

Effectiveness Of Using Kahoot! Application In The Teaching Of Vocabulary On Perception And Achievement Of Low Achiever Students

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Abstract

Using Kahoot! application is one of the game-based learning methods used in the teaching and learning process to encourage active involvement and interest of students. This study aimed to examine the effectiveness of the use of Kahoot! application on perception and achievement for Malay vocabulary learning among low achiever students. This study used a quasi-experimental quantitative research method with one group sample of the pre-posttest design. The respondents involved were 10 low achiever students from a primary Chinese school in Kluang district. The instrument on perception was adapted from the Bicen and Kocakoyun survey while the Malay vocabulary test was self-developed. Data were analyzed inferentially using the Wilcoxon Signed-rank test. The results showed a significant effect of perception and achievement after the use of Kahoot! application in vocabulary learning. Therefore, the using of Kahoot! application as a part of game-based learning method is recommended as an alternative learning tool for teachers in the teaching and learning process.

Introduction

Game-based learning is one of the 21st century pedagogical methods emphasized by the Ministry of Education Malaysia. 21st century learning focuses on the student-centered learning process based on the elements of collaboration, communication, critical thinking and creativity as well as the application of values and ethics. The implementation of 21st century learning aims to produce students who are productive, effective communicators, possess high-level thinking skills and well-versed in the use of information and communication technology (ICT). Align with that, game-based learning is a medium that is in line with the needs of today's teaching and learning that is to develop a generation with 21st century skills (Qian & Clark, 2016; Boyle,

MacArthur, Connolly, Hainey, Manea, Kärki & Van Rosmalen, 2014).

Game-based learning has the potential to produce effective learning since playing is a child's nature. Game-based learning can provide fun when students learn while playing (Puteh, 2010; Liu et al., 2014). Enjoyment in using Kahoot! application as one of the game-based learning methods has attracted students' interest to master vocabulary which indirectly increases students' motivation to learn grammar (Azizah & Jamaludin, 2018). The fun in playing causes students not to feel like they are learning. This situation has enhanced students' intrinsic motivation and skills where play can engage students and make learning more meaningful and effective (Perrotta, Featherstone, Aston & Houghton, 2013).

Based on Villagrasa, Fonseca, Redondo and Duran (2014), the main purpose of the gamification element in game-based learning is to increase commitment and motivation. In education, gamification techniques transfer the game mechanics to the educational environment with the aim of increasing motivation in the teaching and learning process (Lee & Hammer, 2011; De-Marcos, Garcia-Cabot & Garcia-Lopez, 2017). Previous studies have found that students are motivated to learn, experience satisfaction and achieve learning outcomes with the use of Kahoot! application in the learning process (Fuster-Guilló, Pertegal-Felices, Jimeno-Morenilla, Azorín-López, Rico-Soliveres & Restrepo-Calle, 2019). Past studies have also shown the use of Kahoot! application in the classroom has increased student engagement by making students intrinsically motivated in class discussions (Wang, 2015; Wichadee & Pattanapichet, 2018; Licorish, Owen, Daniel & George, 2018).

Perception is an important element in determining student success. Most students have negative perceptions towards difficult and abstract subjects that lead to negative behaviors while learning (Larkin & Jorgensen, 2016). Yilmaz's (2017) study showed that game-based learning has reduced students' feelings of fear of learning and increased their sense of interest in learning. On the other hand, if students' perception is positive towards a subject, it will indirectly increase their involvement in learning and improve the achievement of the subject. This shows that students' perception of a subject is very important and teachers should always be proactive and take the initiative to improve their skills and produce effective teaching techniques in order to create a positive perception and attract students to stay focused in class (Masyuniza, 2015).

Students who face problems in mastering reading and writing skills make them not interested in Malay language subjects (Abdul Rasid & Zulkafli, 2008). Low achiever students, for example,

usually have a negative perception of the Malay language, including in vocabulary learning. Negative perceptions of students cause them to feel that Malay is a very difficult subject and refuse to learn it, especially for non-Malay students (Abdul Rasid, 2010; Nurhijrah, Zuria & Mohd Mahzan, 2019). Therefore, teachers should use teaching methods that can stimulate the interest of low achiever students so that they are interested and have a positive perception towards Malay language, especially in mastering vocabulary.

Sharifah and Aliza (2011) support that game-based learning is very effective as compared to traditional methods as students' perceptions of a subject can be changed. The findings of previous studies suggest that the use of Kahoot! has the potential to assist low achiever students in changing their perceptions towards Malay vocabulary learning. For example, the study of Rajendran et al. (2019) found that students' interest in learning ESL classes increased as the students feel that the use of Kahoot! application is given pleasure to them while learning English.

The use of Kahoot! in teaching and learning also has the potential to improve student achievement. Kahoot! application that not only involve visual, auditory and psychomotor but also rewards elements are able to directly get students involved in learning and motivate students to perform well (Nur Rahmah et al., 2017). The findings of the study by Nailul et al. (2017) showed that student achievement in examinations increased with the use of Kahoot! in the form of drills and practice, revisions and online assignments. Students are increasingly excited to learn Malay and expand their vocabulary. The findings of the study have shown that the application of Kahoot! in the classroom has a positive effect in helping to improve student achievement. The use of Kahoot! application is a contributor in improving the achievement of the Malay language in terms of grammar compared to

conventional methods (Norhamizah et al., 2014).

There are certain characteristics of low achiever students from the aspects of attention, emotions and behavior, social, readiness to learn as well as health (Department of Special Education, 2009). For the attention aspect, the low achiever students have a weaker scheme. They are unable to relate previous learning to the current one. These students often forget the information presented without repetition and cannot remember what has been taught (MohdZuri&Aznan, 2011). Thus, the ability of low achiever students in learning is not on par with other peers in emotional and behavioral aspects. This makes them easily anxious and inferior. In terms of readiness to learn, most of them will quickly feel bored and tired if the study time is too long and often do not attend school. The elements found in the Kahoot! apps can help these students. Kahoot! in the form of drills and practice and revisions helps students to recall what they have learned and students are also able to track their own level of mastery and progress related to a topic immediately (Licorish et al., 2017).

The feedback system in Kahoot! not only enhances the interaction between students but also increases the self-confidence of students who are weak in learning by showing the progress they achieved (Wang & Tahir, 2020). The quiz-based Kahoot! does not require a long time to answer in a single topic studied (Licorish et al., 2017). Quizzes that showcase colorful images and visuals with the addition of audio can stimulate and engage low achiever students who quickly get bored during learning (Kapp, Blair & Mesch, 2014). The diversity of elements in the Kahoot! application indirectly helps to improve the achievement of low achiever students.

Past studies involving the application of Kahoot! have been extensively conducted in English Language subjects (Idris, Mohd Said & Tan, 2020; Ismiyani, 2020; Wichadee et al., 2018), Mathematics

(Muhamad, Harun, Salleh Shaharuddin&Megat Zakaria, 2015; Siti Norhaida, 2017) and Arabic (Saiful, Shahrizal&Luqman, 2019; Aulia Karima & DudungHamdun, 2020). However, not many studies have been done in the context of Malay language learning. Studies in Malay language learning such as the study by MohdUzir et al. (2018) and Norhamizah et al. (2014) were conducted on primary students who were secondary school students. A study of the effectiveness of Kahoot! on other variables such as perceptions (Bicen&Kocakoyun, 2018) and achievements (Nurul Ain et al., 2012) have also been conducted however, few studies looking at the effectiveness of using Kahoot! on the two variables of perception and achievement in a single study.

Research Objective

This study aims:

- i. to examine the effectiveness of using Kahoot! application in the teaching of vocabulary on the perception of low achiever students
- ii. to examine the effectiveness of using Kahoot! application in the teaching of vocabulary on the achievement of low achiever students

MethodologyDesign

This study employed a quasi-experimental quantitative research method with a pre-post test design involving a group consisting of low achiever students. In this study, the quasi-experimental aimed at examining the effectiveness of the use of the Kahoot! in the teaching of Malay vocabulary on the perceptions and achievements of low achiever students. The implementation of Kahoot! application in teaching Malay vocabulary was carried out for two weeks. In the initial phase, respondents were asked to answer a survey on perception and vocabulary test. In the period of the two weeks of learning,

Kahoot! application is used after the learning session as a quiz conducted in individual or group format. After two weeks of the experiment, respondents were given a post-test using a perception questionnaire and a vocabulary test similar to that used during the pre-test.

Population and Study Sample

In this study, the researcher has selected the entire population as a sample of low achiever students from one primary Chinese school. A total of 10 students will be the sample of this study. The selection of a sample that is representative of the population is a census type sampling (census method). This type of sampling is used in a very small number of samples. As this study only involved 10 low achiever students, census type sampling is suitable to be used.

Instruments

This study involved two instruments for data collection. An instrument for measuring students' perceptions was modified from a questionnaire by Bicen and Kocakoyun (2018). The researcher modified the original instrument and used a 4 -point Likert scale to measure each item. The questionnaire used in this study has 13 items to measure the level of respondents' perception which consists of two subcontracts, namely

interaction/involvement and learning/knowledge. The reliability of the instrument was tested through internal consistency analysis where the Cronbach's Alpha value was excellent ($\alpha=0.96$).

Meanwhile, the vocabulary test was developed by the researcher based on the vocabulary skills found in the Level 1 textbook. The test contains 15 vocabulary questions. Each question is 2 marks and the total mark for this vocabulary test is 30 marks. The questions are in the multiple-choice format with four choices of answers; true or false questions and fill-in-the-blanks questions.

Analysis

Inferential data analysis was used to determine the influence of the intervention on two dependent variables. To analyze the pre and post-tests for both variables of this study, the researcher used inferential statistics using the Wilcoxon Test to explain the effectiveness of Kahoot! on the perception and achievement of low achiever students in vocabulary.

4. Findings

Analysis of the Effectiveness of using Kahoot! Application in the Teaching of Vocabulary on The Perception of Low Achiever Students

Table 1 Descriptive Analysis on Students' Perception

		N	Mean Rank	Sum of Ranks
Interaction Pre – Interaction Post	Negative Ranks	0 ^v	0.00	0.00
	Positive Ranks	10 ^w	5.50	55.00
	Ties	0 ^x		
	Total	10		
Knowledge Pre – Knowledge Post	Negative Ranks	1 ^y	5.00	5.00
	Positive Ranks	9 ^z	5.56	50.00
	Ties	0 ^{aa}		
	Total	10		

Table 2 Wilcoxon Signed Ranks Test for Students' Perception

	InteractionPost – InteractionPre	KnwoeldgePost- KnowledgePre	Overall Perception
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Z	-2.820 ^b	-2.302 ^b	-2.449
Asymp. Sig. (2-tailed)	.005	.021	.014

Table 1 and Table 2 show the results of the pre and post-test analysis of the differences in the perceptions towards Malay vocabulary learning. The Wilcoxon Signed-Rank Test showed an increase in overall perception after the use of Kahoot! application in vocabulary learning, ($Z = -2.449$, $p = .014$). These findings indicate that there is a significant effect of the use of Kahoot! application in Malay vocabulary learning on the overall perception of low achiever students. Thus, the null hypothesis was rejected. Specifically, Table 2 also shows the results of the Wilcoxon Signed Rank Test for each sub-construct of perception. The findings showed that there was a

significant effect ($p\text{-value} < .05$) of the use of Kahoot! application in Malay vocabulary learning on the two sub-constructs of perception, namely interaction/involvement ($p = .005$) and learning/knowledge ($p = .021$).

Analysis of the Effectiveness of using Kahoot! Application in the Teaching of Vocabulary on The Achievement of Low Achiever Students

Table 3 Analysis of pre-test and post-test of student vocabulary achievement level

Score	Level	Pre Test		Post Test	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
21-30	High	1	10	4	40
11-20	Moderate	5	50	6	60
1-10	Low	4	40	0	0
Total		10	100	10	100
Mean Score		13.60		20.60	

Table 3 shows that the achievement level of the Malay vocabulary test of the respondents after the use of Kahoot! in learning is increased. The mean score on the post-test (20.60) was higher than that of the pre-test (13.60). Specifically, before using Kahoot! in Malay vocabulary learning, only one in 10 students (10%) achieved a high level of achievement, 5

(50%) students achieved a moderate level, while 4 (40%) students achieved a low level. After using Kahoot! in Malay vocabulary learning, 4 people (40%) students achieved a high level of achievement, 6 people (60%) students achieved a moderate level while no students achieved a low level of achievement.

Table 4 Wilcoxon Signed Ranks Test for Students' Achievement

	TestScore Pos - TestScore Pre
Z	-2.820
Asymp. Sig. (2-tailed)	.005

The Wilcoxon Signed-Rank Test showed an increase in achievement after the use of Kahoot! application in Malay vocabulary learning, ($Z = 2.820$; $p = .005$). The mean

score of students' achievement was increased from 13.60 (pre-test) to 20.60 (post-test). These findings indicate that there is a significant effect of using

Kahoot! in the teaching of Malay vocabulary on the achievement of low achiever students. Thus, the null hypothesis was rejected.

Discussion

Discussion on the Effectiveness of using Kahoot! Application in the Teaching of Vocabulary on the Perception of Low Achiever Students

The result of the analysis suggests the use of Kahoot! application in Malay vocabulary teaching has an impact on the perceptions of low achiever students. Align with the findings of the study by Nurhadianti et al. (2020) which reported that students perceive the use of Kahoot! provide more opportunities to interact with lecturers and classmates either in class or after learning sessions. The application of Kahoot! as a game-based learning method has a great influence on students learning. This is supported by the study of Plump and LaRosa (2017); Rose (2015) and Hussain, Tan, and Idris (2014) who found that most of the participants in their study showed Kahoot! application has made their learning easier, simpler, interactive and served to better understand their subjects. They concluded that the Kahoot! application could stimulate student engagement in learning activities (Bawa, 2018; Plump et al., 2017).

Findings of inferential analysis regarding overall perception were found to indicate that most students agreed that they had positive perceptions in Malay vocabulary learning. The findings of this study are in line with the findings of the study by Faridah et al. (2019); Licorish et al., 2018; Orhan and Gürsoy (2019); Bicen et al. (2018) who also reported that students had a high level of perception after the use of Kahoot in teaching and learning sessions. Interaction or involvement is the first subconstruct of students' perception towards Kahoot! applications in Malay vocabulary teaching. Findings of the higher score for this subconstruct after the implementation of Kahoot! are in line with

findings in the study by Plump et al. (2017); Wang (2015); Wichadee et al. (2018); Licorish et al. (2018) who stated Kahoot is a feedback system that can enhance student interaction and engagement in teaching and learning process. Using Kahoot! application has also increased opportunities for students to interact and also increased student engagement in class which students will collaborate and be able to provide support and assistance in the learning process (Bicen et al., 2018; Parra-Santos, Molina, Casanova & Maiorano, 2018; Awedh, Mueen, Zafar & Manzoor, 2014).

Next, the second subconstruct for perception is learning or knowledge. Findings of the higher score for this subconstruct after the implementation of Kahoot! are supported by the findings in the study by Nurhadianti et al. (2020); Rajendran et al. (2019); Bicen et al. (2018) and Wang et al. (2016) who stated Kahoot was able to motivate them in learning activities. Taylor and Reynolds (2018) also stated that students in the context of EFL can benefit from game-based learning including the use of Kahoot! applications by improving their vocabulary development.

Discussion on the Effectiveness of using Kahoot! Application in the Teaching of Vocabulary on the Achievement of Low Achiever Students

The results of the analysis show that there is a significant effect of the use of Kahoot! application in Malay vocabulary teaching on the achievement of low achiever students. This is supported by Hsiu-Ting Hung's (2017) quasi-experimental study which showed that there was a significant effect of the experimental group using the Kahoot! app in English class compared to the group of students who did not use the Kahoot! App. Studies by Ares, Bernal, Nozal, Sanchez and Bernal (2018); Ranieri, Raffaghelli and Bruni (2018); Bawa (2018); Tsihouridis, Vavougiou and Ioannidis (2017) also reported that the use of the

Kahoot! application has a significant impact on the achievement of experimental students in post-tests. Thus, digital game-based learning could improve student achievement by facilitating students to memorize and master vocabulary (Akdogan, 2017). The use of Kahoot! application can drive an impressive improvement in student academic achievement with the support of the study by Iwamoto et al. (2017) and Omar (2017) who stated that interactions between students motivate them to give their best in tests.

Findings of descriptive analysis showed that the number of low achiever students who achieved high and medium levels in Malay vocabulary tests has increased after the use of Kahoot! application. The mean value of vocabulary achievement in the post-test as a whole also increased. The findings of this study are in line with the findings of a study by Law and Zamri (2021) who also reported that there is an increase in the achievement of primary school students after the use of Kahoot! application in mastering the learning of Malay vocabulary. The studies of Iwamoto, Hargis, Taitano, and Vuong (2017) and Vranesic, Aleksic-Maslac and Sinkovic (2019), were also recorded that students' achievement was increased after the implementation of Kahoot! application.

Conclusion

This study was able to summarize the effectiveness of the use of Kahoot! application in Malay vocabulary teaching on the perception and achievement of low achiever students. The findings of this study also provide practical implications about the influence between the variables involved in this study. In conclusion, the results of this study can help certain parties such as students, teachers and schools to implement the application of Kahoot! comprehensively which has a positive impact on the teaching and learning process in the classroom.

Acknowledgement: This study was supported by a grant from Teaching Development Fund (Vot. No. R.J130000.7753.4J417). Opinions, findings and conclusions or recommendations expressed in the material are those of the

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