The *Kahoot!* Application in Medical Education : The Effect on Student Motivation and Learning Evaluation Result

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ABSTRACT

Medical education institutions in Indonesia have similarities in facing challenges in the teaching and learning process with other institutions in Asia. Institutions that set up medical education study programs find it difficult to conduct large or conventional classes with a single lecture method based on separate scientific disciplines between biomedic and non-biomedic medicine (non-biomedic). The main problems that arise are the lack of student activity and student awareness to learn independently. It is necessary to improve the single class lecture. Gamification is a learning medium that increases student engagement by attracting all students The Kahoot! Application reinforcing some effort and desire to engage students, This reasearch aim to measure the effectivity of Kahoot! application on students' motivation and learning evaluation result between all batches and two medical science division of single lecturer in school of medicine FMHS UMY. This ia a quantitative research with quasi experimental pre-post test design without control. The sample in this study were active students of the Medical Studies Program class of 2017, 2016 and 2015 who were willing to take part in a single lecture process with partner lecturers. Data analized with Wilcoxon test to determine whether there is a significant difference between the results of filling out the MSLQ questionnaire before and after the application of the Kahoot! quiz. In this study, the results obtained based on the Wilcoxon test conducted, that the generation of 2016.2017 and 2018 have p <0.05 so that it can be concluded that the hypothesis states that there are significant differences between Kahoot! (Pre Test) and Learning Evaluation (Post Test) proven.

Keywords: Single Lectures, Learning Evaluation, Motivation, Scientific Discipline, Batches, Kahoot!

1. BACKGROUND

Medical education institutions in Indonesia have similarities in facing challenges in the teaching and learning process with other institutions in Asia. Institutions that establish medical education study programs find it difficult to organize large class lectures or conventional lectures with a single lecture method based on separate disciplines between basic medical science and non-biomedic medicine. The main problem that arises is the lack of student activity and student awareness to study independently[1].

Previously, several studies have been carried out, such as that conducted at China Medical University which revealed that PBL in small classes was more effective than PBL in large classes [2]. Meanwhile, the Department of Pharmacy at the University of North Carolina who tried to redesign its teaching methods found that the large class learning method was less effective than small class learning [3]. The large class lecture system is also used at the Faculty of Medicine and Health Sciences, Yogyakarta Muhamadiyah University (FMHS UMY). The material delivered in the lecture is biomedical and non-biomedical

From interviews conducted on Sunday 29 April 2018 and Monday 30 April 2018 with 10 respondents, namely students of the School of Medicine, FMHS UMY from several different generations, the researchers got several responses.Based on the preliminary interview, it is necessary to improve the single class lecture method to improve student learning achievement. The e-Learning media provides positive energy, supports concept exploration, and provides happiness in the classroom, which increases understanding and motivation.

Gamification is a learning medium that increases student engagement by attracting all students, even students with introverted personalities, by combining a fast-paced learning environment and friendly competition [4]. Some academics, the entire game industry is considered to contain little scientific achievement[5]. Games, especially e-Learning games, are sometimes not believed to be serious work or worthy of attention. In this era using technology can be a great way to engage students in the classroom, and using the right website can help assess learning quickly become a reality[6].

Kahoot! is one of excellent choices for e-Learning media to teach students who are given direct access to mobile devices, availability of wi-fi, and student interest in computer games. The Kahoot! Application reinforcing some effort and desire to engage students, this e-Learning platform can provide an attractive environment that supports learning and adds active participation in the classroom. [7].

This reasearch aim to measure the effectivity of Kahoot! application on students' motivation and learning evaluation result. This novelty was compairing motivation and learning evaluation result after applying Kahoot! Quiz between all batches and two medical science division of lecturer in school of medicine FMHS UMY.

2. METHODE

This study is a quantitative study with quasiexperimental pre-post test design without control. With the design and type of research like this, several relationships that occur before and after the intervention will be revealed. Observations were carried out before and after the intervention [8]

The population was the 2015, 2016 and 2017 School of Medicine students batches. The sample was obtained using total sampling taken during a single lecture conducted by partner lecturers. The determination of partner lecturers is carried out from the results of the lecture quality questionnaire. In this case, the target is lecturers who have the highest and lowest scores from the questionnaire results. However, the researcher also offers openly to lecturers of the School of Medicine to participate as partner lecturers. The number of students of the School of Medicine at the University of Muhammadiyah Yogyakarta consists of 187 in the 2015 batch, 191 students in the 2016 batch, and 186 students in the 2017 batch. In these research uses total sampling technique, a sample is taken using all members of the population as a sample [9].

This research begins with the selection of partner lecturers through an analysis of the quality of the Quality Team lectures (highest and lowest results) and open offers, implementing the application of the Kahoot! in large class single lecture activities at the University of Muhammadiyah Yogyakarta School of Medicine, taking data from the application of the Kahoot! application, taking secondary data from the end of block learning evaluation results based on questions from partner lecturers, and analyzing data with wilcoxon test to determine whether there is a significant difference between the results of filling out the MSLQ questionnaire before and after the application of the Kahoot! Quiz.This research has received ethical approval from the Ethics Commission of FMHS UMY.

3. Result

Respondents in this study were students of the Medical Education Study Program (PSPD) FMHS UMY batch 2015, 2016, 2017, and 2018.

Table 1. Distribution of Respondents Based on theDivision of Medical Sciences

Division of Medical Sciences	Kahoot! (Pre Test)	Learning Evaluation (Post Test)	Total
Biomedic	237	237	474
Non-biomedic	237	237	

From the table above, it can be seen that the number of students who participated in this study from the biomedical and non-biomedic groups had the same number.

On the Multivariate test analysis of results taking the quiz Kahoot! as a pre-test value and Learning Evaluation as a post-test score, several tests were conducted. First is the data normality test using the Kolmogorof-Smirnov test to determine the distribution of the data.

Table 2. The normality test result of the distribution ofKahoot! (Pre-Test) and Learning Evaluation (Post-
Test) in all batches.

Division of Medical Sciences	Kahoot! (Pre Test)
Pre Test Score of Biomedic Lecturer	0,000
Post Test Score of Biomedic Lecturer	0,000

Pre Test Score of non- Biomedic Lecturer	0,000
Post Test Score of non- Biomedic Lecturer	0,000

Based on the normality test by Kolmogorof-Smirnov and Shapiro-Wilk, it can be seen that the data is said to be normal if the p value> 0.05. From the results of the p-values in all the tables above, it was found that all pvalues <0.05, which means this data has an abnormal distribution, so it can be continued with the Wilcoxon test.

Wilcoxon test is a test conducted to determine whether there is a significant difference between the results of filling out the MSLQ questionnaire before and after the application of the Kahoot! quiz.

Table 3. Wilcoxon test results filling out the MSLQquestionnaire before and after the application of theKahoot! on the whole of

Variabel	Z score
Biomedic	-8,298
Non-biomedic	-6,425

Based on the Wilcoxon test conducted, it was found that the results from the 2016 2017 and 2018 batches had a p value of <0.05 so it can be concluded that the hypothesis which states that there is a significant difference of student motivation between before and after the application of the Kahoot!

the Kahoot! Quiz Score of biomedical and non biomedical lecturer obtained as follows

Table 1. The Kahoot! Quiz sco	ore (pre test
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Division of Medical Sciences	Mean Score	Minimum Score	Maximum Score
Biomedic	42,759	0	80

Non-	57,6584	0	100
biomedic			

Based on the table above, the value of filling out the Kahoot! in the biomedical medicine group, the average score was 47.759, the lowest score was 0, and the highest score was 80. In the non-biomedic medicine group, the average score was 57.6584, the lowest score was 0, and the highest score was 100.

Table 4.	Learning	Evaluation	result	(post t	est)
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	Mean	Minimum Score	Maximum
Division of Medical Sciences	Score		score
Biomedic	61,4767	0	100
Non-biomedic	71,2023	0	100

Based on the table above, the value of filling out the Learning Evaluation in the biomedical group, the average score was 61.4767, the lowest value was 0, and the highest score was 100. In the non-biomedic medical science group, the average score was 71.2023, the lowest score was 0, and the highest score was 100.

The relationship between the data from the Kahoot! with the results of the Learning Evaluation, comparisons were made by taking the average value of each group of medical sciences. Furthermore, the data is processed using the 2 related sample test in the SPSS application.

Table 5. Comparison results of filling out the Kahoot!Quiz with the results of the Learning Evaluation in thebiomedical group.

Learning evaluation Score	Mean	Sig.
Before Kahoot!	42,759	.000
After Kahoot!	61,4767	

Based on the table above, a comparison of the average scores for the Kahoot! with the results of the Study Evaluation in the biomedical group an increase of 18.7177 with a significance of .000 which means that a significant difference was found because the value was less than 0.05.

Table 6. Comparison results of filling out the Kahoot!Quiz with the results of the Learning Evaluation in thenon-biomedical group.

Learning evaluation	Mean	Sig.
Score		
Before Kahoot!	57,6584	.000
After Kahoot!	71,2023	

Based on the table above, a comparison of the average scores for the Kahoot! with the results of the Study Evaluation in the non-biomedic medical science group an increase of 18.5439 with a significance of .000, which means that a significant difference was found because the value was less than 0.05.

The relationship between the Kahoot! and Learning Evaluation, then a comparison is made by taking the value of filling out the Kahoot! and Learning Evaluation, the data was processed using the one way ANOVA test in the SPSS application.

Table 7. One-way ANOVA test results to see therelationshipbetweentheKahoot!andLearningEvaluation

Learning evaluation	Mean	Sig.
Score		
Between Groups	51	.000.038
Within Groups	422	
Total	473	

Based on the table above, the p value = 0.038, which means the p value <0.05, which indicates that there is a significant effect on the effectiveness of using the Kahoot! application. in the single lecture, the student from the teaching faculty of the medical education study program FMHS UMY.

4. DISCUSSION

Based on the correlative test conducted in this study, it was found that there was a significant effect in increasing

student scores between the Kahoot! with Learning Evaluation Results. Several things can improve this, especially with regard to the application of quizzes in lecture activities. In addition, many of the learning difficulties experienced by students in undergraduate programs can be attributed to the passive role played by them during large class lectures, therefore active study is recommended as a remed[10].

Based on the correlative test conducted in this study, it was found that there was a significant effect in increasing student scores after the application of the Kahoot! quiz. There are several things that this improvement can happen, especially with regard to the application of quizzes in lecture activities. The application of interactive quizzes in the form of games can be a powerful learning tool for lecturers in teaching at all levels of students. Not to forget, the interface design of a quiz application can also affect student interaction and interest in a lecture activity [11].

In its application, the application of the Kahoot! can help several things in a lecture activity, not only in terms of motivation. In terms of focus, Kahoot! can help increase student focus through the audiovisual features contained in the application. On the other hand, Kahoot! can also be a facilitator in lectures because they can find out whether the lectures can be well absorbed by students or not. Feedback or reflection on a lecture can also be accommodated by applying the Kahoot! so that lecturers can find out student interactions with the lecturer [12].

With the results of research that proves that there is a significant difference in student motivation between before and after the application of the Kahoot! quiz, it is expected that the results between student grades and the student's cumulative achievement index can be directly proportional to the increase in motivation after the application of the Kahoot! quiz. There was an increase in student achievement index after the application of the Kahoot! in educational activities[13]. This is in accordance with the researchers' estimates which stated that the increase in motivation in lectures after the application of the Kahoot! will increase student achievement index.

In terms of interface, and quiz mechanics Kahoot! yourself, the application of the quiz Kahoot! can improve student motivation well. Kahoot! Quiz app interface which shows the results of the top 5 names or student numbers with the best scores in each question are proven to increase student motivation to be able to get good grades in the application of the Kahoot! quiz. This interface system also causes students to pay more attention and interact better in each lecture, and causes healthy and transparent competition between each student [14]

This is also in line with the application of the Kahoot! in large classes that can create an atmosphere of competitive competition between students, create a sense of wanting to win and foster the desire of quiz participants to achieve the highest results compared to other participants. In terms of intrinsic motivation, Kahoot! become one of the stimulants so that students are able to face and control challenges in lectures [12].

In same time reaserch the relationship between learning motivation and the level of learning period, the study found that learning motivation decreased in the third and fourth years when compared to learning motivation in the first and second years [15]. This is in line with research conducted by Demirören which shows differences in learning motivation rates in first year, second year, and fourth year students which are influenced by various factors such as: lack of planning, lack of learning objectives, strategies poor learning, and lack of independence in learning[16]. Students with a low study period will have better learning motivation that students with a higher study period. The learning motivation that emerges is the intrinsic type of motivation which is more commonly found in first year students than in fourth year students [17]

5. CONCLUSION

In this study it was found that there was a significant corelation between the use of Kahoot! Application with learning evaluation results and a significant effect on increasing student scores and motivation after the application of the Kahoot! quiz. There was an increase in learning evaluation result after the application of the Kahoot! in educational activities.

This is in accordance with the researchers' estimates which stated that the increase in motivation in lectures after the application of the Kahoot! will increase student achievement index.

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