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The Effect of the Game-Based Learning Model on Student Engagement in History Learning

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Abstract: This study aimed to examine the effect of the game-based learning model on student engagement in history learning. A quasi-experimental design with a post-test-only model and a non-equivalent control-group design was used to verify the effect of the two variables. The sample consisted of 66 students in classes XI IPS 4 and XI IPS 1 at SMA Negeri 1 Gambiran, obtained through a homogeneity test. The data were collected using documentation and questionnaires. The data analysis technique used one-way ANOVA and LSD (Least Significant Difference) follow-up test with the help of SPSS 22.0 software for Windows. Data analysis results showed that there was an effect of applying the game-based learning model on student engagement in history classrooms. The results of the one-way ANOVA test showed that the probability value (sig.) in the experimental group was 0.040 > 0.05, with the LSD follow-up test LSD of 2.45455. Therefore, it is concluded that there was an effect of student engagement on the experimental group taught using the game-based learning model. This research recommends that the game-based learning model can be a reference for improving student engagement, active learning, and student-centered learning so that the learning process becomes fun, interactive, communicative, collaborative, and able to maximize the role of technology in education.

Abstrak: Penelitian ini bertujuan untuk menguji pengaruh penerapan model game-based learning terhadap student engagement pada mata pelajaran sejarah. Desain quasi experimental dengan model post-test-only , non-equivalent control-group design digunakan untuk memverifikasi pengaruh kedua variabel. Sampel terdiri dari 66 peserta didik pada kelas XI IPS 4 dan XI IPS 1 di SMA Negeri 1 Gambiran, yang diperoleh melalui uji homogenitas. Pengumpulan data menggunakan dokumentasi dan angket. Teknik analisis data menggunakan one-way anova dan uji lanjut LSD (Least Significant Difference) berbantuan software SPPS 22 for Windows. Hasil analisis data menunjukkan bahwa terdapat pengaruh penerapan model game-based learning terhadap student engagement pada mata pelajaran sejarah. Hasil uji one-way anova menunjukkan probabilitas value (sig.) pada kelompok eksperimen sebesar 0.040 > 0.05, dengan uji lanjut LSD sebesar 2,45455. Sehingga disimpulan bahwa terdapat pengaruh student engagement pada kelompok eksperimen yang dibelajarkan menggunakan model game-based learning. Rekomendasi penelitian ini adalah model game-based learning mampu menjadi acuan untuk meningkatkan student engagement, karena pembelajaran aktif, student-centered learning sehingga proses pembelajaran menjadi menyenangkan, interaktif, komunikatif, kolaboratif, dan mampu memaksimalkan peran teknologi dalam pembelajaran.

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INTRODUCTION

The 21st-century learning challenges are present along with technological developments. Some skills emerge due to information technology, leading to a change in the educational paradigm. The teaching-learning process aims to build students' capabilities so they are ready to solve complex real-life problems. Wagner (2010) ex-

plains that 21st-century skills are focused on several skills, namely: (1) critical thinking and problem-solving, (2) leadership and collaboration, (3) skilfulness and adaptability, (4) having ideas and an entrepreneurial spirit, (5) practical communication skills, (6) information identification and analysis, and (7) curiosity. 21st-century learning is also oriented toward style, critical thinking, and learning education, exploring knowledge with the help of technology (Ma'rifatullah, Umamah & Surya, 2021). Technology can provide practical learning experiences (Andriani, et al., 2021; King, et al., 2017; Kolikant, 2019). Moreover, using technology in learning helps students and improves learning interactions (Wang & Tahir, 2020). The 21st-century skills are a form of the vision of education regarding the adaptation to technology-rich environments and meeting the learning objectives for students (Van Laar et al., 2017; Kendra, 2020). Students learning objectives in the 21st century focus on literacy, digitalization, critical thinking, problem-solving, communication, and teamwork (Juntarangsu & Kusonwatthana, 2020). Industry 4.0 affects various fields, including education (Hussin, 2018). Educators have an essential role in character development during the era of Education 4.0 (Khoirunnisa, Umamah, & Sumardi, 2019), which places the position of using information technology and knowledge with the Internet of Things (Wang et al., 2016) to be technology-integrated learning that assists the character and needs of students.

Teachers have an essential role in teaching-learning activities in the era of Education 4.0. They are expected to have the qualities to meet and adapt to the needs of Generation Z students who are technologically literate, innovative, and creative (Priporas, Stylos, & Fotiadis, 2017, P. 376). Generation Z prefers accelerated learning to suit their needs (Moore, Jones, & Roberts, 2017). Regarding the learning of Generation Z, educators need to be creative in developing learning activities and implementing them through various strategies and techniques (Umamah, 2017). Generation Z's attachment to technology has become a part of life. Generation Z can also adapt to technology to innovate more quickly (Safitri & Umamah, 2019; Rufaidah, Umamah & Surya, 2021). This is in line with Umamah (2017), who finds that learning technology that helps Generation Z is 84% smartboard, 81% self-study, 81% digital textbooks, 81% material using websites, 80% online video, 79% web-based learning games, 77% in the form of textbooks, and 74% the use of social media.

History is a field of science that studies humans in the past. History learning is fun if it contains educational, inspirational, and recreational elements. Gen-Z's mastery of technology opens up opportunities to be more innovative (Umamah, 2017). Generation Z's quick ability to adapt to technology makes them more innovative (Umamah, 2017; Umamah et al., 2020). In line with the 21st-century challenges in education, students are prepared to master the 4C competencies, namely collaboration, creativity, critical thinking, and communication (Sani et al., 2018). As a platform for finding history learning sources, the internet has uncertain credibility (Kelly, 2019). On the other hand, using technology reduces critical thinking, academic skills, motivation, and student engagement (Yu & Canton, 2020). This indicates that the 4C skills are not appropriately honed in the learning process.

Another challenge has emerged with the implementation of online learning in Indonesian education. History learning does not only convey past events but also must be able to innovate (Romadi & Kurniawan, 2017). History is a social science that studies facts and human experience. Learning history is successful when students can understand the past as a consideration to live in the present and prepare for the future (Umamah, 2017). In this context, the purpose of learning history is to increase students' understanding of real-world problems and gain wisdom through studying historical events (Umamah et al., 2017). Historical facts in history learning cannot be learned directly. Instead, it is learned by concluding (Gorzycki, 2017).

According to Umamah in Asiyah (2022), the availability of facilities and teachers' performance in using technology as a learning medium are still not optimized. Suitable history lessons should improve student engagement in understanding the framework of the past as the basis for learning historical topics and connecting the present and the future (Subakti, 2010; Umamah, 2017). For teachers, using technology is necessary to support the implementation of technology-based innovative, and effective learning models (Dinc, 2019; Rufaidah, Umamah & Surya, 2021; Ningsih, Umamah & Na'im, 2021). Innovative learning can take place through new ideas from teachers to enhance a better learning experience (Rufaidah, Umamah, 2021). On the other hand, online learning reduces students' opportunities to engage in an active learning environment that creates opportunities for students (Martin & Bolliger, 2018). The integration of technology-based learning is the answer to the challenges of Education 4.0 for educators and students because student engagement is needed for students to learn optimal-

ly.

Student engagement is students' participation and tendency to want to be involved in the learning process both cognitively, affectively, and psychometrically which leads to a level of curiosity, enthusiasm, optimism, interest, and involvement in school activities (Barkley, 2010; Trowler, 2010; Hankins et al., 2017; Stewart-McKoy & Anderson-Chung, 2016). According to Newmann (1992), student engagement directs students to learn, gain knowledge, understand, master, and develop skills. Students engage in essential aspects to achieve learning objectives and acquire knowledge and skills (Appleton et al., 2006; Christenson, Reschly & Wylie, 2012; Fredricks, Blumenfeld & Paris, 2004). Hamilton-Hankins (2017) states that student engagement is essential to achieve curriculum goals, where students participate actively when learning. It brings students meet their self-actualization, behavioral, emotional, and cognitive needs and increases motivation (Christenson, Reschly & Wylie, 2012).

Student engagement has a complexity related to students' quality, which contains cognitive but also affective and psychomotor elements (Corno & Mandinach, 2004). Components of student engagement, namely (1) academics consisting of assignments, learning objectives, and completion of homework, (2) behavior consisting of attendance, participation in class, participation in extracurricular activities, (3) cognitive consisting of self-regulation, relationship, and communication with the school, meeting the objectives, and formulating strategies (4) psychological or emotional consisting of a sense of belonging, identification with the school, and school membership (Fredricks, Blumenfeld, & Paris, 2004; Appleton et al., 2006). Meanwhile, according to Fredricks, Blumenfeld, & Paris (2004), there are three components of student engagement, namely (1) cognitive engagement, (2) emotional engagement, and (3) behavioral engagement. Therefore, student engagement reflects students' cognitive, affective, and psychomotor levels in the learning process.

Previous research shows several effective models for student engagement, one of which is the game-based learning (GBL) model. GBL focuses on student engagement by fostering creativity and independence and increasing student interest and motivation (Cheng & Su, 2011, p. 669). The model can also encourage students to have main motives to win a game against their competitors, interest and pleasure (Chin & Zakaria, 2015; Asmaka, 2019; Safitri, 2022). According to Maiga in Safitri (2022), games can enhance the learning experience, improve the learning atmosphere, improve students' memory, and design teaching through facts, problem-solving, new insights, and curiosity (Schell, 2008).

Based on the explanation above and considering the characteristics of history subjects and the importance of learning history, it is necessary to design history lessons using the game-based learning model and investigate its effect on student engagement. This study aimed to examine the effect of the game-based learning model on student engagement in history learning. This is because game-based learning proposes some advantages, including encouraging motivation and interest, increasing student involvement in learning, creating fun learning, and honing communication skills, collaboration skills, creativity, and analytical skills. On the other hand, history subjects require student engagement to increase students' active and interactive learning. Student engagement requires cognitive, behavioral, and emotional involvement, all promoted in game-based learning. This study aimed to examine the effect of applying the game-based learning model on student engagement in history learning.

METHOD

This study employed a quantitative approach to test an objective theory by verifying the relationship between variables (Creswell, 2009). In addition, this study used a quasi-experimental design with a post-test-only non-equivalent control-group design. A post-test-only non-equivalent control-group design was chosen because the study was carried out in the short term, only measured the post-test, and used an existing/not randomly selected group (Gay, Mills, & Airasian, 2012). A quasi-experimental design was chosen since it did not allow the use of valid experimental, based on the impossibility of randomizing the research subjects (Cohen, Manion & Morrison, 2007; Gay, Mills, & Airasian, 2012: 305). The experimental group was not selected randomly, meaning that students as research subjects were not randomized but based on the condition of the previous class and were tested for homogeneity as a requirement for fulfilling the sample and testing assumptions. As for the threats to internal and external validity, such as differences in cognitive abilities, classroom environmental conditions, test results, research subjects, to the interaction of the treatments in the sample, they can be overcome through a homogeneity test to find out that samples from the population are taken from the same varia-

tion. The control and experimental classes were chosen based on the highest average daily test results, using valid and reliable instruments through instrument and hypothesis testing. The experimental group was not randomly selected but was an existing group. This means that the students as research subjects were not randomized but chosen based on the previous class condition and were tested for homogeneity as a requirement for fulfilling the sample and testing assumptions. The research design can be seen in table 1.

Table 1. Research Design

Group	Treatment	Post-test
Experiment	X_1	O_1
Control	X_2	0_2

Source: Wiersma & Jurs, 2009, P. 167

Description:
O1: Post a student engagement questionnaire
X1: Game-based learning model
O2: Post a student engagement questionnaire
X2: Discovery learning model

The research was conducted at SMA Negeri 1 Gambiran in the even semester of the 2021-2022 Academic Year, and three meetings were held in class XI IPS to teach 1 Basic Competence, such as KD (Basic Competence) 3.5, which was to analyze the nature of the Japanese occupation and the response of the Indonesian people. The Basic Competency (KD) was selected because it was implemented during the learning process in the even semester of the 2021/2022 academic year. Besides, the characteristics of student engagement require students' active involvement in the cognitive, affective, and psychomotor aspects of learning. Meanwhile, the XI IPS grade was chosen because the subject of Indonesian History was more specific in the IPS or Social Sciences major. In contrast, the XI grade level was chosen because the students learned about the basic competency in line with the research design. The research was conducted at SMAN 1 Gambiran (Jl. Sriwijaya No. 11, Wringinagung Village, Gambiran District, Banyuwangi Regency, East Java Province). The location was chosen based on the following considerations: (a) SMA Negeri 1 Gambiran agreed to be the research location; (b) There was an availability of online learning facilities or E-Learning, making it easier for researchers to implement game-based learning models; (c) The population homogeneity test showed that the data has a significance level of >0.05 (homogeneous), so research could be done using that subject; and (d) the game-based learning model tested has never been implemented at the school.

The independent variable in this study was the game-based learning model, a variable that had a role as an "X" influence variable. This variable is also called a predictor or manipulation variable. The dependent or influenced variable was student engagement. The dependent variable is also the result or effect variable (Creswell, 2009). The treatment was carried out in two classes, namely XI IPS 1 as an experimental class taught using the game-based learning model assisted by the Quizizz application. Meanwhile, class XI IPS 4, as the control class, was taught using a discovery learning model and was determined based on the average daily test scores for class XI IPS. The population in this study were students of class XI IPS at SMA Negeri 1 Gambiran during the even semester of the 2021-2022 Academic Year, consisting of 4 classes, namely IPS 1, IPS 2, IPS 3, and IPS 4, with a total number of 131 students. The experimental class was not determined randomly but through a homogeneity test by calculating the average score of the Indonesian History test. The results of the homogeneity test can be seen in table 2.

Table 2. Result of Homogeneity Test of the Daily Test of Class XI IPS

Variable	Levene's Statistic	N	Sig.	Desc.
Daily Test Score of Class XI IPS	0.462	131	0.709	Homogeneous

After the population was proven to be homogeneous, the research sample was selected (Cohen, Manion & Morrison, 2007). The research sample was selected from 2 classes with the first highest average: class XI IPS 1 as the experimental class with an average score of 80.54 and IPS 4 as the control class with the second highest average score of 80.48. There were 33 students in each of the classes.

Table 3. Mean of the Daily Test Score of Class XI IPS

Class	Mean
XI IPS 1	80.54
XI IPS 2	79,63
XI IPS 3	79.55
XI IPS 4	80.48

Documentation techniques were used to obtain data on the number of students and scores

from the population and sample. The questionnaire was used to measure the level of student engagement. The student engagement instrument in this study was adopted from Sinulingga (2018), whose validity has been tested from the results of the product moment formula with a significance level of 0.000 and the reliability from the results of the Cronbach's Alpha formula of 0.955 (very high), using the SPSS 22.0 software for Windows. The student engagement questionnaire used a Likert scale model with answer choices consisting of strongly disagree (SD), disagree (D), agree (A), and strongly agree (SA).

The following is a presentation of student engagement indicators and their descriptors. The first aspect is behavioral engagement, with behavioral indicators of (1) having effort and persistence; (2) having concentration and focus; (3) being willing to ask and contribute; (4) and following the norms. The second aspect is emotional engagement, with behavioral indicators of (1) positive reactions to teachers; (2) positive reactions to friends, and (3) positive reactions to academics. The third aspect is cognitive engagement, with behavioral indicators of (1) the desire to be involved in learning activities; (2) the desire to acquire knowledge; (3) the desire to seek information when facing difficulty with school assignments; and (4) coming up with strategies in doing schoolwork.

To ensure that the student engagement instrument was feasible to use, the researcher tested the validity and reliability of the instrument. On the other hand, there was a reduction in the questionnaire instrument items in this study, which was the 'positive reactions to academics' indicator from the emotional engagement aspect in the behavioral indicator. It would take a long time to obtain the data, so only 'positive reactions to teachers' and 'positive reactions to friends' indicators were used. The scale values for each answer can be seen in table 4.

Table 4. Student Engagement Likert Scale Value

Statement	Description	Value
SA	Strongly Agree	4
A	Agree	3
D	Disagree	2
SD	Strongly Disagree	1

Source: Sinulingga (2018)

Validity and reliability tests were carried out to test the student engagement instrument. The validity of each instrument item was tested using the relationship between the score of each item and the total score of all instruments. The instrument is declared valid if rhit > rtab, using the Product Moment correlation formula assisted by the SPSS 22.0 software for Windows.

Table 5. Criteria of Instrument Validity Result

Coefficient Interval	Relationship Level
0.00-0.199	Very low
0.20-0.399	Low
0.40-0.599	Moderate
0.60-0.799	Strong
0.80-1.000	Very strong

Source: Cohen, 1998

The reliability test was carried out to measure the accuracy and validity of the questionnaire (Cohen, Manion & Morrison, 2007), using Cronbach's Alpha assisted by the SPSS 22.0 software for Windows. The reliability test was held to make it easier for researchers or students. This study used Cronbach's Alpha assisted by the SPSS 22.0 software for Windows using the Reliability Coefficient Classification by Guilford (1956) as follows:

$0.80 < r_{11} \leq 1.00$: very strong reliability
$0.60 < r_{11} \leq 0.80$: strong reliability
$0.40 < r_{11} \leq 0.60$: moderate reliability
$0.20 < r_{11} \leq 0.40$: low reliability
$-1.00 < r_{11} \leq 0.20$: very low reliability

Hypothesis testing used a one-way ANOVA test, assisted by the SPSS 22.00 software for Windows. Before the one-way ANOVA test, normality and homogeneity tests were carried out. The normality test was performed on the student engagement questionnaire using the Kolmogrov-Smirnov assisted by the SPSS 22.00 software program for Windows. Decision-making used a significance level of 5%, with H0 being accepted if the sig. > 0.05, and vice versa. The homogeneity test was conducted on a student engagement questionnaire assisted by the SPSS 22.00 software for Windows software program. Decision-making used a significance level of 5%, with H0 being accepted if the sig. > 0.05, and vice versa. The hypothesis testing used the one-way ANOVA test and the LSD (Least Significant Difference) follow-up test with the help of the SPSS 22.0 software for Windows. It was done by processing the post-test results from the experimental class

using the game-based learning model and the control class using the discovery learning model. The decision-making of the one-way ANOVA test used the calculation of Fcount with Ftable at a significance level of 5%, sig. (2-tailed).

RESULTS AND DISCUSSION

Instrument Testing

Validity tests generally used instrument grids or instrument development matrices as tools. The validity of each instrument item was tested using the relationship between the score of each item and the total score of all instruments. Validity was confirmed if rhit > rtab and vice versa. The formula of validity used the Product Moment correlation with the help of SPSS 22.00 software for Windows. The instrument can be determined to be valid if it has high validity. According to the results of the validity test, all question items on the student engagement variable had a rcount > rtable with a sig (significance) of less than 5% (0.05). This shows that the question items were valid, and the subsequent analysis stage could be carried out.

According to the reliability test results, the items in the research instrument had very high reliability with Cronbach's Alpha of 0.911 in the category 0.80 < r11 ≤ 0.911 (very high reliability). This shows that the instrument had a good consistency.

Prerequisite Test

The data in this study were the quantitative data of students' engagement after learning history using the game-based learning model. The normality test used the Kolmogorov-Smirnov formula with the help of the SPSS 22.0 software for Windows. The test was performed on the post-test results of two classes, XI IPS 4 as the control class and XI IPS 1 as the experimental class. the post-questionnaire data for the control class was normally distributed with a significance of 0.066 > 0.05, which means that H0 was accepted. Meanwhile, the acquisition of post-questionnaire data was normally distributed with a significance of 0.200 > 0.05, which means that the H0 was accepted.

The homogeneity test used a homogeneity of variance test using Levene's Statistics assisted by the SPSS 22.0 software for Windows. Decision-making was based on a significance level of 5%, so H0 was accepted if the value was sig. > 0.05 (homogeneous sample data), and H0 was rejected if the sig. ≤ 0.05 (sample data was not homogeneous).

The two classes of the control group (XI IPS 4) and the experimental group (XI IPS 1) had a homogeneous variance. Post-questionnaire data showed a significance value of 0.793 > 0.05. Meanwhile, Levene's Statistic column showed a significance value of 0.069.

Hypothesis Testing

Hypothesis testing used a one-way ANOVA test assisted by the SPSS 22.0 software for Windows to process the post-questionnaire data results from the control group and the experimental group. Then, the Least Significant Difference (LSD) test was used as a follow-up test to find out whether there was a difference in the mean or significance in the data of the two groups (control and experiment groups). The results of the one-way ANOVA test (experimental class) can be seen in table 6.

Table 6. One-Way ANOVA Test Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	87.515	1	87.515	4.408	.040
Within Groups	1270.606	64	19.853		
Total	1358.121	65			

According to the one-way ANOVA test output table, the experimental class in the class above shows an F value of 4.408 and a probability value (sig.) of 0.040 <0.05. The Ftable value at df = 65 at a significance level of 5% (0.05) is 3.989. The Fcount value in the F table above is 4.408, Fcount > Ftable (4.408 > 3.989) with a significance of 0.040 <0.05, so there was an average difference between the post-questionnaire scores of the control class and the post-questionnaire scores of the experimental class. Therefore, H0 was rejected, and Ha was accepted. This means there was a significant influence on student engagement when students were taught using the game-based learning model. A follow-up test using LSD was carried out to determine whether there was a difference in the mean or significance in the data of the two groups (control and experiment). The results of the follow-up test using LSD can be seen in table 7.

According to the table of the results of the LSD follow-up test, the post-questionnaire data for the experimental group in the second table I and the post-question data for the control group in table J, there is a difference with a significance of 0.069 less than 0.05 and a mean difference (I-J) (average difference) of 2.45455. Based on the results of the two groups, the experimental group taught using the game-based learning model had a better student engagement effect than the control group taught using the discovery learning model.

Table 7. Results of the Follow-Up Test Using LSD

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Control Pre-test	Control Post-test	-9.57576*	1.18233	.013	-11.9152	-7.2363
	Experimental Pre-test	.12121	1.18233	.893	-2.2182	2.4607
	Experimental Post-test	-12.03030*	1.18233	.000	-14.3697	-9.6909
Experimental Pre-test	Control Pre-test	-.12121	1.18233	.893	-2.4607	2.2182
	Control Post-test	-9.69697*	1.18233	.000	-12.0364	-7.3575
	Experimental Post-test	-12.15152*	1.18233	.020	-14.4910	-9.8121

*. The mean difference was significant at the 0.05 level.

The results of the hypothesis testing using one -way ANOVA can be seen in the ANOVA table, which shows a significance value (sig.) of 0.040, less than 0.05. The Fcount value showed a result of 4.408, while the Ftable value at df=65 at a significance level of 5% (0.05) was 3.989. Thus, H0 was rejected, and Ha was accepted. This means there was a significant influence on student engagement when students were taught by the game-based learning models in the experimental group in class XI IPS 1.

Based on the LSD test results, the student engagement data in the control class can be seen in column I, which shows the control pre-test, and column J which shows the control post-test. They show a mean difference (I-J) of -9.57576 with a significance value of 0.013 <0.05. Meanwhile, data on student engagement in the control class can be seen from column I, which shows the pre-test control, and column J which shows the post-test control, showing a mean difference (I-J) of -12.15152* with a significance value of 0.020 < 0.05. It can be concluded that the game-based learning model could increase student engagement compared to the discovery learning model in the control class.

Discussion

Based on the results of the LSD follow-up test of the two groups, students taught using the game-based learning model in the experimental group of class XI IPS 1 had better engagement than those taught using the discovery learning model in the control group of class XI IPS 4.

In line with the previous research, this study found that the game-based learning model can help students grow their creativity and independence and increase their interest and motivation. The game-based learning model also provides a fun and interesting atmosphere and active learning and creates a focus during the learning process supported by technology in Quizizz. Several indicators were found in the statements with the highest average between the experimental and control classes. The average of 121.5 is owned by statement number 7 (I will arrive at school before the bell rings), number 17 (I respect all teachers in this school), and number 18 (all teachers must be respected). Statement number 29 (I will record all the lessons delivered by the teacher) has an average of 121. Statement number 20 (even though we students are different, we should respect each other) averages 119. Statement number 4 (when the teacher explains the lesson, I fully concentrate on understanding the material) averages 117.5. Statement number 2 (I look for information in other media if I struggle with schoolwork) averages 117. Last, statement number 8 (all the attributes on my school uniform) averages 116.5.

The implementation of the game requires students to log into the game (Quizziz) in groups, following the directions from the teacher. Students then play the game using their creativity, communication skills, analysis, and problem-solving in the game, and developing strategies to solve the game. At the end of the game, the highest score determined based on the student's efforts to solve the game will be displayed. While implementing the game-based learning (GBL) model, students fully concentrate and actively participate during history learning and can communicate and collaborate with friends and the teacher.

Accordingly, implementing the game-based learning model can increase student engagement according to the indicators: behavior, emotional, and cognitive engagement. The behavioral engagement aspect of behavioral indicators includes having effort and persistence, concentration and attention, willingness to ask questions and contribute,

and following the norms; they can be realized when students play the game and answer questions in the game. The emotional engagement aspect of behavioral indicators, namely positive reactions to teachers, friends, and academics, can be realized when students collaborate and work in groups to answer questions in the game. The cognitive engagement aspect of behavioral indicators, namely students' desire to involve themselves in the learning process, the desire to master the knowledge, the desire to seek information when encountering difficulties with schoolwork, and the strategies for doing schoolwork, can be realized when students play the game, then implement and reflect on their knowledge during the learning process.

The results of this study support previous research, which states that technological assistance in the Quizziz application can increase student engagement (Stewart-McKoy & Anderson-Chung, 2016). Quizizz, as a game-based learning platform, attracts and promotes students' activeness during learning activities and makes them concentrate well on the topic of discussion. Moreover, the game-based learning model is a learning model that can present a more challenging, fun, and engaging atmosphere in the history learning process. It also allows students to be involved, increases students' activity, creates creativity and innovation, and increases critical thinking (Fauzan, 2019; Novayani, 2019; Vinidiansyah, Nurhaniah & Andi, 2021). Games present learning experiences by utilizing engagement or involvement as a form of participation and a feeling of "being there" (Newmann, 1992). The game-based learning model classifies learning syntax into three stages or steps; they are (1) the input stage, (2) the process stage, and (3) the output stage. The following is an explanation regarding the stages of the game-based learning model according to Ching-Hsue & Chung-Ho (2012). Stage 1 Input: the teacher maps the teaching content into game content and directs students to enter the game; stage 2, Process: the teacher describes the characteristics of the game, attractiveness, and attention, as well as students' curiosity; the teacher links the learning objectives to new skills and other things; the teacher directs students to the game; last, the teacher provides feedback, stage 3, Output: the teacher conducts evaluations to assess results, the teacher monitors student performance and makes improvements for future learning.

Active student engagement at school is crucial to improving student learning achievement and success (Wang & Holcombe, 2010). Engagement means actively concentrating their attention on the environment (Csikszentmihalyi in Hart, Stewart & Jimerson, 2011). Engagement involves psychology in learning to understand and master knowledge and skills (Newmann, 1992). In addition, student engagement is the participation and tendency of students to want to be involved in the learning process in cognitive, affective, and psychomotor domains, which leads to curiosity, enthusiasm, optimism, interest, and involvement in school activities (Barkley, 2010; Trowler, 2010; Hankins, 2017; Stewart-McKoy & Anderson-Chung, 2016; Hankins, 2017). Thus, student engagement leads to the level of students' curiosity, enthusiasm, optimism, and interest shown through the activity and active participation in the learning process.

The game-based learning model emphasizes active learning by involving teachers and students in a game. The game-based learning model aims to improve teaching, learning, assessment, and evaluation (Vlachopulos & Makri, 2017). The collaboration between context, content, instruction, game characteristics, and interaction between the teacher and students influences the learning goals achievement, one of which is related to student engagement (Vlachopulos & Makri, 2017). Feedback from games improves student engagement in the learning environment (Glover, 2013 in Göksün & Gürsoy, 2019). Previous studies have shown that the game-based learning (GBL) model can increase student engagement. First, Stewart-McKoy & Anderson-Chung (2016) find that games can increase student engagement in online learning. Second, Sou & Ju (2018) discuss the Quizizz platform as an online assessment tool in the game-based learning model. The purpose of this research was to evaluate the effectiveness related to students' attractiveness to the application of Quizizz as a medium in the game-based learning model. The game-based learning model presents interactivity, curiosity, motivation, and player expectations. The relationship is seen with student engagement indicators on behavioral engagement and cognitive engagement. Students agree that the Quizizz game can encourage competition. Third, Amornchewin (2018) discusses SQL (structured query language) skills in implementing the game-based learning model using Quizizz. This study aimed to compare the results between tests conducted before and after treatment and investigate student satisfaction in SQL (structured query language) skills. The results showed that the students' post-test scores were higher than the pre-test. Therefore, it shows an increase in student engagement and learning achievement through this application. Fourth, Göksün &

Gürsoy (2019) research results discuss gamification activities through the 7E model with the implementation of Kahoot and Quizizz. This study aims to find a reflection of activities based on academic achievement and student engagement in the learning process. Features, instructions, and game score levels in the learning process using the game-based learning model encourage students to receive stimulation and desire to receive feedback from the game they play. The results of the study show a positive impact of implementing the 7E model on academic achievement and student engagement. It can be concluded that the game-based learning model is a learning model that can present a more challenging and fun history learning atmosphere, as well as get students involved, increase students' activity, create creativity and innovation, and increase critical thinking (Fauzan, 2019; Novayani, 2019; Vinidiansyah, Nurhaniah & Andi, 2021).

The game-based learning model emphasizes developing analytical and critical thinking skills, increasing creativity and interactivity, problem-solving, encouraging students' procedural skills, developing social skills, increasing attention, and growing concentration. This is because the game-based learning model has some advantages, namely (1) expanding students' knowledge in increasing motivation and critical thinking, (2) providing a fun and interactive learning atmosphere so that students are facilitated as the focus of the learning, (3) allowing students to carry out learning strategies during the learning process to achieve learning objectives, as well as being able to carry out effective learning independently. It can be seen that there is a relationship between the game-based learning model and the student engagement indicators, namely behavioral engagement, emotional engagement, and cognitive engagement.

CONCLUSION

There is a significant influence on student engagement when using the game-based learning model. The results of the one-way ANOVA test obtained a Fcount value of 4.408, more significant than the Ftable (3.989), and a probability value (sig.) of 0.040 <0.05. Therefore, there is a significant influence on student engagement when students are taught using the game-based learning model. Furthermore, the LSD test showed a difference in the average value of the mean difference (I-J) of 2.45455 with a significance value of 0.069 > 0.05.

The benefits of using the game-based learning model in history subjects are as follows, 1) for students, the game-based learning model can be used as an alternative model in active and fun learning to facilitate the mastery of learning material; 2) for teachers, it is recommended to apply the game-based learning model in history classrooms to increase motivation, critical thinking, and provide a fun and interactive learning atmosphere through the use of technology, 3) for schools, it can be used to improve the quality of education and the learning process; as well as to increase student engagement, and 4) for other researchers, the application of the game-based learning model is expected to assist the teaching and learning process, both online and offline. This research recommends that the game-based learning model can be a reference for increasing student engagement, active learning, and student-centered learning so that the learning process becomes fun, interactive, communicative, collaborative, and able to maximize the use of learning technology.

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