



THE IMPACT OF SNOWBRAWL GIMKIT MEDIA ON STUDENTS' INTEREST AND LEARNING OUTCOMES IN MATHEMATICS

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ABSTRACT

This study aims to investigate the impact of Snowbrawl Gimkit as an interactive learning media on students' interest and academic performance in mathematics. The research responds to the widespread issue of low engagement and achievement in mathematics, especially in Indonesia, where students' PISA scores remain below average. This study used a quantitative approach with a pre-experimental design of the One Group Pre-test Post-test Design type. The research subjects were 30 eighth-grade students randomly selected from SMP Negeri 1 Socah. The research instruments consisted of a learning interest questionnaire and a mathematics achievement test that had been tested for validity and reliability. Data analysis techniques included the Shapiro-Wilk test to assess normality, the Levene test for homogeneity, and the paired t-test for hypothesis evaluation. The results of the study indicate a significant increase in students' interest and learning outcomes in mathematics after the implementation of the Snowbrawl Gimkit media. Statistical analysis yielded a significance value of 0.000 (< 0.05), indicating a significant effect. The average interest in learning increased from 62.2 to 78.47, while the average learning outcomes rose from 38.00 to 56.67. The results of this study indicate that the use of game-based learning media such as Snowbrawl Gimkit is effective in increasing student motivation and learning achievement. This media is able to address the challenge of low student interest in mathematics by making lessons fun and interactive. Therefore, this study suggests that educators integrate gamification platforms into their teaching as a useful innovation.

Keywords: Snowbrawl Gimkit, interest in learning, learning outcomes

INTRODUCTION

Mathematics education in schools today is still far from the expected standards. Education in Indonesia is still quite low compared to other developing countries (Hamidah et al., 2021). Indonesian students' mathematical literacy is below the international average according to PISA results, where students only have the ability to solve problems that are below level two (Jannah & Hayati, 2024). This is shown by the results of the PISA test in 2015, where Indonesia scored 386 in mathematics out of an average score of 487 for each country, while in 2018, Indonesia's mathematics score declined to 379 from an average of 489 (Anderha & Maskar, 2021). The low PISA scores indicate several important

problems in mathematics education in Indonesia. These include students who are not interested in learning, teaching approaches that still focus on lectures, and a lack of contextual and enjoyable approaches. In addition, psychological factors such as anxiety about mathematics, or math anxiety, low self-confidence, and a lack of support in a positive learning environment all contribute to the problem. A key element that affects both the educational experience and results is the level of interest students have in their learning. Students should be made to feel comfortable, calm, and fun while learning (Fatimah et al., 2022).

Interest can be defined as a high tendency and desire for something or a high tendency and enthusiasm for something (Ndraha et al., 2022). Therefore, teachers must be open to innovating with learning tools that can help the learning process (Pamungkas et al., 2023). Every teacher, as a facilitator, should pay attention to the use of media in teaching (Nurfadhillah et al., 2021). Teachers may not provide enough guidance and attention to learners, which can result in them not getting the interest or encouragement to try harder to learn (Novianti et al., 2020). Not only do students find math difficult, but they also often consider it unimportant or useless in life (Simanjuntak, 2021).

As a solution to this problem, an innovative learning approach is needed that can attract students' interest and actively engage them. One potential medium is Snowbrawl Gimkit, a game-based learning platform that combines interactive quizzes with competitive game elements. The Snowbrawl mode allows students to answer questions while competing in a virtual snowball fight simulation, making the learning evaluation process more enjoyable and motivating. However, the use of this medium remains relatively rare, particularly in mathematics education. This is due to various factors, such as insufficient awareness among teachers, limited training in the use of digital media, and hesitation in integrating technology into the learning process. In the educational journey at school, motivating students to learn is an essential factor that needs to be taken into account (Yogi Fernando et al., 2024). Therefore, teachers must be able to provide fun learning to students so that they are interested in the lesson (Setiawan et al., 2022). Every teacher, as a facilitator, should pay attention to the use of media in teaching (Nurfadhillah et al., 2021).

The novelty of this study lies in its focus on the application of the Snowbrawl mode, which has rarely been studied in the context of junior high school mathematics learning. By assessing improvements in both the cognitive and affective aspects of students, this study is expected to make a real contribution to the development of innovative learning models and provide practical recommendations for educators in creating more interesting, interactive, and meaningful mathematics learning. If students experience the development and improvement of expected behavior during the formulation of learning objectives, learning outcomes are considered achieved (Yandi et al., 2023). The quality and quantity of educational results and procedures can be enhanced by the use of technology in the classroom (Budianti et al., 2023).

However, there is limited empirical research assessing the effect of snowbrawl gimkit in mathematics learning. Therefore, this study aims to investigate the effect of Snowbrawl Gimkit learning media on student interest and learning outcomes.

METHODS

The type of research used is experimental research using quantitative data and the learning model uses the TGT (Teams Games Tournament) model. The use of the TGT learning model in combination with the Snowbrawl Gimkit media is a highly effective innovative approach to increasing student interest and learning outcomes. With strategies that involve healthy competition, teamwork, and interactive and enjoyable learning media, students not only understand the material better, but also enjoy the learning process.

The research design used a Pre-Experimental Design type One Group Pre-test Post-test Design.

Table 1. Research Design

O1	X	O2
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Description:

O1 = Pretest (before treatment)

O2 = Posttest (after being treated)

X = Treatment with snowbrawl gimkit learning media

Participants And Sampling

The subjects in this research were eighth-grade learners from SMP Negeri 1 Socah, which includes three classes and a total of 82 pupils. The participants in this research were selected through a method known as simple random sampling. The group selected comprised 30 students from class VIIIA.

Instruments

The research instruments used in this research are questionnaire sheets, and test sheets. The learning interest questionnaire is an instrument designed to evaluate students' enthusiasm for education. Questionnaire consists of 2, namely a questionnaire before being given treatment with snowbrawl gimkit learning media and a questionnaire after being given treatment using snowbrawl gimkit learning media. Learning outcome tests are questions or tasks made after the learning process to measure students' understanding and abilities. The assessments conducted in this research included an initial test and a final test.

All instruments in this study have been tested for validity and reliability. The following are the results of the validity and reliability tests.

Table 2. validity test of learning interest questionnaire

Statement	Computed-r	Table-r	P(Sig.)	Description
S1	0,879	0,361	0,000	Valid
S2	0,883	0,361	0,000	Valid
S3	0,848	0,361	0,000	Valid
S4	0,893	0,361	0,000	Valid
S5	0,867	0,361	0,000	Valid
S6	0,928	0,361	0,000	Valid
S7	0,866	0,361	0,000	Valid
S8	0,948	0,361	0,000	Valid
S9	0,907	0,361	0,000	Valid
S10	0,941	0,361	0,000	Valid
S11	0,878	0,361	0,000	Valid
S12	0,868	0,361	0,000	Valid
S13	0,922	0,361	0,000	Valid
S14	0,913	0,361	0,000	Valid
S15	0,836	0,361	0,000	Valid
S16	0,938	0,361	0,000	Valid
S17	0,919	0,361	0,000	Valid
S18	0,899	0,361	0,000	Valid
S19	0,931	0,361	0,000	Valid
S20	0,919	0,361	0,000	Valid

All 20 statements in the learning interest questionnaire were declared valid, as each had a calculated r value > table r and a significance value (p) < 0.05. Thus, this questionnaire is suitable for use as a research instrument to measure students' learning interest.

Table 3. Reliability test of learning interest questionnaire

Reliability Statistics	
Cronbach's	
Alpha	N of Items
.990	20

With a Cronbach's Alpha value of 0.990, it can be concluded that the learning interest questionnaire instrument has very high reliability and is very suitable for use as a measuring tool in this study.

Table 4. validity test on learning outcome tests

question	Computed-r	Table-r	P(Sig.)	Description
Q1	0,453	0,361	0,012	Valid
Q2	0,383	0,361	0,037	Valid
Q3	0,377	0,361	0,040	Valid
Q4	0,448	0,361	0,013	Valid

Q5	0,576	0,361	0,001	Valid
Q6	0,623	0,361	0,000	Valid
Q7	0,535	0,361	0,002	Valid
Q8	0,594	0,361	0,001	Valid
Q9	0,574	0,361	0,001	Valid
Q10	0,418	0,361	0,021	Valid

All 10 test questions were declared valid because they had a calculated r value greater than the table r value (calculated $r > 0.361$) and a significance value ($p < 0.05$). Thus, this instrument is suitable for measuring student learning outcomes.

Table 5. Reliability test on learning outcome tests

Reliability Statistics	
Cronbach's	
Alpha	N of Items
.662	10

With a Cronbach's Alpha value of 0.662, it can be concluded that the learning outcome tests instrument is reliable and can be used to measure students' learning interest consistently.

Procedure

Before conducting this research, the researcher first obtained a research permit from the principal of SMP Negeri 1 Socah. Once the permit was issued and approved, the researcher was able to conduct the research at the school.

Data Analysis Techniques

The method of analyzing data employs the Shapiro-Wilk test to assess normality, the Levene test for homogeneity, and the paired t-test for hypothesis evaluation.

FINDINGS

Questionnaire Results and learning outcomes test

Table 6. Questionnaire descriptive statistics

Descriptives		Statistic	Std. Error
Before	Mean	62.20	2.178
	Median	58.50	
	Variance	142.372	
	Std. Deviation	11.932	
	Minimum	42	
	Maximum	90	
	Range	48	
After	Mean	78.47	1.959

Median	78.50
Variance	115.154
Std. Deviation	10.731
Minimum	61
Maximum	95
Range	34

Based on this data, there is a rise in the average level of students' enthusiasm for mathematics when comparing the time before and after implementing snowbrawl gimkit as a learning tool. With an average value before treatment of 62,2 to 78,47 after treatment.

Table 7. Descriptive statistics of learning outcomes

Descriptives		Statistic	Std. Error
Pretest	Mean	38.00	3.085
	Median	40.00	
	Variance	285.517	
	Std. Deviation	16.897	
	Minimum	10	
	Maximum	70	
	Range	60	
Posttest	Mean	56.67	2.809
	Median	60.00	
	Variance	236.782	
	Std. Deviation	15.388	
	Minimum	30	
	Maximum	90	
	Range	60	

Based on this data, There is a rise in the typical performance levels of students in mathematics after implementing Snowbrawl Gimkit as a learning tool compared to before its use. With an initial average score of 38, it increased to 56.67 after treatment.

1) normality test

Table 8. normality test results of interest in learning math questionnaire

Tests of Normality			
Shapiro-Wilk			
	Statistic	df	Sig.
Before	.951	30	.184
After	.942	30	.102

According to the table provided, the significance for the normality test conducted with the Shapiro-Wilk method is $0,184 > 0,05$ prior to treatment, and $0,102 > 0,05$ following treatment. This indicates that the data has a normal distribution.

Table 9. normality test of students' math learning outcomes

Tests of Normality			
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	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest	.937	30	.077
Posttest	.951	30	.179

According to the table presented above, the p-value for the normality assessment utilizing the Shapiro-Wilk method is $0,077 > 0,05$ on the pretest and $0,179 > 0,05$ on the posttest. This indicates that the data has a normal distribution.

2) homogeneity test

Table 10. Homogeneity test results of interest in learning math questionnaire

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Interest in learning mathematics	Based on Mean	.457	1	58	.502
	Based on Median	.266	1	58	.608
	Based on Median and with adjusted df	.266	1	53.562	.608
	Based on trimmed mean	.434	1	58	.513

According to the table presented above, the significance value for the homogeneity test using Levene is $0,502 > 0,05$. This indicates that homogeneity is met.

Table 11. homogeneity test of students' math learning outcomes

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Learning Outcomes	Based on Mean	.550	1	58	.461
	Based on Median	.644	1	58	.425
	Based on Median and with adjusted df	.644	1	57.743	.425
	Based on trimmed mean	.538	1	58	.466

According to the table presented above, the significance value for the homogeneity test using Levene on math learning outcomes is $0,461 > 0,05$. This indicates that homogeneity is met

3) hypothesis testing

The hypothesis test used a paired t-test, which compares the difference between two measurements made on the same sample. Hypothesis:

H_0 : There is no effect of using Snowbrawl Gimkit learning media on increasing students' interest and learning outcomes in mathematics.

H_1 : There is an effect of using Snowbrawl Gimkit learning media on increasing students' interest and learning outcomes in mathematics.

Table 12. Hypothesis test results of questionnaire interest in learning mathematics

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
								Lower	Upper
Pair 1	Before - After	-16.267	6.411	1.170	-18.661	-13.873	-13.898	29	.000

Table 13. hypothesis testing on students' math learning outcomes

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Posttest	-18.667	7.761	1.417	-21.565	-15.769	-13.174	29	.000

According to the table provided, it is recognized that the sig value of the questionnaire of interest in learning and learning outcomes is both $0,000 < 0,05$. Thus, the null hypothesis H_0 is dismissed while the alternative hypothesis H_1 is acknowledged.

DISCUSSION

According to the findings from the hypothesis examination, it can be concluded that students taught with Snowbrawl Gimkit media are different from students taught with conventional learning models. The result of the independent sample t-test shows a sig value < 0.05 . Snowbrawl Gimkit learning media affects students' interest and learning outcomes in mathematics. This finding is in line with (Christin Nur Aini et al., 2024), who found that gimkit learning media can increase students' interest in learning mathematics. This is supported by an increase in the results of the analysis of learning interest from each indicator, namely the feeling of happiness at the initial condition of 63.54% increased to 87.5%, showing attention at the initial condition of 56.66% increased to 80.2%, initial interest in learning from 66.66% to 86.45%, and initial involvement in learning from 54.58% to 85.41%. (Yuanta et al., 2025) stated that Gimkit-based interactive quiz zes achieved 89% validity, facilitating creative and collaborative learning. These findings confirm that Snowbrawl is capable of supporting an effective collaborative learning environment. One component that is very important for student learning success is interest in learning, which comes from the student's interest. (Irnawati et al., 2024) shows that gamification media such as Gimkit increases student interest in lessons by 13% and improves their concentration and activity in mathematics lessons. Factors from outside the interest in learning, namely the teacher's approach to teaching, also play a role (Yunitasari & Hanifah, 2020). (zahro & Darmawan,



2024) According to their research, gamified learning environments such as Gimkit are beneficial, but the game features shouldn't overpower the learning goals. Maintaining involvement requires striking a balance between enjoyment and purpose.

The materials presented on the Google Site are designed to be concise, brief, and easy to understand, and are accompanied by relevant images, text, and videos. Meanwhile, Gimkit presents evaluations in the form of online games with interesting modes, such as Snowbrawl, which can make students more interested (Puspasari, 2025). Snowbrawl Gimkit uses a game mode that combines a quiz component with a winter-themed game. Players in this mode can compete against one another by answering quiz questions and engaging in snowball fights. For each attack, there is a question that serves as a quiz, and players must answer it correctly to earn additional snowballs. One of the new learning media offered is gimkit, a website that supports learning games and has the ability to increase students' interest in learning (Weran et al., 2021). (Levia et al., 2024) indicates that students participate more actively in the learning process when using Gimkit, with participation increasing from 40% to 90% and average quiz scores increasing from 70 to 85.

Because this learning media is game-based, students can be happier and engage better with the lesson. The gimkit improves cognitive and metacognitive abilities, including comprehension, application, and analysis. Gamification can increase motivation, student engagement, and learning outcomes through interactivity and rapid feedback (Prameswari et al., 2025). Available Gimkit items and game elements are constantly updated, making them feel new and relevant and making learning more fun (Agustina et al., 2024). (Martdana, 2025) shows that gamification media such as Gimkit increases student interest in lessons by 13% and improves their concentration and activity in mathematics lessons. By using gamified media, gimkit helps students tackle difficulties in understanding the subject matter in a fun way while increasing their focus. Thus, learning outcomes improve (Septyana et al., 2024).

CONCLUSION AND SUGGESTION

According to the results shown earlier, the significance value (Sig.) is $0.000 < 0.05$, so it can be concluded that there is an effect of snowbrawl gimkit learning media on increasing interest and learning outcomes in mathematics, Thus H_0 is rejected and H_1 is accepted.

Snowbrawl Gimkit can be used in math lessons can be upgraded to pro mode so that it can be used by individual students.

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