

Kahoot! as a learning tool in senior high school students' reading comprehension of procedure text

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Abstract

Kahoot! is used in Education as a learning tool to boost students' motivation, evaluate learning, and increase vocabulary. Meanwhile, the urge to master the four skills of language is compulsory. Some research focused on how Kahoot! boosts students' motivation and vocabulary, but less to investigate specific skills such as reading. The purpose of this study is to find out the effectiveness of Kahoot! as a learning tool in reading comprehension. Grounded in Quantitative Research in the scheme of Pre-Experimental Research with one-group pre-test and post-test. This study involved 29 senior high school students of grade X. To collect the data, a Pre-test and a Post-test were designed in 20 multiple-choice questions of a reading comprehension test. The calculation was conducted using IBM SPSS Statistics 25. The results cover pre-test results in low category, where the average score was 66.55, which was under the minimum criteria of student completion. Kahoot! as a learning tool was then conducted, and statistical results proved that Kahoot! as a learning tool in reading comprehension is effective. It is shown that the average score of the reading comprehension was gained above the minimum criteria of student completion. It was 88.72. This result indicates that Kahoot! as a learning tool in reading comprehension significantly improves their reading achievement, as the students' knowledge of the reading topic is improved by the teacher's guidance in presenting abstract concepts found in reading.

Keywords: *Kahoot!; learning tool; reading comprehension; game-based learning; pre-experimental design*

INTRODUCTION

Learning English is aimed at building competence for the students to use English in many aspects of life, particularly in reading. Reading skills are crucial for students and affect their performance in learning English. Through the use of words, reading is aimed at helping the students to comprehend the author's concept and point of view. Moreover, is an important way to gain knowledge in language learning. It is a basic tool for the student to understand something. reading is important for students' life, especially in their career and education (Harmer, 2007). This concept means that reading provides the students with a variety of information that can broaden their knowledge. Students only read the text without knowing the idea or information contained in the text. other students found difficulties in comprehending the text and answering the questions about the text given (Pratiwi, 2023). Moreover, they were less interested in reading text because the teacher still used the conventional method in teaching reading comprehension.

Therefore, to assist the students to get better comprehension in reading, teachers should use the proper techniques or learning tools.

The use of gamification in the world of education has proven to be effective in increasing students' interest in learning, as well as providing challenges that can improve the quality of learning materials (Permata & Kristanto, 2020). Gamification has been shown to increase learners' engagement with course materials and improve their motivation, learning participation, and collaboration. It has potential, but a lot of effort is required in the design and implementation of the experience for it to be sufficiently motivating for students. Playing games makes students more enjoyable because it is exciting and improves their motivation in the learning process. Students will think that they are more confident while learning English with games. So, the use of gamification in the learning process is very beneficial for students, because they are directly involved in the learning process, which increases student motivation.

A game-based learning tool is useful in teaching and learning activity. Huang (2011) and Dellos (2015) stated that game-based learning is one of the most useful techniques for teaching, particularly to keep students' motivation to study continuously, develop their critical thinking, and assess their progress. Learning using games can avoid a monotonous class. *Kahoot!* is one of which, *Kahoot!* is an educational game application that teachers can use to help students learn. *Kahoot!* is a learning tool that may be used in distant learning activity and more successful than others (Wang, 2015). As a result, *Kahoot!* It may be used as an additional learning tool. *Kahoot!* is a well-known platform that is practically used to support learning (Plump & LaRosa, 2017). Students can enjoy the learning process because *Kahoot!* creates a competitive environment in the classroom. Moreover, students will keep the experience in their minds while learning.

The students who play *Kahoot!* will be asked questions displayed on the screen, then participants will be given a teacher-determined time to answer them. Each correct or incorrect answer will be immediately displayed and will earn points at the end of each The five highest point positions will be displayed at the end of the game, *Kahoot!* only displays the top three points. *Kahoot!* is a visual learning medium. As a visual learning medium, using an application should also excite and motivate students. The *Kahoot!* application is an effective, fun, and non-boring. Additionally, using this *Kahoot!* media can arouse and motivate for fun learning without having to keep text in the form of paper or other stationery.

In teaching and learning English, teaching reading aims to enhance students' ability to comprehend texts effectively, with motivation playing a crucial role in the learning process. Game-based learning is one of the methods that could be used to foster the students' motivation. As a game-based application, *Kahoot!* is a free educational platform that increases students' engagement by incorporating game mechanics to promote competitiveness, enjoyment, and retention of learning material. Piskorz (2016) and Zichermann (in Giang, 2013) stated that using game-based tools like *Kahoot!* not only boosts motivation but also enhances learning outcomes. *Kahoot!* offers the students to

make predictions, foster inquiry, choose appropriate activities, and text where it aligns with the principles of reading instruction (Harmer, 2007).

Kahoot! has some features for teaching reading comprehension such as scale, slide, true/false, and quiz format. Those features have their specific instructional goals: the scale feature surveys students' opinions, slide feature allows teachers to present material interactively, the true/false feature facilitates quick comprehension checks, and quiz encourages competitive learning with multiple-choice questions. All modes require the students to participate using their smartphones, join with a game PIN, and engage with content presented live by the teacher. Scores based on speed and accuracy increase motivation and active participation, with top scores displayed on the leaderboard. This gamification format supports comprehension of text like procedure texts while making the process enjoyable and interactive.

Some previous research has been conducted to investigate the use of *Kahoot!* in teaching and learning English. Artati (2021) found that *Kahoot!* affected students' motivation in learning, where she used it as an icebreaker in the EFL classroom. Differently, Frisnoir et al. (2020) used *Kahoot!* as a learning evaluation tool and found that it is feasible to use. Specifically, to the language element, Quiroz et al. (2021) used *Kahoot!* to improve vocabulary, and it is found that this application achieved significant variation and a medium effect size. Those previous studies vary in each context of research but have the same tool in terms of the use of *Kahoot!*. However, the research samples and specific skills are less commonly found in some research. It is also important to emphasize the samples of the research and the skill of language as the focus. This gap should be filled to get comprehensive findings in the context of the use of *Kahoot!* in teaching and learning English. Thus, this study focuses on finding out the effectiveness of *Kahoot!* as a learning tool in reading comprehension to senior high school students. The findings are expected to provide a valuable reference for English language teachers and support the development of more engaging and effective instructional strategies.

METHOD

Grounded in a quantitative research approach with a pre-experimental design, specifically the one-group pre-test and post-test model, this research investigates the effectiveness of using *Kahoot!* as a learning tool for teaching reading comprehension by comparing the students' performance before and after the intervention. Creswell (2013) stated that the quantitative method emphasizes objective measurement and statistical analysis of data, while Brown (2001) elaborates that experimental design helps the researcher to explore the relationships between variables such as test scores and instructional methods.

Respondents

The population in this study is students in grade X of SMAN 1 Lohbener. The population is 266. The sample is grade X-8 consists of 29 students who were selected purposively. According to Crossman (2017), a purposive sample is a non-probability

sample selected based on population characteristics and research objectives. Purposive sampling is different from convenience sampling and is also known as judgmental, selective, or subjective sampling. The students would divide equally into one experimental group. Students in the experimental group are taught using the *Kahoot* as a learning tool to teach reading comprehension.

Instruments

The measuring instrument used in this study is a pre-test and a post-test. This pre-test and post-test aim to determine the effectiveness of the use of *Kahoot!* as a learning tool to teach reading comprehension. The form of the test is 20 multiple-choice questions that was designed based on the learning objectives in comprehending procedure text.

Procedures

This research was conducted in some steps. It began with distributing a pre-test to the students to measure the initial students' reading comprehension. After the pre-test was conducted, the researcher conducted the treatment: teaching reading comprehension of procedure text using *Kahoot!* After the treatment, the researcher distributed a post-test to measure the implementation of *Kahoot!* All the data was then analyzed using the statistical calculation.

Data analysis

All the data obtained from the pre-test and post-test are calculated based on the statistical procedure of pre-experimental research design. Using descriptive quantitative research method with a simple linear regression analysis to examine the effect of using *Kahoot!* as a learning tool on students' reading comprehension, the data were analyzed using IBM SPSS Statistics 25, beginning with instrument validation by the experts. The process included normality tests using the Kolmogorov-Smirnov method and a homogeneity test with Levene's formula. If the data were normally distributed and homogeneous (Asymp Sig. > 0.05), a paired sample t-test was conducted to determine the significance of score differences between pre-test and post-test results in experimental and control groups. If the data were not normally distributed, the non-parametric Wilcoxon test was used. the significance level was set at 0.05, and hypothesis testing aimed to assess whether the use of *Kahoot!* significantly improved students' reading comprehension.

RESULTS AND DISCUSSION

Results

In this study, the researcher analyzed and calculated the data to find out the results of a study in teaching reading comprehension by using *Kahoot!* as a learning tool at a senior high school in Indramayu. In conducting this study, the researcher used a pre-experimental as the research design. The research sample was the tenth grade of SMAN 1 Lohbener in Academic 2024/2025. The researcher chose X-A as the sample, which has 29 students, to find out the effectiveness of *Kahoot!* as a learning tool to teach reading comprehension. The data were collected from 20 multiple-choice reading comprehension pre-tests and post-tests. The score of both tests is presented below.

Table 1. Pre-test and Post-test Score

	Pre-test	Post-test
Min score	25	70
Max Score	95	100
Mean	66.55	86.72

From the pre-test results, a minimum score of 25 was obtained and a maximum score of 95, with a total of 29 participants and an average score of 66.55. This value is below the minimum criteria. The pre-test results showed that students had problems in the social function related to the type of procedure text, the generic structure, and the language feature of procedure text in terms of connectives. These problems were revealed based on the item test analysis conducted by the researcher. Considering this condition, the treatment was conducted. The teaching of reading comprehension of procedural text was conducted using *Kahoot!* as a learning tool.

From the post-test result, it was found that the minimum score was 70 and the maximum score was 100, with an average score of 86.72. The average value has exceeded the minimum criteria. This result revealed significant improvement in students' reading comprehension following the implementation of *Kahoot!* as a learning tool. Those data were then analyzed using statistical calculations. The following are the stages of statistical calculation.

Table 2. Descriptive Statistics

		Pre-Test	Post-Test
N	Valid	29	29
	Missing	0	0
Mean		66.5517	86.7241
Std. Deviation		23.64558	10.87887
Minimum		25.00	70.00
Maximum		95.00	100.00

The table above shows a clear improvement in students' reading comprehension after the use of *Kahoot!* as a learning tool. The mean score increased significantly from 66.5 in the pre-test to 88.72 in the post-test. It indicates that there was a positive effect of the treatment. The minimum score also rose from 25.00 in the pre-test to 70.00 in the post-test. It suggests that even the lowest-performing student showed substantial improvement. Meanwhile, the maximum score increased slightly from 95 to 100.00, showing that some students achieved a perfect score after the intervention. The standard deviation decreased from 23.64 to 10.88. It means that the post-test scores were more consistent and less spread out which reflects a more uniform understanding among students. After the descriptive statistics were gained, the next step is to calculate the homogeneity test. The calculation is presented below.

Table 3. Test of Homogeneity of Variance

Levene Statistic	df1	df2	Sig.
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PostTest	Based on Mean	2.959	7	15	.037
	Based on Median	.382	7	15	.899
	Based on Median and with adjusted df	.382	7	6.914	.886
	Based on trimmed mean	2.171	7	15	.098

Table 3 shows the homogeneity test to check whether the post-test scores have equal variance across groups. Based on the table, we can see that the significance value (Sig.) is 0.037, which is less than 0.05. This result indicates that variances are not homogeneous according to this measure. However, the median with adjusted degree freedom and trimmed mean, the significance values are 0.899, 0.886, and 0.098, respectively. All of which are greater than 0.05. These results suggest that, overall, the data can be considered homogeneous, especially when using more robust measures like the median. Therefore, the variance among student scores is acceptably consistent for further statistical testing: normality test using Kolmogorov-Smirnov.

Table 4. One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		29
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	11.1755020
Most Extreme Differences	Absolute	.158
	Positive	.110
	Negative	-.158
Test Statistic		.158
Asymp. Sig. (2-tailed)		.061 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

The data in Table 4 shows that the normality test using the Kolmogorov-Smirnov method value is 0.061, which is greater than 0.05. This means that the data is normally distributed. It fulfils one key assumption for conducting a parametric test such as the paired sample t-test. The mean of the residuals is 0, and the standard deviation is 11.18. It indicates that the difference between predicted and actual values is spread relatively evenly around the mean. Overall, the data meet the requirement for normality, allowing for reliable statistical analysis.

Table 5. Paired Sample Test

Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	Lower	Upper			

Pair 1	Pre Test Post Test	-20.172	14.969	2.780	- 25.866	-14.478	-7.257	28	.000
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The results of Pre-test and Post-test were compared in paired sample t-test. It determines whether there is a significant difference after using *Kahoot!* as a learning tool. The mean difference is -20.172, indicating that the scores of post-tests are significantly higher than the scores of pre-tests. The t-value is -7,257 with degrees of freedom, and the significance value (sig. 2-tailed) is 0.000, which is less than 0.05. It means that the difference is statistically significant. It is concluded that *Kahoot!* had a positive and significant effect on students' reading comprehension. The confidence interval ranges from -25,866 to -14.478, further confirming the consistency of this improvement.

Discussion

The use of *Kahoot!* as a learning tool in this research shows interesting results. In the initial phase of the research, the students showed low result of reading comprehension of procedure text. The result of the pre-test was below the minimum criteria of students' completion of the learning material. 66.55 is considered as low due to the standard of minimum criteria of student's completion is 75. Some problems were revealed in this phase. The students result revealed that they had problems in answering some questions relating to generic structure (sequences of steps in procedure text) and language features in terms of connectives in procedure text. These problems were reported similarly with the result of research from Manurung (2021). His research reported that the students are struggling with identifying the steps on the procedures text. The connectives in procedure text challenge the students and lead them to fail in understanding the text.

The mastery of reading comprehension of procedure text covers the way the students understand the steps on how to do something. When the problems are unsolved, this condition possibly create unwillingness to complete the next reading process. The teaching and learning without using media can make the students less active in learning process (Anggrarini & Faturokhman, 2021). Thus, *Kahoot!* is offered as the tool to help the students gain their interest and motivation in learning particularly in reading.

The implementation of using *Kahoot!* as learning tool in this research gained positive response. During the learning process, the students enjoyed the activity and actively participated in the reading process. This condition is supported with the result of post-test. In the post-test, the score indicated that the students showed improvement. The average score of post-tests is 86.72 which means that it exceeds the minimum criteria score of student completion. However, this improvement does not mean the students' problem in understanding procedure text is completely solved. They were still struggle with some minor problems. But in the learning tool offered in this research succeed in gaining their interest and motivation to continue the reading process. Their motivation to compete with other is improves. This situation is represented during the activity where the students were enthusiast in answering the question correctly after seeing their rank position during the

lesson because the teacher shows the result from *Kahoot!* on the screen. Rofiarty et al (2017) support this situation that similarly to their finding. They reported that this situation is one of the advantages of using *Kahoot!* as learning tool, that *Kahoot!* can show the students result right after they answer the question so it triggered the students to compete. In the other hand, it also allowed the teacher to measure the students' learning outcomes.

Furthermore, *Kahoot!* gains a lot of benefits for both teacher and students. From its implementation, the teachers can create new learning atmosphere which is more effective and enjoyable for the students. This learning tool makes the teachers easier in teaching, explaining, and encouraging students to become more active during learning process. On other hands, *Kahoot!* enhances students' interest in learning since *Kahoot!* provide several features that make students be focused on the material taught by the teacher, the researchers determines that the students were enthusiastic about the utilization of the *Kahoot!* during the lesson.

When carrying out the treatment, researchers did not find any very serious problems, only experiencing slight network problems. There were some students who experienced a bit of struggle with the network even though in the end they were still able to follow the lesson. This kind of problem is also the same as research by Masyruhin (2022), there is a limitation in this research, namely the *Kahoot!* requires a strong internet network, so that if a student experiences network problems it can hinder the student's work in completing the test. One element that teachers need to pay attention to when implementing *Kahoot!* is to ensure the network is stable. This is also the same as stated by Mustikawati (2019), *Kahoot!* really requires an internet connection because it can only be played online and can be accessed at www.Kahoot!.com by connecting to an internet network. Because *Kahoot!* is online, students or learning activities need an internet network.

There is an effect of *Kahoot!* as a learning tool in teaching reading comprehension of procedure text it has been stated previously that for hypothesis testing a t-test is used with a significance level of $\alpha = 0.05$. The requirements that must be met for hypothesis testing are that the data obtained is normally distributed and has a homogeneous variance. Therefore, before testing the hypothesis, the normality test and homogeneity test were first carried out. The normalization test aims to see whether the data on learning interest does not deviate from the normal distribution or not while the homogeneity test aims to see whether the two groups come from a homogeneous population or not.

Based on the results of the One-Sample Kolmogorov-Smirnov analysis of pre-test data for class ten that have not used *Kahoot!* as learning tool, the value of $p = 0.061$ for $\alpha = 0.05$ is obtained, this indicates $p > \alpha$. This means that the score data of the grade X-A pre-test results that have not used *Kahoot!* as learning tool are normally distributed. While the results of data analysis for the grade X-A post-test that has used *Kahoot!* as learning tool obtained a value of $p = 0.200$. For $\alpha = 0.05$, this indicates $p > \alpha$. This means that the score data of the grade X-A post-test results that have used *Kahoot!* as learning tool are normally distributed, so the data of the two groups are normally distributed.

Based on the Test of Homogeneity of Variances table, obtained sig value = 0.199, variable post-test (Y) based on pre-test (X) thus it can be concluded that the post-test data is homogeneous because the significance value is greater than the α value ($0.199 > 0.05$). So, it can be concluded that the post-test data based on the pre-test has the same variance. Processing results with SPSS version 25.

The testing technique used is the Paired Sample t-Test with a significant level of $\alpha = 0.05$. Based on the results of data processing with SPSS version 25, the sig value (2-tailed) is $0.000 < 0.05$, so we can conclude that there is a significant difference between interest in learning procedure text in the pre-test and post-test data. So, in other words, *Kahoot!* as a learning tool has a significant effect on the learning interest of grade X-A high school students.

CONCLUSION

The findings of this study show that the implementation of *Kahoot!* as a learning tool had a significant positive effect on students' reading comprehension of procedural text at the senior high school level. In the initial phase, the students demonstrate low performance in the pre-test results. They show problems related to generic structures and language features: connectives in procedure text. The use of *Kahoot!* as a learning tool that integrates engaging features like scale, slide, true/false, and quiz formats showed that the students' marks improved. The result of the post-test and based on the statistical data analysis, showed that *Kahoot!* was confirmed effective as a learning tool in reading comprehension of procedural text for senior high school students.

Kahoot! as a learning tool helped the students to increase their motivation and engagement. It transforms their passiveness in learning into active engagement in the learning process during the implementation of *Kahoot!* The result of the study was confirmed by another relevant research, such as Rofiarti et al (2017). This finding reportedly similar, where gamification tool like *Kahoot!* can significantly enhance student participation and allow teacher to track learning outcomes more effectively. This significance participation can lead to succeed of learning process, where the students can get better experience in comprehending the text. Despite some remaining difficulties with vocabulary and specific reading elements, students' interest and willingness to engage in reading activities increased notably after the treatment.

On the other hand, the study also limited in some aspects such as technical issues like unstable internet connectivity that can affect to the learning process. This challenge in technology-based learning environment is commonly happened; the further implementation should be able to anticipate this challenge by providing better connection of internet. Despite the technical limitation, some suggestion for further research is offered based on this research such as the context of language skill: Listening or Speaking, different text genres, or participants from different level. Further research is also possible to compare the other gamification platforms to determine which tools is more effective in teaching English, particularly in teaching reading comprehension.

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