7]; some factors that make students have low ability to mastery the vocabulary are using of monotonous techniques by teachers, the media being used in vocabulary class is unattractive which cannot motivate the students in the learning process and leads to less attention toward the teacher. And the atmosphere is unsupportive due to the failure of classroom management. To improve teaching vocabulary technique, language teachers must provide the tool or technology which are relevant to teaching and learning in this digital era to motivate and attract student to their lesson. As [8], this generation of the students are more familiar with mobile devices and cloud computing. They prefer communicating by using social media over direct contact with people. Therefore, they need different methods to engage them in learning because they get bore easily without their devices. Most studies showed positive effects of technology in language classrooms. Technology helped increase students' motivation, autonomy, and engagement [9, 10]. In addition, students also gained better outcomes in vocabulary [11]. Regarding to this, gamified and quiz-based learning suit them best as it a technology which they can use their own devices and play along in the classroom [12]. [13] found that learning vocabulary through mobile games is effective in helping students to improve their vocabulary building skills. In recent years, online quiz application has become widely used in educational field by teachers. There are also many studies on the use of online quiz game-based application such Kahoot! and other applications. As same as [14], this research is the analysis of gamification application like Kahoot!, Socrative and Quizlet in the English Studies Degree. The result shows that instructors have a clear preference for Kahoot! in comparison to Quizlet, and above all Socrative. And Kahoot! is the first choice of students when learning English grammar and revision. The research of [15] also shows the result that Kahoot! has significant effect on academic achievement on the third grade primary school education while Quizizz does not. As Kahoot! is proven positive effects on academic achievement, the research conductor recommends to use Kahoot! over Quizizz as a learning aid in a learning process. [16] conducted a research on the effects of using Kahoot! as a game-based learning tool on EFL learners' vocabulary recall and retention, the finding shows that using Kahoot! was fruitful and advantageous for learning English vocabulary because of the usefulness of using Kahoot! can acquire vocabulary as an alternative to more traditional resources and the relative advantages of integrating Kahoot! in collaborative learning activities in classroom settings.

From the phenomenon above, the researcher concludes that the attempt of using game or quiz-based learning should be utilized in English language classroom to enhance students' vocabulary mastery and learning achievement. As diploma one students in high vocational college have difficulties in vocabulary learning because they cannot remember the words, meanings, when, and how to use the words due to the teaching methods and materials. Kahoot! is one of the game-based learning application that can be implemented in English language classroom by using a smartphone, tablet, gadget, and computer. Teachers can create quizzes on Kahoot! according to the lesson to engage students to learn and enhance teaching and learning process. There are various researches according to the use of Kahoot!. However, most of the researches were conducted on the students from elementary to high school level. Therefore, this research aims to investigate the significant influence of Kahoot! application in improving students' vocabulary mastery and the gamification elements of Kahoot! that affect students' opinion of Kahoot! application regarding diploma 1 level of students in high vocational school.

## 2. Objectives

2.1 To determine whether there is an effect of Kahoot! application in improving diploma 1 students' vocabulary mastery test scores in high vocational school in English for Communication subject.

2.2. To investigate whether the elements of gamification influence on students' opinion on using Kahoot! application of diploma 1 students in high vocational school.

## 3. Hypothesis

Table 1 Hypothesis

H <sub>1</sub>	Kahoot! application has positive effect in improving diploma 1 students' vocabulary mastery test scores.
H <sub>2</sub>	Competitiveness (CO), enjoyment (EN), and challenge (CH), influence on students' opinion on using Kahoot! application.

## 4. Literature Review

### 4.1 Vocabulary Mastery

Vocabulary is an important component of a language proficiency, a basis of speaking, listening, reading, and writing skills, it can significantly indicate how well learners perform in a language classroom [17]. While [18] state that vocabulary can be defined as " words we must know to communicate effectively; words in speaking (expressive vocabulary) and words in listening (receptive vocabulary)". It means that vocabulary is a basis component that language learners must learn and know the meaning in order to master language skills while mastery is complete knowledge or complete skill. From the definition, mastery means a complete knowledge or skill that make someone master in a certain subject. Therefore, vocabulary mastery is always being an essential part of English. Based on the definitions mentioned above, the researcher concludes that vocabulary is a basic component to be mastered in order to master English language.

#### 4.1.1 Aspects of Vocabulary

According to [18], some aspects that the teachers should teach and the students should be taught to be mastered in order to help the students master in vocabulary are first, form-To master vocabulary; pronunciation and spelling are the aspect that students must learn to gain knowledge of how each word is sounded and spelled. Second, grammar-The new words need to be taught if they are not obviously covered by general grammatical rules. Each word may have an unpredictable change of form in certain grammatical contexts. Lastly, collocation-Many of linguists define similar concept of collocation, all focus on a co-occurrence of words. [19] defines collocation as a common combination between words. However, the co-occurrence is appeared more often than their respective frequencies. [20] defines collocation as a tendency of certain words to co-occur regularly in each language.

#### 4.1.2 Aspect of Meaning

##### Denotation, Connotation, and Appropriateness

Denotation is the literal meaning of a word or we would say that it is the definition found in the dictionary [21]. While connotation is defined as the emotions or ideas that someone thinks of when read or hear a word [22].

Meaning Relationship - Meaning relationship is how a word's meaning relates to others. It can be useful to teach in a language class. There are various kinds of the relationship such as: Synonyms (a



word which has the same or nearly the same meaning as another or other) and Antonyms (a word that has opposite meaning of another word).

Word Formation - Vocabulary items, whether one-word or multi-word which can often be broken down into their components. And how these words are put together is exactly a piece of useful information. The common prefixes and suffixes which are usually taught such as in-, im-, un-, -less, -ness, -ment, etc. When students know the meaning of the root words and they know the meaning of prefixes or suffixes, this will help them guess the meaning of combined words like management, impolite, informal.

[23, 24] has proposed 3 sub word knowledge concepts or aspects in each primarily word knowledge which are form, meaning, and use based on the assumptions of [22].

First, form (spoken, written, and word parts). Vocabulary mastery includes the mastery of pronunciation and spelling. The students need to learn how the word is sounded and how it is spelled.

Second, meaning (form and meaning, concept and referents, and associations). The knowledge of meaning is when students having insight into form and meaning, concepts and referents, and word associations which means students understand the concept of the word or phrase of the language that being taught.

Lastly, use (grammatical function, collocation, and constraint on use). The use of vocabulary explains how each word can be used and how the company of each word is likely to keep according to grammatical rules [23]. Form the mentioned rules, students must understand the unique function of the specific word in order to use the word correctly in an appropriate grammatical functions. According to [23], there are 5 indicators of the vocabulary mastery. In this research, the researcher only focused on one sub-aspects of each. Form (written), meanings (associations), and use (grammatical function). The indicators are discussed in table 2.

**Table 2** The Vocabulary Aspects

Vocabulary aspects	Indicators
Meanings	Students can identify synonym of the words.
	Students can identify antonym of the words.
Form	Students can distinguish the root word and word with prefix or suffix.
Use	Students can know in what context they can use the word.
	Students can answer questions according to the context in the text or conversation.

#### 4.2 The Overview of Online Quiz Application

The online quiz application has commonly utilized by language teachers as a teaching tool. Teachers can create quizzes related to the course content to let students practice after the lesson. The online quiz application can provide feedback immediately and it appears at the end of the quiz [25]. According to [26], the quiz applications allow users to create a quiz with multiple choice, true or false, sort & order, text – response, numeric response, Likert scale, and clickable images. Teachers can create an account to design a quiz with multiple languages.

There are many online quiz applications which can be used as teaching tools as Quizlet, Quizziz, Quiz Socket, Kahoot!, etc. In this study, the researcher used and investigated Kahoot! application on students' vocabulary mastery and intention to use the application.

### 4.3 Kahoot! Application in Education

Kahoot! is a game-based students response system (GSRS) where the classroom is temporarily transformed into a game show where the teacher is the game show host and the students are the contenders [27]. When students use Kahoot!, points are awarded for correct answers and participating students immediately see the results of their responses. The questions can be newly created by the teachers or teachers can search for exiting sets of questions as well. Students play by using their own devices such as smartphone, iPad, laptop, or gadget. The questions appear on shared screen and students answer by selecting the colored shape which matches their answers. Students earn points when answer correctly and quickly as spending less time is counted to get higher points [28].

Kahoot! is an example of popular game-based platform among those digital medias. It allows teachers to create game-base quizzes which offer a great opportunity for teachers to motivate and engage students to their lessons. The quiz appears as a competition which helps in boosting students' participation and engagement in the classroom [29]. There are several researches and studies about positives effect of Kahoot! on education. Kahoot! could significantly improve English skills and increase mental efforts of students in Taiwan [30]. Kahoot! could reduce the anxiety level of tests among middle school students in Turkey, Kahoot! could improve learning achievements, and promote learning engagement as well [31]. Kahoot! could also improve English vocabulary knowledge in term of acquisition of middle school students in Chile [32].

### 4.4 Gamification

Gamification is “The use of game design elements in non-game contexts.” [33] to enhance participants' motivation through the additional elements of game [34]. [35] states that gamification can be added into the classroom as it is a great way to help students learn by making the hard topics more fun.

The are three elements of gamification was selected to be studied in this research as following;

Competitiveness (CO) is one of the elements in quiz-based application which makes the participants want to compete with the others. Kahoot! application provides a competitive environment between the users through point differences based on the response speed [36].

Enjoyment (EN) is an enjoyment and pleasure when technology is using. Enjoyment is one of the elements that Kahoot! provides. Kahoot! helps students to have fun while using the application [36].

Challenge (CH) is the desire to achieve the fixed goals [36]. By using Kahoot! students answer the questions with time limitation from 5 seconds to 4 minutes. The points are increased if they spend less time to answer. This feature makes students want to perform better in the next question items of the quiz [36].

## 5. Methodology

### 5.1 Variable

**Table 3** Independent and Dependent Variables

Variables	
Independent	Dependent
The effect of using Kahoot!	Students' vocabulary mastery test scores
Competitiveness (CO)	Students' opinion on using Kahoot!
Enjoyment (EN)	Students' opinion on using Kahoot!
Challenge (CH)	Students' opinion on using Kahoot!



## 5.2 Population and Sample

The population of this research was Diploma 1 students. The total number of Diploma 1 students is 120, consist of 10 classes.

In this study, the researcher used convenience sampling to select the sample group. The sample group was the students from two classes of the researcher which are 1/13+14 and 1/19+20 from accounting and hotel majors. They are high vocational students in Bangkok. The researcher used this sample because the treatment was used by the researcher in the teaching method without interfering other teachers and students' teaching and learning process.

## 5.3 Research Treatment

Kahoot! application as a treatment was divided into 4 sessions according to the vocabulary aspects which the researcher focused on. Each session consists of 10 items quiz and students played after the lesson which are Prefix-Suffix, Synonym, Antonym, and Conversation. The time limitation for each item of the quizzes is 10-20 seconds according to the length of texts, sentences, and the level of difficulty.

## 5.4 Research Instruments

The researcher used two instruments in this study. First, tests which are pre-test and post-test of vocabulary mastery in English for communication subject. The tests were multiple choice type with four answer a, b, c, and d adapted from learning materials and syllabus. There are 25 items in each test, and the total score is 100. Second, questionnaire which was given right after the post-test in order to determine the factors that influence on students' satisfaction of using Kahoot! in the class. There are 11 items in this questionnaire.

### 5.4.1 Validity and Reliability

To check the validity of the test, the researcher used IOC (index of item objective congruence) formular by giving the twenty five items test to three experts who have master degree in English language and have been English teachers for more than ten years. They teach in English for communication subject as well. From the result, all test items are valid with the total score of 0.8.

The test was given for a try out to Diploma 1 students who enrolled for English for communication subject in semester 1 which are Diploma 1/7+8 and 1/43 students via Google Form, total number of the students was 29 to check reliability of the test. To obtain reliability of the test, the researcher use KR-20 formular to check internal consistency of reliability by Jamovi program 2.3.26 version. The Cronbach's Alpha was 0.804 which indicates good internal consistency according to [37].

The questionnaire items were adopted from previous study which have been validated and used [38]. [38] states that the questionnaire items can be adopted to use if the questionnaire satisfies the needs of the researcher, but the questionnaire is recommended to test the reliability and validity of this survey. Then to ensure content validity, experts in the research area were asked to crosscheck the survey questionnaire items draft.

The reliability of the questionnaire was checked by giving for a try out to 29 students on the same level which used to experience Kahoot! quiz in their English lessons. The Cronbach' Alpha of eleven items was 0.820 which indicates that the questionnaire was reliable.

### 5.5 Data Collection

The data collection was conducted first through pre-test. The pre-test was given through Google form to the students before Kahoot! was implemented as a treatment in the class to check the students' vocabulary score. Second, the post-test was given after four times of the treatment were utilized in the class through Google form. The questionnaire was given right after the post-test to investigate that Competitiveness (CO), Enjoyment (EN), and Challenge (CH) have significant influence on students' opinion of using Kahoot!. Finally, the data of both test scores and questionnaire results were used in the process of data analysis.

### 5.6 Data Analysis

In this study, the data are quantitative and the data analysis was divided into two patterns. Both were analyzed by using descriptive statistic. The pretest and posttest scores were described by paired sample t-test analysis to check the significant difference of mean scores. The effect size was analyzed by using Eta Square formula to check the significant effect of using Kahoot! application on students' vocabulary mastery. The one sample t-test was used to describe p value of the questionnaire to test the significant of each element on students' opinion on using Kahoot! application .

## 6. Results and Discussion

**Table 4** Means Summary for English Vocabulary Mastery (Pretest and Posttest Scores)

	N	Mean	SD
Pretest	30	52.4	7.82
Posttest	30	80.3	8.72

According to [39], students' vocabulary score was categorized into "Fair" level with the mean scores of 52.4 before Kahoot! was used in the class. 86.67% of the students got fair level while 13.33% got fairly good level. However, students' vocabulary mastery was categorized into "Good" level with the mean score of 80.3 after Kahoot! application was used as a treatment. 3.33% of the students got fair level, 6.67% got fairly good, 40% got Good, 40% got very good and 10% got excellent level.

**Table 5** Paired Samples T-Test

			Statistic	df	p	Mean difference	SE difference
Pretest	Posttest	Student's t	-14.5	29.0	< .001	-27.9	1.92

The dependent samples t-test (paired sample t-test) was calculated to compare students' vocabulary mastery pretest and posttest scores. The t-test was significant,  $t(29) = 1.92$ ,  $p < .001$ . The result indicated that the vocabulary mastery pretest score ( $M = 80.3$ ,  $SD = 8.27$ ). The vocabulary mastery posttest score are higher than the pretest score. The first hypothesis is accepted. Besides, there is a significant effect of students' vocabulary mastery by using Kahoot! application. Eta square was "0.90", referring to the effect size guidelines; the effect of using Kahoot! application on students' vocabulary mastery was categorized as "large effect".



The results of the study proves that Kahoot! application as a digital material has significant effect in improving students' vocabulary mastery aligned with the study of [40]. This study reveals that there is a significant effect on students' vocabulary mastery by using Kahoot! application. Students also enjoyed learning with Kahoot! and the classroom atmosphere was good while Kahoot was utilizing. The study of [41] also proves that students has improved their vocabulary mastery after Kahoot! was applied as a media in English as a foreign language class. The result of this study also shows that the students' scores always increased gradually in each test.

The data from the questionnaires were scored as follows: for the positive statements, Strongly Agree =5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1. The level of students' intentions to use Kahoot! was determined by using the criteria as 0-0.99 = Highly Negative, 1.00-1.99 = Negative, 2.00-2.99 = Average, 3.00-3.99 = Positive, 4.00- 4.99 = Highly Positive [42]. The results are revealed in Table 6.

**Table 6** Arbitrary Level for Questionnaire Interpretation [43]

	Level of Agreement
1 – 1.8	Strongly Disagree
1.81 – 2.61	Disagree
2.62 – 3.42	Neutral
3.43 - 4.23	Agree
4.24 - 5	Strongly Agree

**Table 7** Students' Satisfaction of Gamification Elements of Kahoot! Application

Competitiveness	Statement	n	M	SD	Level
CO1	I feel competitive with other students when using Kahoot!	30	4.28	0.702	Highly Positive
CO2	Platform Kahoot! provides a competitive system when I take a quiz	30	4.14	0.743	Positive
CO3	I want to get the highest rating when using the Kahoot!	30	4.28	0.752	Highly Positive
Average			4.23	0.624	Positive
Enjoyment	Statement	n	M	SD	Level
EN1	I have fun using Kahoot!	30	4.59	0.568	Highly Positive
EN2	I feel comfortable with process in Kahoot!	30	4.55	0.686	Highly Positive
EN3	I am enthusiastic with the process in Kahoot! when carrying out the learning process	30	4.52	0.574	Highly Positive
EN4	I feel happy when I spend time with Kahoot! for learning	30	4.62	0.561	Highly Positive
Average			4.57	0.504	Highly Positive



**Table 7** Students' Satisfaction of Gamification Elements of Kahoot! Application (Cont.)

Challenge (CH)	Statement	n	M	SD	Level
CH1	Kahoot! indicates the number of questions to be answered	30	4.59	0.628	Highly Positive
CH2	Kahoot! provides video or image aids to help solve questions	30	4.38	0.728	Highly Positive
CH3	Kahoot! provide a time limit for answering questions	30	4.45	0.572	Highly Positive
CH4	I feel challenge when competing in Kahoot!	30	4.66	0.553	Highly Positive
Average			4.52	0.513	Highly Positive
Total Average			4.44	0.547	Highly Positive

Table 7 reveals that in general, students' opinions about Competitiveness of Kahoot! element when using Kahoot! application were positive ( $M = 4.23$ ). This means that students favored the teaching material and felt competitive in class activities. The statements of the highest agreement were: "I feel competitive with other students when using Kahoot!" ( $M = 4.28$ ) and the statement "I want to get the highest rating when using the Kahoot!" ( $M = 4.28$ ). In addition, students thought that Kahoot! provided the competitive system when they used the material of teaching as show in the statement "Platform Kahoot! provides a competitive system when I take a quiz" ( $M = 4.14$ ). Although, this statement was rated the lowest score, students' opinion about the competitiveness system while using Kahoot! was at positive level.

Table 7 reveals that on average, the value of students' opinions about enjoyment through digital material such Kahoot! application was highly positive ( $M = 4.57$ ). This means that the students had positive opinions on the enjoyment of Kahoot application. They enjoyed using Kahoot! in the classroom and comfortable when using it as the teaching material. Based on the mean scores of students' opinions, the statement which received the highest mean score was "I feel happy when I spend time with Kahoot! for learning," ( $M = 4.62$ ). Students also thought that this teaching material was fun as shown in the statements "I have fun using Kahoot! " ( $M = 4.59$ ) and "I feel comfortable with process in Kahoot!" ( $M = 4.55$ ). In addition, the statements shown the enthusiasm of the students while using Kahoot! application "I am enthusiastic with the process in Kahoot! when carrying out the learning process" ( $M = 4.52$ ) was rated the lowest mean score; it is worth to note that it was still at a positive level.

Table 7 reveals that, students' opinions about the challenge of using Kahoot! application as a digital quiz were highly positive ( $M = 4.52$ ). This means that students thought that Kahoot! application could challenge them when using it and the material was challenging to play among their classmates. The statements of the highest agreement were: "I feel challenge when competing in Kahoot!," ( $M = 4.66$ ) followed by the statement "Kahoot! indicates the number of questions to be answered" ( $M = 4.59$ ). In addition, students thought that limited time of answering each question was challenging as shown in the statement "Kahoot! provide a time limit for answering questions" ( $M = 4.45$ ). The statement that was rated at the lowest place was "Kahoot! provides video or image aids to help solve questions" ( $M = 4.38$ ).



However, video or image which provided in the Kahoot! questions could help them to answer the question as it show positive opinions from the students.

Finally, Table 7 reveals that on average of students' satisfaction on using Kahoot! application, the mean score of Satisfaction on using Kahoot! was positive ( $M = 4.23$ ). This means that the students had positive opinions on Kahoot! application as a teaching material and had a good experience of using it. Based on the mean scores of students' opinions, the statement which received the highest mean score was: "Overall, I am satisfied with Kahoot!," ( $M = 4.28$ ). It indicated that students were satisfied with Kahoot! application in general. Followed by the statement "I am delighted with the experience I get when using Kahoot!" ( $M = 4.28$ ), students were satisfied with the experience of using Kahoot! application. The last statement was "Kahoot! that I used has met my expectation" ( $M = 4.14$ ). The statement received the lowest scores compared to other statements, it is worth to note that although it was rated the lowest mean score statement, the mean score was still at a positive level.

In order to determine the factors students' satisfaction of gamification elements through the use of Kahoot! application, an independent t- test analysis was employed. The results are presented in Table 8.

**Table 8** One Sample T-Test

		Statistic	df	p
CO	Student's t	36.5	28.0	< .001
EN	Student's t	48.8	28.0	< .001
CH	Student's t	47.4	28.0	< .001

Note.  $H_a \mu \neq 0$

Table 8 reveals on students' satisfaction of gamification elements on using Kahoot! application. Competitiveness (CO), Enjoyment (EN), and Challenge (CH) have significant effect on students' opinion of using Kahoot!. Enjoyment is the gamification element that significantly effects on students' satisfaction of using Kahoot! application the most with ( $t=48.8, p<.001$ ) followed by challenge ( $t=47.7, p<.001$ ) and competitiveness ( $t=36.5, p<.001$ ) is the least gamification factor that significantly effects on students' satisfaction of using Kahoot! application.

The results of this study indicate that Competitiveness, Enjoyment, and Challenge are proven to significantly affect students' opinion on using Kahoot! application. Competitiveness significantly affects students' opinion of using Kahoot! aligned with [44]. This study shows that Kahoot! can help students to compete with their peers. Moreover, Kahoot! also provides the competition system for students which make students desire to compete to achieve the highest rank when using Kahoot!. The results of this study also prove that Enjoyment is proven to affect students' opinion on using Kahoot! aligned with [45]. This study indicates that students were excited, enthusiasm, and happy when Kahoot! was implemented in the class. Students also felt comfortable with the Kahoot! application' processes which teachers can add pictures, animations or video to questions and answers. Lastly, Challenge significantly affects students' opinion of using Kahoot! which is different from the study of [44]. This study explains that students' limitations and performance can impact negative opinion of using Kahoot! application. As a result of this negative opinion on using Kahoot! application, students do not want to recommend using Kahoot! on learning activities

Apart from the statistic reports, the researcher also found out that students had fun during Kahoot! application being used in the class. Students participated more in class and the interaction between students and students and students and teacher were increased.

## 7. Implication

Based on the research findings, the following recommendations are given to English teachers and future researcher. For English teachers, the researcher recommends that educational online quiz like Kahoot! should be implemented in the language classroom to improve vocabulary knowledge. This is because students become more motivated and attentive in such teaching materials. Kahoot! can make students enjoy the teaching and learning process, have fun among their peers, and learn vocabulary effectively by remembering and understanding the words from the materials in a fun way. Students will also obtain benefits from gamification elements of Kahoot! such as competitiveness, challenge, and individual impact which make them understand the lesson quickly, improve their scores, and be more productive in the language class because they can learn naturally while using Kahoot! application as a material in class.

For future researchers, the researcher recommends the future researchers to conduct another study on the effects of using online quiz, particularly Kahoot! application on different aspects of English language components. In addition, there are more features of Kahoot! which can make Kahoot! application a learning platform and class communication channel. It will be useful if the future researchers focus on the effects of using Kahoot! application as a main platform in teaching, giving homework or even communication channel in English subject instructional design.

## 8. Conclusion and Limitations

This research aims to find out the effectiveness of Kahoot! application in improving diploma 1 students' vocabulary mastery test scores and to investigate 3 elements of gamification that influence level 1 of high vocational students in Bangkok on using Kahoot! application as an online quiz application in the classroom. The finding reveals that students' vocabulary mastery test score was increased in each students after Kahoot! application was implemented in the class. The means score was in "Fair" level and became "Good" after the treatment was utilized. This indicates that there is a significant effect of using Kahoot! application on improving students' vocabulary mastery. The paired sample t-test result showed  $p = < 0.001$  means that using Kahoot! application has significant effect on students' vocabulary mastery with the large effect size of 0.90. And the finding also reveals that three gamification elements have statistically effect on students' opinion of using Kahoot! application. The strongest effect is enjoyment (EN), the second is challenge (CH), and the third one is competitiveness (CO).

This study has some limitations such as the internet connection was not stable. This led some students lost their rank of score and the absence of few students. However, students who lost their ranks can still saw the questions and answers on teacher's screen and the numbers of absent students were few enough which did not affect the research process.

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