Increasing Arabic Vocabulary Mastery Through Gamification; is Kahoot! Effective?

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ENGLISH ABSTRACT

Vocabulary (mufradat) mastery is decisive in the success of foreign language learning. Mastering many vocabularies can improve students' listening, speaking, reading, and writing skill. Various strategies have been applied to improve vocabulary mastery, but the results are not satisfactory. They were only able to achieve an average score of 42, far below the minimum criteria of mastery leaning, which is 75. It was because the students are less motivated to master it. Quantitative research with experimental design was carried out to test Kahoot! media, one of the game-based learning methods to improve students' vocabulary learning outcomes in class X MAN 4 HST. The results showed that students' learning outcomes in the experimental class which used Kahoot! Gamification method is significantly higher than the control class, which used reading aloud and guessing the meaning method. The average learning outcomes in the experimental class were 28,269 points higher than that of the control class. The average value of the control class N-Gain is 25.95, which is categorized as ineffective. While the average N-Gain value of the experimental class is 74.31, categorized as quite effective category. The results indicated that Kahoot! implementation can increase the average score of students in learning mufradat to 85.

Keywords: *Gamification, Kahoot!, Mufradat, Motivation, Learning Outcomes*

INDONESIA ABSTRACT

Penguasaan kosakata (mufradat) sangat menentukan keberhasilan pembelajaran bahasa asing. Menguasai banyak kosa kata dapat meningkatkan kemampuan untuk menguasai keterampilan istima, kalam, qiraah, dan kitabah dengan mudah. Berbagai strategi diterapkan untuk meningkatkan penguasaan kosakata, tetapi hasilnya tidak memuaskan. siswa hanya mampu mencapai nilai rata-rata 42, jauh di bawah nilai ketuntasan minimal,

yaitu 75. Hal tersebut disebabkan karena siswa kurang termotivasi untuk menguasai bahasa Arab. Penelitian kuantitatif dengan desain eksperimental dilakukan untuk menguji Kahoot!, salah satu metode pembelajaran berbasis game untuk meningkatkan hasil belajar kosa kata siswa di kelas X MAN 4 HST. Analisis data menggunakan SPSS 25 menunjukkan Sig. (2-tailed) 0,000 <0,05. sehingga Ha diterima. Hasil belajar siswa di kelas eksperimen yang menggunakan Metode gamifikasi Kahoot! secara signifikan lebih tinggi daripada kelas kontrol yang menggunakan metode membaca dengan nyaring dan menebak makna. Rata-rata hasil belajar di kelas eksperimen adalah 28.269 poin lebih tinggi dari rata-rata hasil belajar di kelas kontrol. Nilai rata-rata N-Gain kelas kontrol adalah 25,95, dikategorikan tidak efektif. Nilai rata-rata N-Gain dari kelas eksperimen adalah 74,31, dikategorikan sebagai kategori yang cukup efektif. Implementasi Kahoot! Meningkatkan nilai rata-rata siswa dalam pembelajaran mufradat menjadi 85.

Kata Kunci: Gamifikasi, Kahoot!, Mufradat, Motivasi, Hasil Belajar

Introduction

Vocabulary is one of the most critical elements in learning a foreign language. Mastering various vocabularies will have a direct influence on the process of mastering foreign languages. Based on the 2013 curriculum, students at Madrasah Aliyah are required to communicate using Arabic, both orally and in writing. In fact, most students are still unable to master many vocabularies. This condition may hinder them from being able to communicate fluently both orally and in writing. The lack of vocabulary may also cause the students' low ability to read, write, and listen in Arabic (Aladdin, 2012; Yusri et al., 2013). Therefore, mastery of vocabulary is critical in the process of mastering Arabic as a foreign language (Syamsiyah, 2019).

In practice, as Arabic teachers, researchers see that the commonly used learning methods are ineffective and efficient in improving students' vocabulary mastery. Students' motivation to learn Arabic can be categorized as very low (Nurhafizah & Latuconsina, 2021; Wassalwa & Wijaksono, 2020). This can also be seen in the average score of student learning outcomes in class X MAN 4 HST in *mufradat* learning which only reaches 42, far below the standard minimum score, which is 75. This condition affects the level of student participation in the learning process. As a result, students' understanding of texts in Arabic, both narration and conversation are also low. Islam (2015) confirmed that one of the critical factors of demotivation in learning Arabic was vocabulary.

Integrating information and communication technology in the learning process is considered as an appropriate solution. Students who grow up in the digital era have a high

interest in using information and communication technology devices in their daily activities (McCrindle, 2014; Mirriahi & Alonzo, 2015). The researchers also confirmed that the integration of ICTs in the learning process increased the attractiveness of learning and the level of students' participation and motivation (Abedalla, 2015; Saud et al., 2019). Integrating various ICTs and game application into the learning process make students more enthusiastic in conducting experiments (Prensky, 2001). Khan & Al-Shibami (2019) also confirmed that students who grew up in an electronic environment were more likely to prefer internet learning than traditional learning. Therefore, digital game-based learning becomes the choice to create a meaningful learning experience for students (Putri & Billah, 2019).

Educational games and systems game-based student responses (gamification techniques integrated with student response systems) can increase students' motivation and participation in learning. Students are more interested in joining the class when the teacher implements the gamification technique (Barrio et al., 2015; Wang & Lieberoth, 2016) . Also, Banfield and Wilkerson (2014) confirmed that students' responses indicate that their motivation increased significantly while using the gamification technique. Nowadays, the use of conventional learning styles, which centered only on the teacher and the blackboard, always leads to boredom (Cheong & Filippou, 2013; Graham, 2015; Roehl et al., 2013).

The use of gamification elements in the learning process can increase the level of students' engagement and motivation (Wang, 2015). Student Response Systems are often used in formative assessment through multiple-choice questions. It offers the opportunities to the students to answer questions interactively (Melanie, 2011). However, the integration of technology in the teaching and learning process also requires more time to learn about the applications that will be used, then create the appropriate content, and provide educational feedback to students.

Kahoot!, and Socrative are two platforms developed based on the Game Student Response System (GSRS) (Plump & LaRosa, 2017; Wang, 2015). Kahoot! allows teachers to present learning material in the form of image, audio, and to arrange the time and weight scores in video-based quizzes (Wang, 2015). It is also easy to use without the need for specific training (Plump & LaRosa, 2017). Kahoot! also gives the teacher access to

control the pace of the game, the number of weighted scores given to each quiz item, and display earned scores in a competition scoreboard.

The Role of Gamification in Increasing Students' Learning Motivation

Motivation plays an essential role in ensuring the success of second language learning. Motivation can be internal and external. Internal motivation comes from within the students themselves (Keller, 2009). This motivation arises because of self-interest, hobbies, and self-awareness. This self-impulse is usually more energetic and can last for a longer time. Achievement, self-esteem, expectations, performance satisfaction, responsibility and the need to understand Arabic are the examples of internal motivation. While the external motivation is encouragement that comes from outside. If a student wants to learn Arabic to get praise, a gift from another person, or a high score on exam, it means he is learning based on external motivation. Aside from high motivation, there is no other factor that can ensure the success of learning a second language (Dörnyei, 2001).

Another article written by Dornyei (1998) shows that the level of enthusiasm and commitment of the teacher is one of the main factors that can influence the students' motivation. The teacher's ability to generate students' motivation to master a second language is essential to the effectiveness of language learning. He also cited from Reilly's research that intrinsic motivation plays a significant role in motivation in the experimental group.

A study conducted by Ghengesh (2010) also highlighted the role of teachers in improving students' motivation to learn a second language. The results of the study indicated a decrease in students' motivation level as they aged. Several factors are underlying the low motivation level for older students, including the teacher's role in motivating, and determining the right attitude towards second language acquisition. Majority of the older student's state that teachers must have certain qualities, including (a) being friendly and kind; (b) understand students' problems and help them; (c) explain well; (d) teach more excitingly and enjoyably.

Many studies found a strong relationship between teacher's motivation and motivation, perception, effort, and students' achievement in acquiring a second language. For instance, Ryan & Patrick (2001) found that motivation and prior involvement were strong predictors of subsequent motivation and involvement, whereas gender, race, and previous achievement were not associated with changes in both students' motivation or

involvement. Students' perceptions on the teacher support and the strategies they employ in building interactions and promoting learning goals are linked to positive changes in their motivation and involvement.

Hardré & Sullivan (2009) also stated that the effectiveness of teachers to diagnose and intervene in students' motivation and their interpersonal motivation style could determine the success of the learning strategies they implement. The strategies that teachers use can predict the support of their classroom.

Guilloteaux & Dörnyei (2008) conducted a study to examine the relationship between teachers' motivation in teaching and their students' motivation in language learning. Based on a large-scale investigation of 40 ESOL classrooms in South Korea involving 27 teachers and more than 1,300 students, it shows that the teacher's motivation is related to an improvement in the students' motivation in language learning activity as well as their motivational state.

In a study conducted by Ashinida (2013), there are nine factors that may reduce students' motivation in learning Arabic. The first and second factors are closely related to the complexity of Arabic language itself and the role of the teacher in conveying the learning. The majority of respondents found that Arabic is a difficult to learn, especially those related to pronunciation, followed by grammar, writing and orthographic systems, diacritics, vocabulary memorization, and reading skills. Also, the teacher plays an essential role in motivating students to learn more. According to the results of this study, teachers must try to improvise their teaching styles and attitudes to motivate students to learn Arabic.

Kahoot Implementation in Vocabulary Mastery

Vocabulary is a key factor in learning foreign languages. The number of vocabularies mastered will determine mastery in other elements of foreign languages. Lexical knowledge is the main requirement for understanding and using foreign languages, both oral and written (Hunt et al., 2005; Thu'aimah, 1986). For this reason, vocabulary mastery methods are a priority in learning foreign languages.

Every student may use different strategy to master vocabulary on their own. Vocabularies are not only taught in classroom, but it can also be taught through text

reading activities. This process is called incidental vocabulary learning, which shows that reading can develop a more comprehensive vocabulary.

Research conducted by Baharuddin and Ismail (Baharudin & Ismail, 2017) found that methods for mastering vocabulary are classified into two categories. The methods which often used are memorizing certain vocabularies based on the frequency of use, asking teachers and colleagues about the meaning of vocabulary, pronouncing vocabulary clearly and loudly repeatedly, using Arabic-Indonesian dictionaries to find out the meaning of a word and guessing the meaning of a word based on the context of the sentence. Meanwhile, the methods which rarely used are using the Arabic-Arabic dictionary, a flashcard, a song or rhythmic sound, Arabic conversation, using vocabulary to write sentences, attaching vocabulary writing to be mastered on surrounding objects, using vocabulary in socio-drama. Also, translating vocabularies into their mother language, self-testing by conducting vocabulary tests, linking vocabulary with personal experiences, using vocabulary in interacting through social media, and studying vocabulary from textbooks before class time starts.

Educational games are considered as a solution to improve Arabic vocabulary mastery. Educational games in the learning process can increase motivation and support cognitive, emotional, and social development (Papastergiou, 2009; Siegle, 2015). However, educational games are only suitable for students at elementary to secondary levels with relatively small numbers (Yien et al., 2011).

Game Student Response System (GSRS) is a form of utilizing game principles and student response systems to improve students' engagement, motivation, and pleasure in the learning process. The use of GSRS requires students to activate previous knowledge and carry out independent evaluations when playing and understanding learning material (Coca & Sliško, 2013; Plump & LaRosa, 2017). Teachers can use GSRS as a learning method that supports individual learning (Wang, 2015). GSRS can also encourage students to learn independently by utilizing their own devices to access learning materials wherever and whenever. Passive students in class may have the opportunity to be more active in digital classrooms. For this reason, teachers are encouraged to integrate the principles of gamification into the learning process.

Kahoot! is a game student response system developed through the Lecture Quiz Research program by the Norwegian University of Science and Technology in 2006. It

provides features for creating quizzes that can integrate with images and videos. Kahoot! also gives users access to publish and share quizzes that are made by themselves and modify quizzes made by others. To use Kahoot! in class, both teachers and students require laptop, internet connection, and LCD so that students can see the quiz displayed on the Kahoot page and the scores obtained. Next, to enter the game, students must enter their PIN and Nickname, without the need to first create an account.

When the quiz is played, questions and answer choices are displayed simultaneously on the screen. Students are asked to choose colors and symbols they consider as the right answers. The display on the screen will show the countdown time and the number of students who have answered. During the quiz, students will be accompanied by music to give enthusiasm in competing to answer the questions presented.

Five students with the highest score and the percentage of answers given by students will be displayed after completing one question. Students will also get direct feedback, including the percentage of the correct answers, the number of points obtained, the ranking obtained, and the difference in points with students in the ranking order with other students. Finally, at the end of the session, students' names with highest points gained will be displayed on the screen.

According to the research carried out by (Barrio et al., 2016; Wang & Lieberoth, 2016b), the use of Kahoot! can increase students' motivation, engagement, and learning interactions. Kahoot! can also be used to share content with other students to increase sense of togetherness and collaborative learning (Wang, 2015).

The effectiveness of GSRS depends on students' tendencies, whether they still find the game interesting, easily accessible, useful, and of good quality. For that reason, boredom, because it presents the game with the same format regularly, is a factor that needs to be aware of. Wang (Wang, 2015) confirms that the use of GSRS for one semester still shows a significant positive impact on student participation and learning outcomes. Some students also commented that after one semester, they still have high motivation to study in advance as a form of preparation for taking part in the weekly quiz game.

Methods

The approach used in this research is quantitative with quasi-experimental research design (Thyer, 2012). This research is carried out to find out an effect of Kahoot implementation on Arabic vocabulary learning outcomes. The dependent variable in this study was the mastering of Arabic vocabulary learning outcomes for students of class X MAN 4 HST, and the independent variable was the implementation of Kahoot! in learning Arabic vocabulary. Participants in this research are students of MAN 4 HST. There are 26 students in the control class and 23 students in the experimental class.

The research design in this study is a quasi-experimental non-equivalent control group design. Both the control and experimental class in this study used the intact class. Both classes are given the same pretest and posttest. The gamification method with Kahoot! is implemented in the experimental class, while reading aloud and guessing meaning with conventional media is implemented in the control class.

The test instrument used is multiple choice with five options, with 50 questions for 50 minutes, on hobbies and professions learning materials. The hypothesis proposes in this research state that there is a significant difference between the learning outcomes of the experimental class and the control class. The data collected will be analysed using independent sample t-test dan paired sample t-test with SPSS for windows version 25.

The use of independent sample t-test aims to find out the difference between the pretest and posttest in both experimental and control group, while the paired t test is to see the results of the pretest posttest of students in the same class (Gao et al., 2018; Gerald, 2018). This test is carried out because the assumptions of normality and homogeneity (not absolute requirements) of the data are met. The interpretation of the results of this test is if the calculated t value is higher than the t table value, then the hypothesis is accepted.

Result and Discussion

In this study, the control class applied the reading aloud and guessing meaning using conventional media, while the experimental class used the gamification method with Kahoot! media. Learning materials for both classes is taken from the Arabic textbook for Madrasah Aliyah chapters 4-5 about hobbies and professions. The implementation of the pretest and posttest uses Google form with a period of 50 minutes for 50 questions. In

the experimental class, the number of samples was 23 students, while in the control class were 26 students.

Table 1. The Results of the Pretest and Posttest in the Control and Experiment Class

Score	Class	Mean	Median	Mode	Std. Dev	Minimum	Maximum
Pretest	Control	41.73	45.00	55	15.162	15	65
Posttest		56.73	55.00	55	15.553	20	85
Pretest	Experimental	43.48	45.00	30	13.604	20	65
Posttest		85.00	85.00	100	13.734	60	100

Table 1 shows the pretest and post-test results in the control and experimental class, especially the average score between pretest and post-test for both classes.

Table 2. The Results of One-Sample Kolmogorov-Smirnov Test in Control Class

Class	N	Mean	Std. Deviation	Asymp. Sig.(2-tailed)	Remark
Control	26	.0000000	10.37990402	.200	Normally Distributed
Experiment	23	.0000000	12.14877535	.200	Normally Distributed

According to the result of One-Sample Kolmogorov-Smirnov Test above, it is known that p-value for both classes is higher than 0.05 (0.200). Based on the decision-making guidelines in the Kolmogorov Smirnov normality test, it can be concluded that the control and the experimental class pretest and posttest values distributed normally so that paired sample t-test can be done.

Table 3. Results of Paired Samples Test on the Control and Experimental Class

Class	Mean	Std.Deviation	t	df	Sig.(2-tailed)	Remark
Control	-15.000	11.314	-6.760	25	.000	Statistically Significant
Experimental	-41.552	14.336	-13.890	22	.000	Statistically Significant

The results of the paired samples test above shows that the p value is less than 0.05 (0,000). Therefore, it can be concluded that Ha is accepted. It confirms that an average

score between pretest and posttest in the control class is statistically different. Also, the average score between pretest and posttest in experimental class which taught by using Kahoot! gamification method is statistically different. On the other hand, each method improves the learning outcomes of vocabulary (*mufradat)* of students, both in the control and experimental class.

Furthermore, to determine the difference, tests of the effectiveness of learning between the control and the experimental class are conducted using an independent sample t-test.

Tabel 4. Results of Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.048	.828	-6.705	47	.000	-28.269	4.216	-36.751	-19.787
Equal variances not assumed			-6.757	47.000	.000	-28.269	4.184	-36.686	-19.852

The table above showed the *p* value is higher than 0.05 (0.828), so it can be concluded that the data variance for both classes is homogeneous. Because of that, the interpretation of posttest results between the control and the experimental class will be guided by the equal variances assumed line value.

In the equal variances assumed line Sig. (2-tailed) value is lower than 0.05 (0,000). Based on independent sample t-test decision making, Ha is accepted. Average learning outcomes of *mufradat* in the control class by using reading aloud and guessing the meaning method and the learning outcomes of *mufradat* in the experimental class using the Gamification with Kahoot! method is different significantly.

Furthermore, in the mean difference column, there is a value of -28.269. It revealed that the average learning outcomes of students in the control class and the average

learning outcomes in the experimental class are different. It shows that the average learning outcomes in the experimental class were 28,269 points higher than that of the control class. To find out the effectiveness of the implementation of reading aloud and guessing the meaning in the control class and Kahoot! in the experimental class, the researchers used the following categorized of the effectiveness of the N-Gain value:

Tabel 5. Interpretation of the Effectiveness of N-Gain

Percentage (%)	Interpretation
< 40	Ineffective
40-55	Less Effective
56-75	Quite Effective
> 76	Effective

Source: Hake, R.R, 1999

Tabel 6. Mean Differences Between the Control and Experimental Class

Class	Mean	Remark
Control	25.9331	Ineffective
Experiment	74.3154	Quite Effective

Table 6 above has shown that the average value of the control class N-Gain categorized as ineffective, and the average N-Gain value for the experimental class categorized as quite effective. Finally, it can be concluded that the implementation of reading aloud and guessing meaning method in the control class can increase the average value of student learning outcomes about 25.95% while the use of the Kahoot! Gamification method in the experimental class can increase the average value of student learning outcomes about 74.31%.

The results of this study confirm that the gamification method with Kahoot! increase student learning outcomes effectively (Hayyu Desi Setiawati & Adi, 2018; Medina & Hurtado, 2017). Interviews conducted by researchers with several students in the experimental class admit that the use of Kahoot! in vocabulary learning is a new experience. Kahoot! able to increase motivation to master the vocabulary presented in the form of contested quizzes. Students who initially get unsatisfactory grades feel more challenged to master the material provided to answer the quiz presented quickly and accurately. The Learn and Play feature is to learn and play on Kahoot! makes students able

to master the vocabulary (*mufradat*) indirectly. That shows that Kahoot! has an advantage in increasing student motivation in learning and achievement.

The results of this study are also in accordance with (Matthews et al., 2015) who suggested that Kahoot! apply gamification principles to increase student participation in learning. The application of game-based learning methods can increase students' motivation and participation better in learning as compared to the traditional methods (Huizenga et al., 2009; Perrotta & Houghton, 2013). Highly motivated students will study better and harder. The learning process is fun and more flexible and provides control over its learning proven to be able to increase student motivation to learn independently.

It can be concluded that gamification is an innovative approach to foster motivation in the educational setting. A game usually has components such as goals to be achieved, rules that determine how to achieve goals, a feedback system that provides information about progress towards goals, and the fact that participation in the game is voluntary. Gamification is a concept that uses game-based mechanisms, aesthetics, and game thinking to increase engagement, activity, and promote learning (Kapp, 2012)

Gamification means applying game characteristics, both in terms of mechanism and dynamics, to non-game situations (Simões, Redondo, & Vilas, 2013). Many educators have applied the concept of gamification in the learning process they carried out to increase students' involvement and motivation. The availability of fast feedback is one of the advantages of the game adopted in learning. Kapp (2012) notes that educators can improve feedback mechanisms by utilizing game design elements. Continuous feedback to students is available in the form of independent practice, visual cues, the progress of activities, correct answers to comments from other players.

Buckley and Doyle (2016) found that gamification interventions had a positive impact on learning. However, the magnitude of the positive impact received by students depends on whether the student is intrinsically or extrinsically motivated. The results of their studies show that the positive impact of gamification is specifically useful for students who have intrinsic motivation, especially in mastering the material. As for students who only have extrinsic motivation, the positive impact of gamification is minimal. They only aim to complete learning to reach a certain level so as not to lag behind classmates.

Alf Inge Wang and Andreas Lieberoth (2016b) conducted more specific experiments to investigate how to use points and audio in Kahoot! can affect the learning environment. There are four experimental groups included in this study. One group uses Kahoot! with audio and points, one group uses Kahoot! with audio but without points, one group uses Kahoot! without audio but with points, and one group uses Kahoot! without points and audio. The results of the experiment revealed that there were some significant differences in concentration, involvement, enjoyment, and motivation when used audio and points in game-based learning. The most surprising finding is how the use of audio positively influences classroom dynamics. One feature that might contribute to the psychological shift from conventional learning mode to gamification mode is the use of audio and music

Furthermore, other factors that may increase student motivation on the use of the Kahoot gamification method is direct feedback. Students can directly know whether the answers they give are true or false. Students who get direct feedback on the learning process will be more motivated, and the learning outcomes obtained will increase (Hattie & Timperley, 2007; Yusoff et al., 2014). Kahoot! provides features to provide direct feedback, so that students' motivation to achieve learning targets increases. Situation and condition around are both critical factors to determine steps in improving the process and results of education continuously. Technology has fundamentally changed the way individuals find, evaluate, and use information and knowledge (Voogt et al., 2003). The emergence of the millennial generation that has a very different learning style from the previous generation presents new challenges in the world of education (Elam et al., 2007).

Conclusion

Using Kahoot! can significantly improve the students' learning outcomes in vocabulary *(mufrodat)* material in the experimental class compared to conventional methods applied in the control class. The result of this study showed that the *p* value is less than 0.05, meaning that Ha was accepted. Learning outcomes of vocabulary *(mufradat)* between control group that used reading aloud and guessing meaning method and experimental class that used the Kahoot! Gamification method is significantly different. The average learning outcomes in the experimental class were 28,269 points higher than that of the average learning outcomes in the control class. The average value

of the control class N-Gain is ineffective categories, and the experimental class is quite effective category.

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