MALIM: Jurnal Pengajian Umum Asia Tenggara 21(2020): 147–156
https://doi.org/10.17576/malim-2020-2101-12

STUDENT AS TEACHER – ALTERNATIVE REVISION METHOD VIA QUIZIZZ APP

AMIRUL MUKMININ MOHAMAD*

ABSTRACT

Revision is one of the most important parts of learning activities, especially to test students' level of understanding. However, the 21st century learning situation saw the process of revision in classroom that is still fully mastered by teachers. This research aims to look at the effectiveness of the game-based application Quizizz as a revision medium as well as to develop students' self-learning. Through the use of Quizizz, students need to prepare a quiz-based questions for a spesific topic, and the fellow students will answer the questions. Quasi-Experimental research involved 30 undergraduate students of social science course where the data was obtained through pre-test and post-test scores as well as questionnaires. The data were analyzed using the T-Test Independent Test for comparison of scores and Simple Linear Regression test for the regression analysis between variables. Comparative analysis of scores between pre and post-intervention test revealed significant differences, with p = 0.000 values recorded. Regression analysis showed a significant association between the intervention method and the increase of students' course content mastery and self-learning skill. The results show that the respondents build their knowledge of the content on their own through the use of Quizizz as a tool, compared to the achievements shown through conventional method.

Keyword: Quizizz; Student-centered learning; Revision; Game-based learning.

INTRODUCTION

Teaching and learning process in the classroom involves the acquisition of new knowledge and skills for the benefit of students, in addition to the retention of existing knowledge and skills. To achieve that goal, revision is a tool to strengthen the existence of such information in the cognitive process of students. In addition to the role that has been stated, revision also serves as a tool to re-master the knowledge that has been learned (Kafadar 2013). Educational institutions from schools to colleges have made revision as one of the learning habits carried out through special sessions in the classroom. This is because revision is an effective medium that helps students to process, understand and adapt the information obtained better and organized (Tay 2013).

The revision process is often associated with learning styles, as the two are closely related where the learning style used by students is identified as one of the factors influencing revision habits (Shi 2011). Such relationship can be observed in situation where there are differences in learning styles while revise, to indicate that students have different strengths and interests while absorbing, processing and recalling information (Shi 2011), which gives different results to the performance in their studies. However, Manalo (2017) stressed that contributing element to the effectiveness of the process does not only depend on the learning style, but also the approach of teachers in classroom should also be considered as an important element for effectiveness of the learning process.

Learning Approaches

The proposed method of intervention is constructed based on two learning approaches, namely Student-Centered Learning and Game-Based Learning. Quizizz app is an implementation medium of the intervention. This section will discuss the scholarly sources and foundation knowledge related to the approaches and the app.

Student-Centered Learning (SCL)

Student-Centered Learning (SCL) is the main approach applied in the method. SCL is an alternative teaching strategy that replaces teacher-centered teaching, where students become key pillars of actively engaging in a teaching and learning session. Weimer (2012) places four important features that define this SCL conceptual teaching. First, this approach involves the practice of explicit skills. Second, this approach encourages students to reflect on what they have learned and how they have learned it. Third, this approach motivates students through opportunities for them to control their own learning process. Fourth, this approach promotes the value of collaboration and group work. Finally, in this approach, the educator (teacher/lecturer) acts as a facilitator and mentor, and not just as information provider (Stefaniak and Tracey 2015).

The field of research related to SCL focuses on two dominant things, namely learning approach and self-learning (Apiola and Tedre 2013). Through self-learning, students become more independent and responsible in exploring and learning knowledge (Baeten, Struvyen and Dochy 2013) without having to be pressured or instructed. This self-exploration of knowledge and skills causes students to experience increased in motivation and self-confidence (Baeten, Struvyen and Dochy 2013) and more interested in deepening their knowledge and skills.

Game-Based Learning (GBL)

Game-Based Learning (GBL) is the second approach applied in the intervention method. In general, games contain fun elements that can encourage students to be more active in learning activities (Hanus and Fox 2015). In the learning process in classroom, GBL approach is incorporated into the learning process through game elements as activities, and replaces conventional learning concepts with game-based learning models (Sawang et al. 2017). Compared to conventional teaching strategies, GBL is more effective in increasing students learning motivation through integration between technologies (application usage), fun game concepts and broader knowledge exploration (Dean 2017), while increasing the interest of students when following specific challenging subjects or facing difficult test (Deterding et al. 2011). In the context of thinking, the approach has the potential to stimulate students' abstract thinking during cognitive process, and generate their ability to think at a higher level (Dean 2017).

Quizizz Application

Quizizz is one of the game-based learning application that incorporates the concept of gamification (MacNamara and Murphy 2017). Quizizz integrates fun information technology, science and game concepts to engage students and consumers. After students finish answering all the questions online, Quizizz will display a picture with a message to indicate whether the answer is right or wrong. It is a form of pleasure and attraction for students (Miller 2017). As an alternative to the new world, Quizizz can be used to plan a classroom activities and to provide an assessment for students (MacNamara and Murphy 2017). The feedback on

monitoring and evaluation toward students also shows high students engagement when Quizizz is used (Boulden et al. 2017). In this research, Quizizz is the implementing medium for intervention method, where the application uses the concept of game-based learning to the fullest.

Problem Statement

The revision process conducted in schools or colleges now has several issues involving its handling in the classroom by teachers. First, this process is dominated and fully controlled by teachers without any active involvement by students. Teacher conducts revision sessions like regular learning sessions and students are ready in their seats to answer the questions posed. Such a teacher-centered situation is feared not to provide reinforcement in students' existing understanding (Avidov and Iluz 2014) as expected, since students have to go through another common teaching procedure that makes teachers the main focus (Zohrabi et al. 2012).

Second, the existing revision process is carried out in one direction only, that is, from teacher to students, without any communication in various directions such as students to teacher or between students. If the teacher conduct a question-and-answer session, number of students who are interested in asking questions is too small, due to embarrassment and not getting used to the approach (Madhu 2015). This one-way approach as well as the shy nature does not familiarized the practice of asking questions among students (Cifone 2013). As a result, students do not have the nature of exploring knowledge that should be deepened and strengthened, instead of just waiting to be bribed and pampered by teachers (Harris 2012).

Third, the diversity of ideas in the session is very limited. Most commonly used methods are Q&A, quizzes as well as written exercises, which are seen as boring. In this case, the creativity of teachers is limited to only utilizing existing facilities, without thinking of alternative strategies to make the revision more enjoyable (Jasmi et al. 2011).

Based on the problems discussed above, a more student-centered revision method is needed to make the sessions conducted in the classroom more interesting and fun. As an added value, application of the latest technology through the concept of game-based learning in the proposed method is expected to engage students' involvement in the process of revision as well as learning in the classroom. Thus, the objective of this research is to examine the effectiveness of Quizizz as an effective revision medium in two aspects, first; to improve student’ mastery of course content, and secondly; to improve students' self-learning skills.

RESEARCH METHODOLOGY

This research is a quantitative research that employed One-Group Pretest-Posttest design under Quasi-Experiment. The Quasi-Experiment design provides an opportunity for researchers to see before and after effects of the intervention on the same research group. This research allows for the researcher to utlisize the same set of respondents compared to the two groups design; the control group and the treatment group. In comparison to the pure experimental research that selects research subjects randomly, the Quasi-Experiment determines the subjects specifically based on specific characteristics. A total of 30 students consisting of 24 female students and 6 male students from the social sciences discpiline who underwent this course for 14 weeks were selected for this research.

Research Procedure

The operationalization of the research procedure is displayed in the conceptual framework below (refer to Figure 1). The procedure begins with the conventional revision session conducted by teacher. This conventional revision session involves the use of written questions practice as well as regular question and answer between the teacher and students. After the students had underwent the conventional revision session, the students sat for a pre-test to measure their achievement in mastering the course content. For the next phase, the same students who underwent the the conventional revision session were guided in using the proposed intervention tool, that is the Quizizz app. After the intervention session, the group of students sat for the post-test to measure their achievement after attending the session. Finally, a set of questionnaires was admistered to the studenst who were also the respondents of this research. The aim of the questionairre is to find out the students' feedback on the effectiveness of the Quizizz app in improving students' mastery of course content and students' self-learning skills.

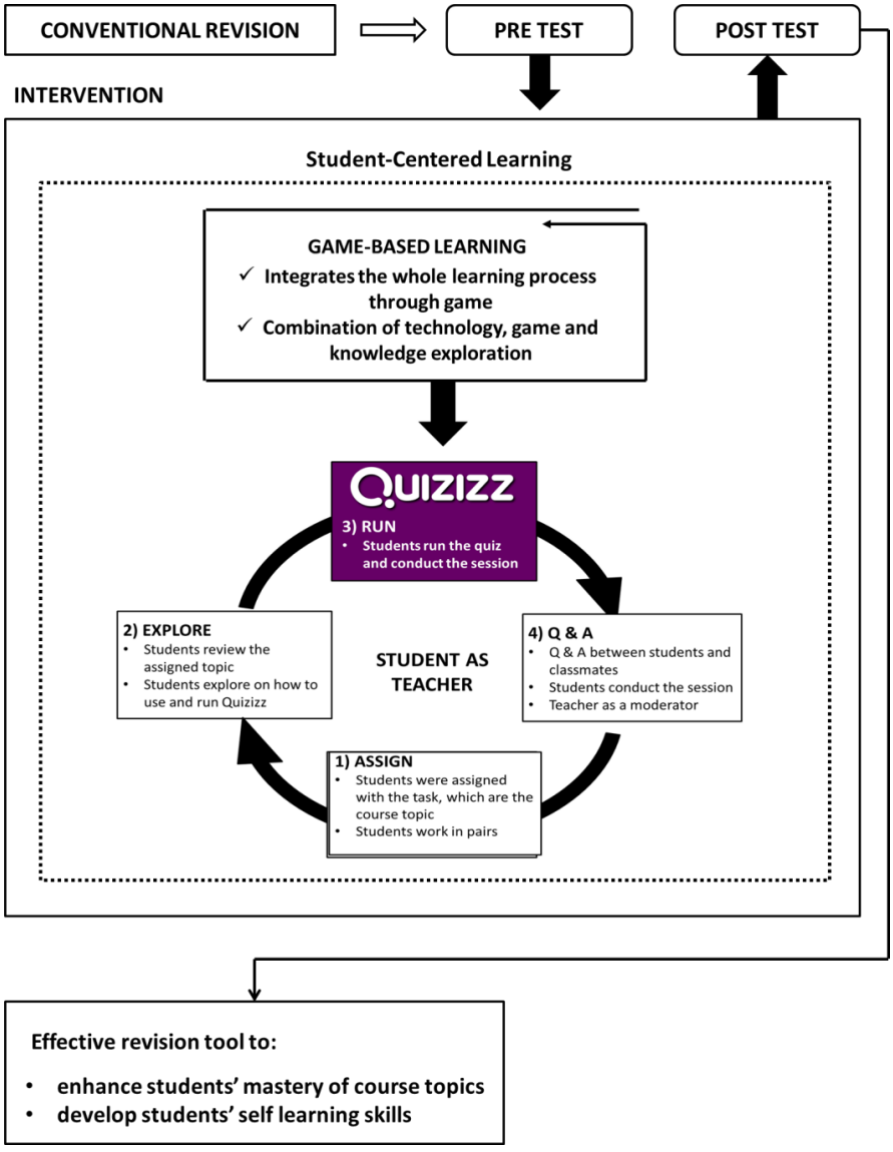

Figure 1 – Conceptual Framework

Intervention

The concept of student-centred learning (SCL) serves as one of the scaffolding elements in this proposed intervention. Through the SCL concept, students' learning takes place in two main different but meaningful platforms. The 2 meaningful platforms which the students experienced are, firstly, the exploration of knowledge and skills on their own accord and followed by the strengthening and the mastery of course content which are achieved through their role as 'teacher' during the revision phase. In pair, students explore and discover Quizizz app on their own and master all the features and specifications needed for them to create an account, formulate and administer the revision questions for their classmates and run the quiz in class.

This proposed revision method that used Quizizz app also applied the concept of game-based learning (GBL) in the implementation of the research design. GBL concept makes revision sessions more entertaining with the used of scoreboards, memes and rewards. During the intervention, students conducted a revision session for the assigned topic with the help of the app. During this gamification phase, students will actively played the role of a teacher for a specific topic that was assigned to them and after which they will conduct Q&A session. Meanwhile, the class teacher would engage in different roles. He/she would assume the roles of a class monitor and a facilitator in assisting to provide answers to the questions that (may) not be answered by students during Q&A.

Research Instrument

Two main instruments were used in this research: a set questionnaire and a set of pre and post-test questions taken from course' final exam questions. The questionnaire was administered to find out the overall effectiveness of using Quizizz app as an alternative tool in carrying out revision among the students. The questionnaire for this research contains three sections: the demographic of the respondents, the Quizizz effectiveness as a revision medium in improving students' understanding of course content as well as in improving students' self-learning skills. The second research instrument, which is a set of pre and post-test questions consisted of the course' final exam questions which cover all course content. This assessment which serves as a final assessment for the course required students to provide accurate and appropriate answers to the given questions/tasks. In other words, the purpose of carrying out this final exam is to gauge to what extent Quizziz app has improved student' mastery of course content and students' self-learning skills. Once all the data was successfully obtained, it was processed using Two Dependent Sample T-Test for pre and post-test scores, as well as Simple Linear Regression analysis for the association between variables in the questionnaire.

RESULTS

This section will present and discuss the findings of the research, which are the effectiveness of Quizizz app in enhancing student's mastery of course content as well as developing students' self-learning skill.

Objective 1: The Effectiveness of Quizizz in Enhancing Mastery of Course Content among Students

Simple Linear Regression analysis was peformed on the findings from the questionnaire to determine the association between intervention method used and the increase of course

content' mastery. The hypothesis below, Ho1, is formulated to find the association between the utilization of Quiziz app and increase of course content' mastery.

Ho1: There is no significant association between Quizizz and students' mastery of course content

The findings of SPSS for Simple Linear Regression test proves that there is a significant association between Quizizz and the increase in mastery of course content among students, with $F(1, 30) = 11.387$, $p < 0.05$, with a value of $R_2 = .289$. The percentage expectation in mastery of course content for students is $Y = 10.754 + 3.458\ X$ when X is measured in percentage. In this case, the mastery of content increased by 3.458 for each percent of Quizizz use. The significance value of table 1(b) is 0.005, which is less than the significance level 0.05. This result also rejects the null hypothesis to suggest that there is a significant association between Quizizz use and the increased of students mastery of the course content.

Table 1(a): Model Summary - Quizizz effectiveness on course content' mastery

Model	R	R Square	Modified R Square	Expected Standard Error
1	.538[a]	.289	.264	2.496

a. Predictor: Quizizz

Table 1(b): Simple Linear Analysis Regression – Quizizz effectiveness on course content' mastery

Model		Sum of Squares	Df	Min Square	F	Sig.
1	Regression	70.959	1	70.959	11.387	.005[b]
	Residual	174.488	28	6.232		
	Total	245.447	29			

Table 1 (c): Model Coefficients - Quizizz effectiveness on course content' mastery

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig
(constant)	10.754	4.514		2.382	.024
Quizizz	3.458	1.025	.538	3.374	.002

Dependent Variable: Post-Test Score

Comparison of the score between pre-test and post-test is done based on the following hypothesis:

Ho2: There is no significant difference between pre-test and post-test scores

Table 2(a): Paired T-Test: Descriptive Analysis

		Mean	N	Standard Deviation	Standard Error Mean
Paired 1	Pre-Test	16.37	30	3.163	.578
	Post-Test	25.91	30	2.909	.531

Based on table 2(a), mean value of pre-test score is 16.37 while mean value of post-test score is 25.91. This shows that the mean value of post-test scores exceed the pre-test. The standard deviation of pre-test score is .578 while the post-test score is .531, with the distribution of data for the post-test scores smaller than the pre-test scores. The number of participants (N) is 30.

		Mean	Standard Division	Standard Error	95% Confidence Level Lower	Upper	T	Df	Sig
Pair 1	Pre-Test & Post Test	-0.9543	1.691	0.309	-10.175	-8.912	-30.917	49	0.000

Significant (2-Tailed) values recorded in the table are 0.000, which is less than the significance level of .05. Therefore, it can be concluded that there is a significant difference between the mean of pre-test and post-test score. Since the table shows that the mean value of post-test scores exceeds pre-test scores, it can be concluded that the intervention method using Quizizz has a significant impact on positive changes in student scores, while proving that Quizizz is effective as a student revision method.

Objective 2 – The Effectiveness of Quizizz in Enhancing Students' Self-Learning Skills

Simple Linear Regression analysis was also performed on the findings of the questionnaire to establish the association between intervention method and students' self-learning skills based on the following hypothesis:

Ho3: No significant association between Quizizz and students' self-learning skills

SPSS findings for simple linear regression test demonstrating significant association between Quizizz and self-learning skills development among students, with $F(1, 30) = 20.650$, $p < 0.05$, with $R_2 = .424$. The percentage expectation in students' self-learning skills is $Y = 1.393 + 0.694 X$ when X is measured in percentages. In this case, self-learning skills increased by 0.694 per cent using Quizizz. The significant value in table 3(b) is 0. 000, which is less than the significance level 0.05. This result also rejects the null hypothesis to suggest that there is a significant association between Quizizz use and the building of self-learning skills among students.

Table 3(a): Summary model - Quizizz effectiveness on students' self-learning skills

Model	R	R Square	Modified R Square	Expected Standard Error
1	.652[a]	.424	.404	.372

a. Predictor: Quizizz

Table 3(b): Simple Linear Regression Analysis - Quizizz effectiveness on student' self-learning skills

Model		Sum of Squares	Df	Min Square	F	Sig.
1	Regression	2.855	1	2.855	20.650	.000[b]
	Residual	3.871	28	.138		
	Total	6.727	29			

Table 3(c): Model Coefficients - Quizizz effectiveness on students' self-learning skills

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig
(constant)	1.393	.672		2.072	.048
Quizizz	.694	.153	.652	4.544	.000

DISCUSSION

The findings of the research which are presented in the previous section have rejected all three null hypotheses. For the Ho1 and Ho3 that attempt to verify the association between the intervention method and targeted skills, the null hypothesis has been rejected. Evidently, there is an association between intervention method with the course content' mastery and self-learning skills' development. The probable cause for this connection is due to the students' need to reinforce their understanding and master the content as Quizizz app requires them to construct questions and options to the given questions. Without a sound knowledge of the assigned topic, the students may find it challenging in completing the given tasks. The exploitation of student-centered learning (SCL) experience forms the basis for students to self-explore on how to master Quizizz and carry out their role as a teacher in front of their fellow classmates. For Ho2 that differentiate the score between pre-test and post-test, a significant value of 0.000 was attained. This value proves that the proposed intervention is effective in making changes to the course content' mastery, in comparison to the conventional revison method.

The use of the proposed intervention method that combined SCL with Quizizz makes the learning process more engaging and meaningful for the students. This illustrates that Quizizz app permeates total and active involvement among the students.

Quizizz app not only offers a form of alternative method for the existing dull and unexciting review session in the classroom, but is also has the potential to equipp students with the learning skills listed below:

i) to boost self-understanding of course content,
ii) to explore how to use and manage Quizizz comprehensively,
iii) to develop a set of questions and quizzes through Quizizz,
iv) to conduct quiz sessions with classmates, and
v) to conduct question and answer sessions related to content with classmates and answer the questions given.

This well thought and innovative method can be applied in all area of courses, whether social science, pure science, language, engineering, economics or others. The use of Quizizz app as a learning tool makes the revision session fun and attractive to students (Miller, 2017) which can stimulate and increase students' learning motivation through a combination of technology and knowledge (Deterding et al. 2011).

CONCLUSION

The proposed intervention that exploits and manipulates the used of Quizizz app in a traditional classroom has benefitted the students in terms of enhancing the content of the course, in acquiring self learning skills and also equipping themselves with digital learning literacy. The Quizizz app is able to facilitate the transition and transcend both teachers and students to the sophisticated and demanding 21st century learning environment. A revision process that is innovatively integrated with the 21st-century learning style enable to promote self directed learning among passive students. This self directed learning uses student-centered approach which is an alternative step to a more effective learning habit. The use of Quizizz app as a medium of revision is not only teachers and students-friendly, but also, it is better than the less-entertaining and exciting conventional revision method.

Implications and Recommendations

Based on the above mentioned findings, it is imperative that every institution of education and school is recommended to be equipped with internet facilities and knowledge on the use of the latest applications. This is to ensure that process of reinforcing the course content is achieved and the desired self learrning skills are developed effectively. As a recommendation for future studies, researcher should consider using game-based learning (GBL) app such as Quizizz app and Quizalize as a distance assessment tool during Covid-19 movement control period. Interestingly, the use of GBL app can also be seen from the aspect of its use as an alternative to develop teaching materials.

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AMIRUL MUKMININ MOHAMAD
Pusat Citra Universiti
Universiti Kebangsaan Malaysia
43600 UKM Bangi
Selangor, MALAYSIA

*Pengarang untuk surat menyurat: mieroll@ukm.edu.my

Received: 1 June 2020 / Accepted: 29 September 2020 / Published: 12 November 2020