El Midad : Jurnal Jurusan PGMI Vol. 16 No. 1 Juni 2024
p-ISSN 2087-8389 e-ISSN 2656-4289 p. 91-108
website : http://journal.uinmataram.ac.id/index.php/elmidad email : elmidadpgmi@uinmataram.ac.id

COMPARISON BETWEEN *GASING* AND CONVENTIONAL METHODS ON MATHEMATICS LEARNING OUTCOMES IN ELEMENTARY SCHOOL

Ani Latifatunnisa[1], Aziz Kurniawan[2]
[12]UIN SAIZU Purwokerto, Islamic Elementary School Teacher Education,
[1]anilatifatunnisa28@gmail.com [2]azizkurniawan@uinsaizu.ac.id

ABSTRACT

The method of this study was a quantitative approach applying a field study with a quasi-experimental method. This research aimed to describe the comparison of the student's achievement between *gasing* and conventional methods in mathematics learning outcomes at class IV of MI Ma'arif NU Banteran. The population was class IV which totalled 78 students. The sample used in this research was class IV A with 27 students as the experimental class and class IV B with 26 students as the control class. The data collection technique used is a test technique, then data analysis includes validity test, normality test, homogeneity test, Wilcoxon test, and N-Gain test. Based on the results of data analysis, it can be seen from the Wilcoxon test, it was found that differences in learning outcomes for students in the experimental class (*gasing)* and control class (conventional) obtained positive Ranks with a value of N 50, meaning that the entire sample experienced an increase in learning outcomes from pretest to posttest. *Mean Ranks* is 25,50 the *Asymp. Sig.* (2-*taled*) of 0,000. The *Asymp. The sig* value is less than 0.05, so it can be concluded that the hypothesis is accepted.
Keywords: Mathematics, *Gasing*, Conventional, elementary school

INTRODUCTION

Education has an important role in supporting the development of a nation. The nation will develop more if its education system is of high quality. Quality education is born from good systems, planning, materials, and management and is implemented by quality teachers. Such teachers are teachers who have a high level of quality and provide good education and learning to students in order to fulfill their obligations and responsibilities inside and outside school. (Hamdi, 2019). On the other hand, learning activities can take place effectively and are encouraged by cooperation between teachers and students so that learning objectives are achieved.

Mathematics is an important subject, especially in meeting daily needs. Mathematics teaches students to think systematically, logically, critically, analytically, and creatively and to be able to work together (Kholil & Zulfiani, 2020). They think that mathematics is a confusing, complicated, difficult subject, and there are too many formulas that need to be memorized and this makes them not like it (Sumber: Observasi, 16 September 2022).

Nabillah & Abadi (2019) stated that one of the students' low understanding of mathematical concepts is the learning methods used by educators, for example, educators apply traditional learning by positioning students as listeners. According to

Kurniawan (2020), teachers play an important role in the learning process, but when the methods used are conventional, teachers only become the center of students' attention (teacher center). This is in line with the criticism given by Paulo Freire regarding the term banking-style education (Education Banking). Paulo believes that the learning practices that occur are like teachers saving knowledge and students acting as a place to save money. This style of educational practice will result in knowledge being merely inherited, but losing its educational function (Amin *et al.*, 2022).

Based on the results of preliminary observations carried out by researchers in class IV MI Ma'arif NU Banteran, information was obtained by interview with the teacher. The result showed that the daily test scores in mathematics for class IV students were still relatively low and the majority had not yet reached the *KKM* or the minimum passing criteria. The low student learning outcomes are caused by various factors, including the lack of student interest in mathematics subjects (Source: Observation, 16 September 2022). Apart from that, the results of observations made by Umam et al., (2023); Prastika, (2020) stated that students' interest in learning influences and correlates with student learning outcomes. Students tend to pay less attention to the explanations given by the teacher and are less enthusiastic about asking questions when experiencing difficulties in the learning process. However, when the teacher gave questions to students, everyone actively asked questions as if the material the teacher had presented was in vain. This shows that fourth-grade students' learning is still relatively low.

Based on the results of observations and existing data, it can be concluded that student learning outcomes are influenced by various factors, including students' perceptions and interest in mathematics subjects, as well as the lack of variety in learning methods used by educators. Educators tend to use traditional methods more often in the learning process, causing students to lack enthusiasm for learning mathematics. To overcome the obstacles that occur, teachers need to apply appropriate, innovative, and effective learning strategies and methods that can motivate and guide students to think critically and actively in learning mathematics. The method that researchers offer is the *gasing* method (easy and fun), namely a method that emphasizes reasoning is designed with concrete concepts, and encourages students to

understand and master learning material that can calculate quickly without tools with a logical and exploratory approach. .

The above statement was in line with research conducted by (Diah & Siregar, 2023) which shows the results that there are significant differences in mathematics learning outcomes between class III elementary schools before and after using the TGT learning model modified by the *gassing* method. Based on the results of the analysis and discussion, it was proven that the students' mathematics learning outcomes before being given treatment were 56.84, then after being given treatment, it increased to 80.00. Then the results of the Wilcoxon test showed that the significance value (sig) was smaller than α, namely 0.000 <0.05. This research shows that there is an influence of the TGT learning model modified by the *Gasing* method on students' mathematics learning outcomes. Apart from that, this research was also strengthened by research conducted by Damanik with the title "Effectiveness of the *Gasing* Mathematical Method on the Interest and Learning Outcomes of Round Bangun Flat Students in Class VIII of SMP Negeri 1 Harian Bogor Regency".

This research aimed to determine the effectiveness of using the *gasing* on the interest and learning outcomes of class VIII students in mathematics learning about the circumference of flat shapes. The results of the research show that in hypothesis testing the difference in student interest in learning using the independent sample t-test obtained 6,324 > 2,015 ($t_{count} > t_{table}$) with a significance of 0.000 < 0.05 and in the effectiveness hypothesis test using the right side t test the pooled variance formula obtained 6,322 > 2,015 ($t_{count} > t_{table}$). Meanwhile, the research results in testing the hypothesis of differences in student learning outcomes using the independent sample t-test obtained 2,557 > 2,015 ($t_{count} > t_{table}$) with a significance of 0.014 < 0.05 and the effectiveness hypothesis test using the right side t-test of the pooled variance formula obtained 2,556 > 2,015 ($t_{count} > t_{table}$). Based on the results of data analysis, it can be concluded that the spinning top mathematics method is effective on students' interest and learning outcomes regarding the circumference of flat shapes.

Compared to conventional methods, the *gasing* method tends to be more effective and motivates students. In the conventional method, learning is carried out traditionally and is centered on the educator as the provider of learning. In the *gassing* method, learning is carried out in a more balanced manner because it is not only

centered on the teacher but the students are active in the learning process. Based on these results, researchers are interested in resetting "Comparison of *Gasing* and Conventional Methods on Class IV Mathematics Learning Outcomes".

LITERATURE REVIEW

Mathematics

As a basic science, mathematics is presented to all levels of education from primary education to higher education. The word Mathematics comes from the Greek word "*mathematica*" which means "*relating to learning*" which comes from the word "*mathema*" which means knowledge. In Dutch, Mathematics is known as "*wiskunde*" which is an exact science related to deductive reasoning, meaning that truth is obtained from something logical from the previous concept of truth. Mathematics cannot accept any generalizations, it must be based on real evidence (Nabila, 2021).

According to the "Kamus Besar Bahasa Indonesia (KBBI)", mathematics is the science of numbers, relationships between numbers, and operational procedures used in solving problems regarding numbers (Na & Hipertensiva, 2018). Meanwhile, according to Beth and Piaget, mathematics is knowledge related to abstract structures and interrelated structures so that they are well organized with deductive thinking patterns (Swaratifani & Budiharti, 2022). Then another opinion was also expressed by James and James (Putri & Adirakasiwi, 2021) that mathematics is a concept, quantity, and arrangement that is thought about logically.

According to several definitions that have been mentioned, it can be said that mathematics is a structured science that contains abstract elements and which contains numbers and logically arranged concepts.

Learning Theory

Piaget Theory

According to Piaget, learning is a process of children's adaptation to their environment involving assimilation and accommodation. Assimilation is the process of combining stimuli into cognitive structures. Meanwhile, accommodation is a change in understanding as a result of a new stimulus. If the incoming stimulus is received, it will be assimilated and then accommodated and an adaptation process occurs, then the

cognitive structure will increase. According to him, cognitive development depends on the way each child interacts with his environment. Based on the level of cognition, Piaget classified individuals into four stages, namely: sensorimotor stage (0-2 years), pre-operational stage (2-7 years), concrete operational stage (7-12 years), formal operational stage (12 years to above) (Ahdhianto, 2018).

Bruner Theory

Learning mathematics is studying concepts and structures and looking for relationships between these concepts and structures in learning mathematics. To improve the quality of learning, schools are expected to provide adequate technology and media. Bruner believes that in the learning process, children should be allowed to manipulate objects and props that are specifically designed to understand mathematical concepts. According to him, in this theory, students are considered as creators and thinkers using existing information. Through visual aids, children will form regular patterns which are then connected to their inherent intuition. According to him, children form mathematical concepts in three stages, namely: enactive stage, iconic stage, symbolic stage (Hatip & Setiawan, 2021).

Thorndinke Theory

This learning theory is also called connectionism theory. Thorndike believes that learning is an interaction between stimulus and response. Stimulus and response are efforts to activate students completely and comprehensively in terms of thoughts, feelings, and actions. A stimulus is something that can stimulate learning activities such as thoughts or feelings or other things that can be applied through the senses. Meanwhile, a response is a reaction that occurs which can be in the form of thoughts, feelings, or movements. There are three laws in connectionist theory, namely the law of readiness, the law of implementation, and the law of consequences.

Learning is the effort made by teachers to create conditions for students to learn. Teachers should be able to utilize the surrounding environment as a place for interesting problems for students to explore with various ideas. On the other hand, teachers must also be able to think logically, critically, and systematically, and be able to solve problems in everyday life. (Amsari & Midjiran, 2018).

Gagne Theory

Learning is all physical and spiritual activities carried out by a person that cause changes in behavior. According to Gagne, learning is a change in behavior that occurs in a person where the person's situation is different from before (Tarihoran et al., 2021). This theory states that there are two objects obtained by students, namely direct and indirect objects. Direct objects are facts, skills, concepts, and principles. Meanwhile, indirect objects include the ability to investigate and solve problems, learn independently, have a positive attitude towards mathematics, and know the proper attitude in learning (Ahdhianto, 2018).

According to Gagne (Ahdhianto, 2018), There are eight types of learning, namely: gesture learning, stimulus-response learning, movement sequences, verbal sequences, differentiation learning, concept formation, principle formation, and problem solving. Among the eight types of learning, problem-solving learning is the type of learning with the highest degree. In problem-solving there are four steps that need to be achieved, namely: understanding the problem, making a plan, implementing the plan, and checking again.

The Conventional Method

The conventional method is the lecture method where the delivery of learning is carried out by educators to students orally. According to Mulyasa, a lecture is a teacher's narrative to students to present learning material. Conventional learning can be interpreted as learning in a classical context that is accustomed to being carried out and is centered on the teacher. Learning is done through listening, question and answer, and reading. The use of the lecture method is no longer adequate if applied to current conditions (Siti Mega Farihatun & Usdarti, 2019).

The advantage of the lecture method is that it does not require large costs and is easy to do. The lecture method can present broad subject matter and can highlight the main material being studied. Through the lecture method, the teacher can control the class situation because the class is entirely the responsibility of the teacher who is teaching.

The weakness of the lecture method is that the material that students can master is limited to the knowledge mastered by the teacher and the process of absorbing the material is less than optimal because learning is focused only in one

direction. Moreover, it also does not stimulate students to read the material (Wirabumi, 2020).

The *Gasing* Method

The *gasping* mathematical method is a method that is "easy, fun and enjoyable" in solving problems to achieve a result (Kusuma *et al*., 2019). This method was developed by Prof. Yohanes Surya, Ph. D. The *gasing* mathematics method helps students understand learning concepts. Prof. Yohanes Surya revealed that considering mathematics as something scary is not true and such perceptions must be abolished because mathematics is easy and fun. When one knows how to solve it, mathematics is fun.

Prof. Yohanes Surya stated that the gassing method is simple in mathematics that is dominated by a logical approach with concrete concept designs starting from the easiest lessons to the most difficult and calculations are done by rote (Gunawan *et al*., 2021).

Mathematics learning using the *gassing* method is carried out through five stages, namely:

1. Simple Dialogue
2. Imagine and fantasize
3. Present examples of relevant questions
4. Present material in depth
5. Provide a variety of questions

The advantage of the gaming method is that it can be learned from all age levels and the time used is more effective and efficient. Another advantage is that this method makes mathematics easy, fun, and enjoyable without having to memorize formulas (Kusuma *et al*., 2019).

The weakness of the top mathematics method is that when the test is in the form of essay questions. If students do not include calculations with formulas, even though the answer is correct, it will still be declared wrong, and in general, the top learning strategy cannot be applied to solve mathematics problems in higher education, because students are generally required to be able to derive various formulas (Kusuma *et al*., 2019).

RESEARCH METHOD

The type of research used in this research is quasi-experimental research. This design applies treatment carefully and reveals a causal relationship between the experimental group and the control group (Sugiyono, 2016). This research was carried out at MI Ma'arif NU Banteran, Sumbang Banyumas Regency. The population of this study was all class IV of MI Ma'arif NU Banteran for the 2022/2023 academic year, totaling 78 people and divided into 3 classes.

This research instrument consists of learning tools such as Learning Implementation Plans (RPP) and tests. To collect data in the field, researchers used a test technique with 25 questions. In this study, researchers conducted pretests and posttests on students in sample classes, both in experimental and control classes. The pretest is given before treatment is given, while the posttest is given after treatment is given.

Before the instrument is used, it will first be validated by an expert validator in the field. The purpose of validation is so that the measuring tools in the research instrument have the right accuracy to answer the problem. Test content validity with the help of 2 experts in the field of mathematics. The validity test results were 71.12%, this shows that the instrument used is valid with a high level of validity. The following are the results of the content validity test obtained in Table 1 according to experts

Table 1. *Expert* validity test calculation results

No	Constituent	Expert 1	Expert 2
1	Material	75 %	75 %
2	Construction	75 %	75 %
3	Language	77.75%	79 %
	Amount	75.91 %	76.3 %
	Average	76.12%	

Then the researchers tested the normality of class IV mathematics learning outcomes with the Shapiro-Wilk test using SPSS 21 software. The decision-making criteria in this test are if the significance level is more than 0.05 then the data is normally distributed and the significance level is less than 0.05 meaning the data is not distributed normally. The results of the normality test calculations can be seen in Table 2

Table 2. *Test of Normality*

	Kolmogorov-Smirnov[a]			*Shapiro-Wilk*		
	Statistic	Df	Sig.	*Statistic*	df	Sig.
Class A	.229	25	.002	.933	25	.100
Class B	.130	25	.200*	.935	25	.115

From Table 2, the significance value for class A (experimental) is 0.100 and 0.115 for class B (control), because both values are greater than 0.05 so the data was normally distributed. After carrying out the normality test, the researcher continued data analysis using the homogeneity test. Based on SPSS 21 statistics, a significance result of 0.01 was obtained because this value was smaller than 0.05 so the data was declared not homogeneous. The homogeneity test results can be seen in Table 3.

Table 3. *Test of Homogeneity*

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std.Error Difference	95% Confidence Interval for Difference	
								Lower	Upper
Equal Variances assumed	7.121	.010	3.170	48	.003	13.920	4.391	5.091	22.749
Equal Variances not assumed			3.170	40.158	.003	13.920	4.391	5.046	22.749

RESULT AND DISCUSSION

The data obtained in this research consisted of pretest data and posttest data. Based on data on student learning outcomes, a recapitulation is obtained as follows in Table 4.

Table 4**.** Recapitulation of Pre-Test and Post-Test Scores

Value	*Pre-test*		*Post-Test*	
	Eksperiment (A)	Control (B)	Eksperiment (A)	Control (B)
Total	190	191	1564	1216
Minimum	5	5	40	20
Maximum	10	15	84	80
Average	7,60	7,64	62,56	48,64

From Table 4. above, it can be seen that students' initial knowledge of the circumference and area of flat shapes is still very low. This can be seen from the pretest results in the experimental and control classes. After the learning process was implemented, students' mastery of learning concepts increased in both control and experimental classes. Based on the pretest and posttest scores in the control class which uses conventional learning methods and the experimental class which uses *gasing* learning methods.

Based on the data in Table 3, the data obtained by the researcher has a non-homogeneous conclusion, so the requirements in the parametric test analysis are not fulfilled. Therefore, the analysis used by researchers is a non-parametric test using the Wilcoxon test. The following non-parametric Wilcoxon test results are listed in Table 4.

Table 4. Uji *Wilcoxon Signed Ranks*

		N	*Mean Rank*	*Sum of Rank*
Post Test Eksperimen- Pre Test Eksperimen	*Negative Ranks*	*0* [a]	*0.00*	*0.00*
	Positive Ranks	*25* [b]	*13.00*	*325.00*
	Ties	*0*		
	Total	*25*		
Post Test Kontrol – Pre Test	*Negative Ranks*	*0* [d]	*0.00*	*0.00*
	Positive Ranks	*25* [e]	*13.00*	*325.00*

Kontrol	*Ties*	*0 f*
	Total	*25*

a. Post Test Eksperimen < Pre Test Eksperimen

b. Post Test Eksperimen > Pre Test Eksperimen

c. Post Test Eksperimen = Pre Test Eksperimen

d. Post Test Kontrol < Pre Test Kontrol

e. Post Test Kontrol > Pre Test Kontrol

f. Post Test Kontrol = Pre Test Kontrol

Based on Table 4, it is explained that the Wilcoxon test data shows changes in values before and after treatment. Positive Ranks with an N value of 25 means that the entire sample experienced a change in the pre-test to post-test scores. These data show that there was no decrease in results in either the experimental class or the control class. This means that the entire sample experienced an increase in scores from the pretest to the posttest. The mean Ranks or the average increase is 13.00 and Sum of the Ranks or the number of positive ratings is 325.00 and the Ties value is 0, meaning there was no similarity in the pretest and post-test scores.

The basis for decision-making:

a) If the significance value is <0.05, then H_0 is accepted

b) If the significance value is > 0.05, then H_0 is rejected

The following was the decision-making table from the Wilcoxon test using *IBM Statistics SPSS 21*.

Table 5. Decision-making

Test Statistics

	Post Test-Eksperimen - Pre Test-Eksperimen	Post Test-Kontrol - Pre Test-Kontrol
Z	-4.375[b]	-4.373[b]
Asymp. Sig. (2-tailed)	.000	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks

Based on the "Test Statistics" output in Table 5, it was known that *Asyimp. Sig (2-taled)* has a value of 0.000. Because 0.000 was smaller than 0.05 (0.000 < 0.05), it can be concluded that the "hypothesis" means that in both groups of data, it shows that

there is An influence of the method used on class IV mathematics learning outcomes. Furthermore, to determine the level of change in fourth-grade mathematics learning outcomes, an N-Gain Test analysis was carried out. The results of the N-Gain test analysis are presented in Table 6. This table shows that both the experimental class and the control class are in the medium category. However, the level of effectiveness on mathematics learning outcomes is much higher in the experimental class (class A) at 59% compared to the average N-Gain value for the control class (class B) at 44.41%. If we are guided by the standard interpretation of *N-Gain* effectiveness with categories (%) as used by Hake R.R, (Madjid, 2019) as explained in before chapter, then the *N-Gain* test results for the experimental class are in the quite effective category, while the control class was in the less effective category.

Table 6. *N-Gain* Calculation Output Results

	Class			Statistic	Std.Error
N-Gains Percent	Eksperimen	Mean		59.5519	2.45902
		95% Confidence Interval for Mean	Lower Bound	54.4767	
			Upper Bound	64.6271	
		5 % Trimmed Mean		59.5395	
		Median		62.1053	
		Variance		151.170	
		Std. Deviation		12.29510	
		Minimum		36.84	
		Maximum		82.61	
		Range		45.77	
		Interquartile Rank		20.35	
		Skewness		-.236	.464
		Kurtosis		-.647	.902
	Kontrol	Mean		44.4140	4.03115
		95% Confidence Interval for Mean	Lower Bound	36.0941	
			Upper Bound	52.7339	
		5 % Trimmed Mean		44.1397	
		Median		41.0526	
		Variance		406.255	
		Std. Deviation		20.15576	
		Minimum		15.56	
		Maximum		78.26	
		Range		62.71	
		Interquartile Rank		38.95	

Skewness	.305	.464
Kurtosis	-1.098	.902

This research is by Piaget's, Thorndike's, and Bruner's learning theory. According to Piaget's learning theory, learning is a process of adapting children to their environment so that their cognitive structure will increase. According to Piaget, elementary school children generally aged 7-12 years are at the concrete operational stage. Therefore, learning should be carried out concretely through demonstration, practice, and abstract stages (Nainggolan & Daeli, 2021).

Concrete operations are a turning point in children's cognitive abilities to think logically. At this stage, children begin to have the ability to think systematically about concrete objects (objects that can be captured by the five human senses). This is by the *gassing* method that the researchers applied. Starting with a simple dialogue, the teacher asks about material that has been studied previously, then is provoked by questions related to the material to be studied and is encouraged with songs or chants about mathematics.

According to Piaget's theory, at this age children can imagine, have high fantasies and daydreams, and think logically but only then can they apply it to physical objects. Because of that, in the next stage, the teacher helps students to imagine various events in everyday life that are related to the material to be studied. For example, the researchers used. Researchers use the example of matches made into rectangles of various sizes to make students think and know that squares are included in rectangular shapes. After that, students discover how to calculate the perimeter of a square and can write the formula according to their findings. Likewise with the geoboard media that researchers used. This stage is also under the learning theory expressed by Brunner which considers humans as subjects who process, think, and create information. The various stages carried out by students to find the formula are under those expressed by Brunner, that is processing knowledge and thinking about it, and then creating formula information.

In the *gassing* method, the use of formulas was minimized and learning was made simpler with a logical approach. Starting from the easiest to the most difficult, the learning atmosphere and fun interactions make students enjoy the lesson more, so

students don't feel bored. These results are in line with research conducted by (Diah & Siregar, 2023) which shows the results that there is a significant difference in mathematics learning outcomes between class III elementary schools before and after using the TGT learning model modified by the *Gasing* method. Based on the results of the analysis and discussion, it was proven that the students' mathematics learning outcomes before being given treatment were 56.84, then after being given treatment, it increased to 80.00. Then the results of the Wilcoxon test showed that the significance value (sig) was smaller than α, that is 0.000<0.05. So it can be concluded that this research shows that there is an influence of the TGT learning model modified by the *Gasing* method on students' mathematics learning outcomes.

The use of the *gasing* method is done to make children feel happy studying mathematics without the fear of having too many formulas to memorize. So that learning is easy, fun, and enjoyable. Several studies on the application of the *gassing* method have been proven to improve mathematical understanding abilities and mathematics learning outcomes. These results are in line with research conducted by (Kusuma *et al*., 2019) which shows that there is a significant difference in mathematics learning outcomes between class III students who received the *Gasing* method treatment, namely 15.71 which is included in the very high category, while class III who did not receive the *Gasing* method treatment is 13.46 which is included in the very high category. in the high category. There is a significant difference in mathematics learning outcomes between the group of students who were taught using the *Gasing* Mathematics learning method and the group of students who were not taught using the *Gasing* Mathematics learning method.

On the other hand, this research is also strengthened by research conducted (Damanik, 2018) with the title "The Effectiveness of the *Gasing* Mathematical Method on the Interest and Learning Outcomes of Roving and Flat Building Students in Class VIII of SMP Negeri 1 Harian, Bogor Regency". This research aims to determine the effectiveness of using the *gassing* method on the interest and learning outcomes of class VIII students in mathematics learning about the circumference of flat shapes. The results of the research show that in hypothesis testing the difference in student interest in learning using the independent sample t-test obtained 6,324 > 2,015 ($t_{count} > t_{table}$) with a significance of 0.000 < 0.05 and in the effectiveness hypothesis test using the

right side t test the pooled variance formula obtained 6,322 > 2,015 ($t_{count} > t_{table}$). Meanwhile, the research results in testing the hypothesis of differences in student learning outcomes using the independent sample t-test obtained 2,557 > 2,015 ($t_{count} >$ table) with a significance of 0.014 < 0.05 and the effectiveness hypothesis test using the right side t-test of the pooled variance formula obtained 2,556 > 2,015 ($t_{count} > t_{table}$). Based on the results of data analysis, it can be concluded that the *gassing* mathematics method is effective on students' interest and learning outcomes regarding the circumference of flat shapes.

CONCLUSION

Based on data processing and analysis results and discussion, the following conclusions can be obtained:

1. Descriptively, the comparison of mathematics learning outcomes for classes that use the top method is better than the mathematics learning outcomes for classes that use the lecture method. It can be seen that the average score for the experimental class, namely the class that uses the spinning top method, is higher, namely 59.6% compared to the class that uses the lecture method, namely 44.4%.
2. It was concluded that this research found significant differences in learning outcomes between classes that applied the top and lecture mathematics learning methods. The learning outcomes of students who use the spinning top method are superior to the learning outcomes of students who use the lecture method. Based on data analysis using the Wilcoxon test, Positive Ranks were obtained with an N value of 25 in each class, meaning that all samples experienced an increase in their scores from pretest to posttest with Mean Ranks or an average increase of 25.50 and an Asymp value was obtained. Sig. (2-taled) which is less than 0.05, namely 0.000.

REFERENCES

Ahdhianto, E. (2018). *Matematika untuk Sekolah Dasar*. Media Akademi.

Amin, K., Ikramatoun, S., & Darwin. (2022). *Relevansi Pemikiran Paulo Freire terhadap Pendidikan di Aceh The Relevance of Paulo Freire ' s Thoughts to Education in Aceh*. *19*(1), 13–21.

Amsari, D., & Midjiran. (2018). Implikasi Teori Belajar E.Thorndike (Behavioristik) Dalam Pembelajaran Matematika. *Jurnal Basicedu*, *2*(2), 52–60.

https://doi.org/10.31004/basicedu.v2i2.49

Arifin, Z. (2017). *Evaluasi Pembelajaran*. PT Remaja Rosdakarya.

Damanik, R. H. (2018). Keefektifan Metode Matematika Gasing Terhadap Minat dan Hasil Belajar Keliling Bangun Datar Siswa Kelas Viii SMP Negeri 1 Harian Kabupaten Samosir. *Informasi Dan Teknologi Ilmiah (INTI)*, *5*(2), 69–74.

Diah, R., & Siregar, N. (2023). Pengaruh Model Pembelajaran TGT (Teams Games Tournament) Modifikasi Metode Gasing Terhadap Hasil Belajar Matematika Siswa. *Jurnaledukasia.Org*, *4*(2), 1–10.

Gunawan, I., Sukmana, N., Rahmawati, D., & Pramiarsih, E. E. (2021). *Pelatihan Mengajar Bilangan Pecahan dengan Metode Matemaika Gasing Bagi Guru Pendidikan Dasar di Sekolah Muammadiyah Secabang Cilawu Garut*. *3*(2), 99–107.

Hamdi, M. M. (2019). Konsep Pembelajaran Guru Yang Bermutu. *INTIZAM: Jurnal Manajemen Pendidikan Islam*, *3*(1), 66–76.

Hatip, A., & Setiawan, W. (2021). Bruner's Cognitive Theory in Mathematics Learning. *PHI: Jurnal Pendidikan Matematika*, *5*(2), 87.

Ismail, F. (2018). *Statistika Untuk Penelitian Pendidikan dan Ilmu-Ilmu Sosial* (M. Astuti (ed.)). Kencana.

Khalil, M., & Zulfiani, S. (2020). Faktor-Faktor Kesulitan Belajar Matematika Siswa Madrasah Ibtidaiyah Da'watul Falah Kecamatan Tegaldlimo Kabupaten Banyuwangi. *EDUCARE: Journal of Primary Education*, *1*(2), 151–168. https://doi.org/10.35719/educare.v1i2.14

Kurniawan, A. (2020). Peningkatan Pemahaman Peserta Didik Kelas VII Melalui Metode Inside Outside Circle dengan Bantuan Media Video Animasi. *Jurnal Pendidikan*, *8*(2), 178–184. https://doi.org/10.36232/pendidikan.v8i2.394

Kusuma, M. W. K., Jampel, I. N., & Bayu, G. W. (2019). Pengaruh Metode Pembelajaran Matematika Gasing Terhadap Hasil Belajar Matematika. *Jurnal Pedagogi Dan Pembelajaran*, *1*(1), 37. https://doi.org/10.23887/jp2.v1i1.19330

Madjid, R. A. (2019). Pengaruh Penggunaan Media Audio Si Juara Terhadap Hasil Belajar IPA Pada Siswa Tunanetra Di Mtslb/a Yaketunis Yogyakarta. *E-Jurnal Skripsi Program Studi Teknologi Pendidikan*, *8*(4), 305–314.

Na, D. E. C., & Hipertensiva, C. (2018). *Kamus Besar Bahasa Indonesia*. Pusat Bahasa Departemen Pendidikan Nasional.

Nabila, N. (2021). Konsep Pembelajaran Matematika SD Berdasarkan Teori Kognitif Jean Piaget. *JKPD (Jurnal Kajian Pendidikan Dasar)*, *6*(1), 69–79.

Nabillah, T., & Abadi, A. P. (2019). Faktor Penyebab Rendahnya Hasil Belajar Siswa. *Prosiding Seminar Nasional Matematika Dan Pendidikan Matematika Sesiomadika*, *2*(1), 659–663.

Nainggolan, A. M., & Daeli, A. (2021). Analisis Teori Perkembangan Kognitif Jean Piaget dan Implikasinya bagi Pembelajaran. *Journal of Psychology "Humanlight," 2*(1), 31–47. https://doi.org/10.51667/jph.v2i1.554

Prastika, Y. D. (2020). Pengaruh Minat Belajar Siswa Terhadap Hasil Belajar Matematika Siswa Smk Yadika Bandar Lampung. *Jurnal Ilmiah Matematika Realistik*, *1*(2), 17–22. https://doi.org/10.33365/ji-mr.v1i2.519

Rahmi, R., & Sri, B. N. (2021). *Statistika Penelitian Pendidikan : Analisis Perhitungan Matematis dan Aplikasi SPSS*. Kencana.

Siti Mega Farihatun, R., & Usdarti. (2019). Keefektifan Pembelajaran Project Based Learning (PjBL) Terhadap Peningkatan Kreativitas Dan Hasil Belajar. *Economic Education Analysis Journal*, *8*(2), 635–651. https://doi.org/10.15294/eeaj.v8i2.31499

Siyoto, S., & Sodik, S. (2015). *Dasar Metodologi Penelitian*. Literasi Mediia Publishing.

Sugiyono. (2016). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D* (23rd ed.). Alfabeta.

Swaratifani, Y., & Budiharti, B. (2022). Analisis Faktor Kesulitan Belajar Matematika Materi Operasi Hitung Pecahan Kelas V SD Mutiara Persada. *Lucerna : Jurnal Riset Pendidikan Dan Pembelajaran*, *1*(1), 14–19. https://doi.org/10.56393/lucerna.v1i1.120

Tarihoran, D., Nau Ritonga, M., & Lubis, R. (2021). Teori Belajar Robert Mills Gagne Dan Penerapan Dalam Pembelajaran Matematika. *JURNAL MathEdu (Mathematic Education Journal)*, *4*(3), 32–38. https://doi.org/10.37081/mathedu.v4i3.2242

Umam, K., Quthny, A. Y. A., & Badruttamam, C. A. (2023). Phubbing: Suatu Degredasi Minat Belajar Siswa sebagai Dampak Media Sosial di Mi Dlauul Islam. *Journal on Education*, *5*(3), 8717–8724. https://doi.org/10.31004/joe.v5i3.1666

Usmadi, U. (2020). Pengujian Persyaratan Analisis (Uji Homogenitas Dan Uji Normalitas). *Inovasi Pendidikan*, *7*(1), 50–62. https://doi.org/10.31869/ip.v7i1.2281

Wirabumi, R. (2020). Metode Pembelajaran Ceramah. *Annual Conference on Islamic Education and Thought*, *I*(I), 105–113.