

Increasing Students' Reading Comprehension Through Gamification Based on Balinese Local Stories

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Abstract—Industrial revolution 4.0 has transformed today's classroom. The demands of implementing innovative teaching media are needed. This research aims at increasing students' reading comprehension through gamification based on Balinese local stories. We implement Quasi-experimental research with one group pre-test post-test design in this research. The sample was 31 fifth grade students of elementary school 5 Kampung Baru in academic year 2019/2020. Two instruments were implemented in this study, that is, treatment instrument and pretest posttest instrument. The treatment instrument was gamification based on Balinese local stories, while the pretest and posttest instrument were in the form of objective questions for reading comprehension. The result showed that gamification based on Balinese local stories was able to increase students' reading comprehension. Gamification based on Balinese local stories as teaching media are suggested to be used as teaching media in teaching reading comprehension.

Keywords—gamification, Balinese local stories, reading comprehension

I. INTRODUCTION

Technology advancement in 21st century or renown as industrial revolution 4.0 has rapidly enhanced. This era has impacted the development of many aspects, including education. Education 4.0 is a new educational that aims to fulfill the needs and potentialities of the fourth industrial revolution. The main concept of education 4.0 is learning by doing [1]. It means that the students are encouraged to discover and learn new things based on experimentation. Learning 4.0 has significantly changed students' role from being passive in education 1.0 to more active in education 4.0 [2-4].

Furthermore 21st century learning demands 4 skills that are required by the students, it is called as "4C". 4C consists of communication, collaboration, critical thinking and creativity. In order to survive in the era where critical thinking is needed, students are required to master reading comprehension. Reading comprehension means understanding and making relationship between vocabularies that are used in a written text

in order to achieve comprehensive understanding [5]. Comprehension is achieved when a reader can respond to, act on, or transform the presented information in a written text. Some researches that have conducted found that students should understand 90% of the vocabulary in order to comprehend the text [6].

Reading comprehension is needed for the students to expand their knowledge and information. The failure of understanding a few words brings a negative impact towards students' comprehension [7]. Another factor that causes the lack of reading comprehension is reading interest. Reading interest plays an important role in helping students to comprehend the text because it is the fundamental factor that directly related to their reading goals [8]. Reading interest is important as it motivates students to read for enjoyment and satisfaction [9]. Some researchers also prove that both reading interest and text comprehension are positively correlated because the more the students read, the more they understand [8-11]. A study in Becker et al. [12] showed that reading interest gives continuing positive effects on reading achievement. Their study found that reading interest in fourth grade is positively related to reading achievement in sixth grade. Therefore, Children who have reading interest will see reading as a desirable activity. They tend to read more frequently and it helps them to develop better reading comprehension [9].

In order to build students' reading interest and make them able to comprehend a text, teacher must consider the characteristic of young learners. What is meant by young learner is those who are 5-12 years old [13]. Young learners love to play and have fun. Yet, they are also easily got distracted [13]. By considering the young learners' characteristics, establishing fun and fascinating learning media for reading comprehension is required by integrating the reading text and technology.

One of the ways to establish an innovative teaching media for reading comprehension is through gamification. In present,

Gamification has been developed and implemented as an integrated teaching media. Gamification is an adoption of game mechanics and dynamics that aims to solve problems, engage people and improve the learning process [14]. Considering that the students nowadays are always keep in touch with technology and the benefits acquired by using gamification, the present study used gamification as a media for teaching reading comprehension.

Since the present study is focusing on students' reading comprehension, the content of Gamification is based on Balinese local stories. Local story is a story that is developed in a certain area. Local story is chosen as the material since it is in a form of narrative and it has moral value that students can learn. Narrative story can attract young learner to read, as they tend to like story [15].

The aforementioned explanation lead to the following research question: Is there any significant mean difference of students' reading comprehension before and after gamification was implemented?

II. METHODS

One group pre-test post-test design was used to achieve the research aim. The experimental group was repeatedly pre-tested and post-tested. The researcher conducted 6 meetings for the treatments. The scores of the pretests and posttests were analyzed quantitatively and compared in order to determine the effectiveness of the treatment [16].

The instruments used in this study were pretest and posttest instrument and treatment instrument. Pretest and posttest instrument was in the form of reading comprehension test specifically in a form of objective questions.

III. RESULTS AND DISCUSSION

A. Results

TABLE I. THE MEAN SCORE SUMMARY OF PRETESTS-POSTTEST

	Meeting	Pretest	Posttest
Mean Score	1	45.55	80.58
	2	65.55	87.35
	3	49.29	89.45
	4	54.45	88.81
	5	62.10	87.68
	6	66.74	88.97
Mean Summary		56.11	87.13

Table 1 lists the mean score summary of pretest and posttest. Both pretest and posttest were repeatedly conducted in 6 meetings. All mean scores from pretest and posttest in every meeting were calculated and summarized. As illustrated in Table 1 that the mean score of pretests from all treatments is 56.11 whereas the mean score of posttests from all treatments is 87.12. This reveals that the mean score of posttests is higher than pretest.

Hypothesis testing was conducted to know whether gamification based on Balinese local stories can increase students' reading comprehension. The hypothesis testing was conducted by using paired sample t-test. The result of hypothesis testing can be seen in Table 2.

TABLE II. PAIRED SAMPLE T-TEST ON PRETEST AND POSTTEST SCORE

Pair 1			Mean Pretest	Mean Posttest
Paired Differences	Mean		70.12903	
	Std. Deviation		17.47040	
	Std. Error Mean		2.21874	
	95% Confidence Interval of Difference	Lower		65.69238
Upper			74.56568	
T			31.608	
Df			61	
Sig.(2-tailed)			.000	

The result of paired sample T-test showed that the value of Sig. (2-tailed) was .000. This value was lower than the level of standard ($\alpha=.05$). It indicates that there was significant difference between pretest and posttest.

Effect size was conducted to quantify the magnitude of difference between pretest and posttest. The calculation of the effect size was analyzed by using Cohen's d measurement. The larger the effect size, the stronger relationship between two variables. The result of effect size found that the value of Cohen's d was 3.528882. It indicated that the effect of treatment towards the sample was large.

B. Discussion

There was one research question in this study. The research question dealt with the determination of the effect of gamification based on Balinese local stories as teaching media on fifth grade students' reading comprehension. Before implementing gamification based on Balinese local stories as teaching media, pretest was conducted. It aimed to measure students' ability in comprehending text before they receive the treatment. Pretest was conducted repeatedly for six times. The stories given in every meeting was different. In pretest, students were given a text of the story and they were required to answer the pretest questions based on the story. From pretest one until pretest six, the students consistently showed poor achievement in reading. They found difficulties in answering the questions due to the lack of reading comprehension. Most of the students score only could achieve below average.

Then, before conducting posttest, the students were given a treatment by using gamification. The implementation of gamification in teaching and learning activity was based on the steps proposed by Gros. The steps were experimentation, activity, discussion and reflection. Experimentation is the first process which consists of several activities such as determining the suitable gamification, creating the lesson plan and suitable learning objective for students. This first step was done by determining gamification based on Balinese local story as

teaching media, creating lesson plan, selecting the appropriate basic competency. Those basic competencies were chosen in order to establish suitable learning objectives for the students.

The second step was the activity. Activity is a process of implementing gamification in teaching and learning process. The use of gamification as a media for reading comprehension was done by showing the gamification on LCD. The teacher opened the gamification and started the story. The story and the game completed with illustration and the voice of every character in the story was varying. After reading and listening to the story, the students played the game in gamification.

According to Nitiasih et al. [15] there are six basic features of gamification including user, challenge, point, level, badges and ranking. User is the participant of the game that in the field of education, the students are the user. The students were required as the user who played the game. The game was started after the narrator in gamification finished delivering the story. In each level of the games, the students faced various challenges. The challenges were based on the story in the game, for example; arranging jumbled letters and puzzle, giving direction, and finding things. Each challenge has its own point. Point is the accumulated results of the challenge. It appears at the end of the challenge.

There are three levels in each game and each level has three sub-levels. After completing certain task, badges are given to the user as a reward. The reward is given based on students' performance in doing the challenge. If the students perfectly finish the challenge, they will get three stars as the reward and if they not, they will get one or two stars. In the end of the game, the user will be ranked. Ranking of users is the accomplishments position of the user after completing all of the tasks.

During the implementation of gamification based on Balinese local stories in the classroom, the student seemed very enthusiastic and active in the classroom. It was proved by the frequency of the students raised their hand when they wanted to answer the question given. It was in line with theory proposed by Furdu et al. [17] where gamification establish a better learning experience because it combines fun and meaningful learning during the game. Students' engagement in the classroom was also very high because they fully paid attention when the story in gamification was started and gamification affects the students' engagement, behavior, motivation and achievement to learn and improve their knowledge [17].

After giving treatment through gamification, the result of the posttest showed that students were able to comprehend the story better through gamification rather than through conventional text. It could be seen from the comparison of mean score of pretest and posttest. Students were able to comprehend the story better because they were able to answer the question correctly. In addition, their response towards the question was also excellent.

Gamification based on Balinese local stories has also successfully improved students' desire to read. It was because gamification successfully combined narrative text and games. According to Wigfield et al. [8] reading interest plays an important role in helping students to comprehend the text because it is the fundamental factor that directly related to their reading goals. It was supported by the result of study conducted by Becker et al [12] that reading interest gives continuing positive effects on reading achievement. Their study found that reading interest in fourth grade is positively related to reading achievement in sixth grade. Therefore, Children who have reading interest will see reading as a desirable activity.

Furthermore, the use of local stories was also able to embed cultural and moral values to the students. The students could learn the educational character through the stories. From *I Cupak and Gerantang*, *Manik Angkeran*, and *I Siap Selem* stories, students can learn the value of honesty, humble and responsible, and intelligence. *I Ketimun Emas* story showed the value of love and affection, confidence, and intelligence. *I Sugih and I Tiwas* story gave the students the value of tolerance, honesty, humble, happiness, Intelligence and responsible.

Our findings indicated that there was significant effect of using gamification based on Balinese local story as teaching media on fifth grade students' reading comprehension. Furthermore, the result of this research also indicated that the use of gamification in learning environment had successfully influenced the students' achievement in reading.

IV. CONCLUSION

Conclusively, gamification based on Balinese local stories as teaching media gave significant effect towards fifth grade students' reading comprehension. It was proven by the result of the descriptive and inferential statistics analysis. Based on the result of descriptive analysis, the mean score of posttests was higher than pretest ($87.13 > 56.11$).

The inferential analysis which consisted of hypothesis testing (paired sample t-test) and effect size showed that the t-observed of the data was higher than the t critical value. The comparison between t-observed and t critical value was $31.608 > 1.671$ which means that there was significant effect of using gamification based on Balinese local stories as teaching media towards the 5th grade students' reading comprehension. It was also supported by the result of effect size. It found that the value of Cohen's *d* was 3.528882. It indicated that the effect of treatment towards the sample was large.

Based on the research that had been conducted, some suggestions are proposed. Other researchers are expected to conduct further study about this game by developing the strengths and considering the weaknesses. Considering the challenges faced during conducting the study, other researchers are expected to minimize those challenge in next study.

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