The Impact of True or False Type Active Learning Strategy with AI and Motivation on Student Learning Activities at MTsN Medan

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Abstract

This research aims to increase students' participation in learning. This research was conducted from May 2024 to June 2024 at MTsN 1 Medan. This research used quantitative methods by applying an experimental approach. This approach allows to test the effect of independent variables on dependent variables. Students of class VII[4] and VII5 MTsN 1 Medan as the test subjects. The test was conducted on 36 people of VII[4] and 36 people of VII[5] MTsN 1 Medan. The research that has been done shows that there is a difference after the true or false type active learning strategy accompanied by artificial intelligence (AI) and learning motivation to students. Where previously the pre test and post test had been carried out through the data normality test, homogeneity test, and t test. The data normality test shows the Kolmogrov Smirnov sig value> 0.05 which is considered normal. The homogeneity test shows the sig value Based on Mean 0.06 > 0.05 which is homogeneous. While from the t test students produce data by showing the output value of pair 1 obtained both significant at <.001 and that value is less than 0.005 pretest of the Experimental class and post test of the experimental class, also in the Control class pretest and postest of the control class produces the same value

Keywords: AI, Social Studies, Learning Motivation, Strategy

Abstrak

Penelitian ini bertujuan untuk meningkatkan partisipasi siswa dalam pembelajaran. Penelitian ini dilaksanakan pada bulan Mei 2024 sampai dengan Juni 2024 di MTsN 1 Medan. Penelitian ini menggunakan metode kuantitatif dengan menggunakan pendekatan eksperimen. Pendekatan ini memungkinkan untuk menguji pengaruh variabel independen terhadap variabel dependen. Siswa kelas VII4 dan VII5 MTsN 1 Medan sebagai subjek uji coba. Uji coba dilakukan terhadap 36 orang siswa kelas VII4 dan 36 orang siswa kelas VII5 MTsN 1 Medan. Penelitian yang telah dilakukan menunjukkan bahwa terdapat perbedaan setelah adanya strategi pembelajaran aktif tipe true or false disertai kecerdasan buatan (AI) dan motivasi belajar terhadap siswa. Dimana sebelumnya telah dilakukan pre test dan post test melalui uji normalitas data, uji homogenitas, dan uji t. Uji normalitas data menunjukkan nilai sig Kolmogrov Smirnov > 0,05 yang dianggap normal. Uji homogenitas menunjukkan nilai sig Based on Mean 0,06 > 0,05 yaitu homogen. Sedangkan dari uji t siswa menghasilkan data dengan menunjukkan nilai output paired t test diperoleh nilai keduanya signifikan pada <.001 dan nilai tersebut lebih kecil dari 0.005 pretest kelas Eksperimen dan post test kelas eksperimen, begitu juga pada kelas Kontrol pretest dan postest kelas kontrol menghasilkan nilai yang sama

Kata kunci: AI, Ilmu Pengetahuan Sosial, Motivasi Belajar, Strategi

INTRODUCTION

The learning process involves all the steps students take to achieve their goals in a learning environment. Without it, learning will not run efficiently. Not just listening to the teacher or recording important information, but also actively engaging in various activities to improve the quality of learning. This activity includes both physical and mental actions. For students, activity during learning reflects their interest in learning. During the learning process there are various student activities and behaviors, such as asking questions to the teacher or classmates, expressing opinions, doing assignments, and collaborating with friends. Positive attitudes and responsibility for tasks are also part of student activities. All of these can be assessed from both the process and outcome aspects of learning. In the context of learning, active student engagement is the key to building productive interactions between teachers and students, as well as between students and themselves. When the classroom is filled with this engagement, the learning atmosphere becomes fresh and supportive, allowing each student to optimize his or her potential. The activities that result from this student engagement not only create new knowledge and skills, but also contribute to improved academic achievement.

In the implementation of active learning there are principles that exist in the Qur'an, such as the principle of active participation. In this principle, students are required to actively participate in learning. This is as written in the word of Allah QS. Al-Maidah verse 2:

وَتَعَاوَنُوْا عَلَى الْبِرِّ وَالتَّقْوٰىۖ وَلَا تَعَاوَنُوْا عَلَى الْاِثْمِ وَالْعُدْوَانِۖ وَاتَّقُوا اللّٰهَۗ اِنَّ اللّٰهَ شَدِيْدُ الْعِقَابِ.

Meaning: And help each other in (doing) righteousness and piety, and do not help each other in sin and transgression. And fear Allah, surely Allah is very severe in His punishment (QS. Al-Maidah verse 2).

The verse explains about helping in all matters. Likewise in the active learning process, the active learning process is a process that really requires helping behavior, active learning requires cooperation between several learning components. Therefore, students are required to be active and cooperate with their friends. Active learning will not succeed if there is no cooperation between teachers and students, and between students and other students (Remiswal, 2013).

When associated with the word of God, it can be seen that in the application of *active learning* strategy *type true or false,* the principle of active participation is required. In this principle, students are required to actively participate in learning, both teachers and students take a very important active role. The teacher is the one who plans, makes a list of *True or False* statements related to learning material and designs learning scenarios that will be implemented in class. While students are the ones who use abilities such as thinking, analyzing, searching, finding, or providing information, asking, answering, doing learning activities alone or in groups, and respecting the opinions of fellow friends when the learning process takes place.

Effective learning activities are not limited to writing activities; students are expected to ask questions, answer questions, participate in discussions, and complete assignments on time. But in reality, some learning activities may become less effective due to the lack of efficiency of classroom management. To maximize the learning process, students' active involvement is key, which can be achieved through the use of learning strategies that encourage students' mental, and physical participation. Teachers need to choose appropriate and interesting teaching methods for students so that they can be enthusiastic about learning. In managing the learning process in the classroom, the teacher's ability is very dependent on the success of learning effectively and involving students directly. Initial research at MTsN 1 Medan revealed that the level of student involvement in social studies learning was still low, as reflected in the data in the table below:

Tabel 1. Learning Activities of Students in Class VII MTsN 1 Medan

No.	Class	Indicator of Student Learning Activity											
		1		2		3		4		5		6	
		Fs	Ps	Fs	Ps	Fs	Ps	Fs	Ps	Fs	Ps	Fs	Ps
1	VII-1	26	83,87%	29	93,54%	7	22,58%	5	16,12%	31	100%	3	9,67%
2	VII-2	22	73,33%	25	83,33%	3	10%	2	6,66%	28	93,33%	4	13,33%
3	VII-3	29	90,625	26	81,255	5	15,62%	3	9,37%	30	93,75%	4	12,5%
4	VII-4	27	84,37%	24	75%	3	9,37%	2	6,25%	25	78,12%	2	6,25%
5	VII-5	28	87,5%	30	93,75%	4	12,5%	2	6,25%	28	87,5%	2	6,25%
6	VII-6	26	83.87%	22	70,96%	2	6,45%	2	6,45%	25	80.64 %	1	3,22%
7	VII-7	25	83,33%	20	66,66%	3	10%	2	6,66%	25	83,33%	2	6,66%
8	VII-8	26	81,25%	26	81,25%	2	9,37%	1	3,12%	23	71,87%	2	9,37%
9	VII-9	27	93,10%	23	79,31%	4	13,79%	2	6,89%	24	82,75%	2	6,89%
10	VII-10	25	83,33%	22	73,33%	4	13,33%	2	6,66%	26	86,66%	1	3,33%

Source: Observation data processing 2024

Info.:

1. Students pay attention to the teacher's explanation   (Fs: Frequency)
2. Students take notes on the teacher's explanation   (Ps: Percentage)
3. Students ask questions
4. Students answer questions
5. Students actively work on the worksheet/book
6. Students actively help their friends solve problems

Based on observations made on March 25, 2024 at MTsN 1 Medan regarding student learning, especially social studies, which still shows a limited level, it is known that in class VII-1 the level of student participation in learning activities reaches its peak in the indicator of students actively working on worksheets/books, with a percentage of 100% and a frequency of 31 students. The same thing also happened in class VII-2 and VII-3, where the top indicator was students who actively worked on the worksheet/book with a percentage of 93.33% and 93.75% respectively. Whereas in class VII-4 the highest indicator was students who showed the teacher's explanation with a percentage of 84.37%. In class VII-5, the highest indicator was students who took notes on the teacher's explanation with a percentage of 93.75%. In class VII-6 and VII-7, the highest indicator is students who pay attention to the teacher's explanation with a percentage of 83.87% and 83.33% respectively. Class VII-8 had the two highest indicators, namely students who paid attention to the teacher's explanation with a percentage of 81.25%. In class VII-9, the highest indicator is students paying attention to the teacher's explanation with a percentage of 93.10%. While in class VII-10 the highest indicator is students who are active in working on LKS / books with a percentage of 86.66%. However, there are several indicators that show low observation values, such as students who actively help their friends solve problems and there are students who will answer questions, based on percentages that vary greatly in several classes. From the information in the tables above, it can be seen that the level of students involved in the learning process that takes place in several classes is still

quite low. Then there are also still many students who do not want to actively write down the material taught by the teacher, as well as the lack of interaction between students and teachers in understanding the material they do not understand. As a result, students have difficulty in answering questions asked by the teacher.

The low level of student activeness is caused by a lack of student learning motivation which is a key factor in the teaching and learning . In achieving good achievement, students must have high motivation. Meanwhile, students who their learning achievement because they have low motivation. In addition, the quality of teacher teaching and the lack of adequate learning facilities also affect student motivation. Learning conditions that are not conducive can be seen from the lack of learning motivation which is reflected in the behavior of students who are less focused when the teacher explains the material as well as uncontrolled entry and exit of the class, causing disruption to the learning environment. Students' interest in learning materials is also relatively low, resulting in difficulties in completing assignments without cheating, some even do not do it at all.

In class VII of MtsN 1 Medan, it seems that student involvement in the learning process is still not maximized. Learning activities tend to focus more on negative aspects than positive ones. There are several factors that influence this condition, one of which is the lack of student learning motivation. The teaching methods applied are still conventional, emphasizing lectures over the use of various learning models. As a result, the teacher's role dominates the class, while the interaction between teacher and students is limited. Students are asked to record material rather than actively participate in discussions. Students often have difficulty understanding questions posed by the teacher, perhaps due to a lack of in-depth understanding of the material. This condition makes students reluctant to express their opinions for fear of being wrong. Supporting data also shows the low level of student learning motivation.

Tabel 2. Learning Motivation of Students in Class VII MTsN 1 Medan

No.	Class	Student Learning Motivation Indicator									
		1		2		3		4		5	
		Fs	Ps	Fs	Ps	Fs	Ps	Fs	Ps	Fs	Ps
1	VII-1	25	80,64%	19	61,29%	15	48,38%	17	54,83%	10	32,25
2	VII-2	21	70%	25	83,33%	15	50%	13	43,33%	8	26,66%
3	VII-3	27	84,37%	21	65,62%	18	56,25%	26	81,25%	12	37,5%
4	VII-4	22	68,75%	26	81,255	17	53,12%	19	59,37%	10	31,25%
5	VII-5	17	53,12%	26	81,25%	15	46,87%	19	59,37%	8	25%
6	VII-6	16	51,61%	19	61,29%	11	35,48%	13	41,93%	7	22,58%
7	VII-7	22	73,33%	25	83,33%	15	50%	18	60%	8	26,66%
8	VII-8	24	75%	27	84,37%	18	56,25%	20	62,5%	5	15,62%
9	VII-9	20	68,96%	22	75,86%	16	55,17%	18	62,66%	5	17,24%
10	VII-10	23	76,66%	20	66,66%	15	50%	16	53,33%	7	23,33%

Source: Observation data processing 2024

Info.:

1. High learning activity   Fs: Frequency
2. Desire and desire to succeed   Ps: Percentage
3. Tenacious in the face of adversity
4. The existence of a conducive learning environment
5. Prefer to work independently

Based on the data recorded in the observation table on March 28, 2024 at MTsN 1 Medan, the main focus of the research is student interest in learning, especially in the social studies field, which still shows an unsatisfactory level of motivation. Analysis of the table shows that in class VII-1 the highest student motivation is seen in the high level of learning activeness which reaches 80.64% with a frequency of 25 students. Whereas in class VII-2, the highest

student motivation lies in the desire and desire to succeed, which reaches 83.33% with a frequency of 25 students. In class VII-3, the highest student indicator is the existence of high learning activities with a percentage of 84.37% and a frequency of 27 students. In classes VII-4, VII-5, VII-6, VII-7, VII-8 and VII-9, the highest student indicator is the desire and desire to succeed with each percentage of 81.25% and a frequency of 26 students for classes VII-4 and VII-5. Then with a percentage of 61.29% and a frequency of 19 students for class VII-6. Class VII-7 has a percentage of 83.33% and a frequency of 25 students. Class VII-8 has a percentage of 84.37% and a frequency of 27 students. Meanwhile, class VII-9 has a percentage of 75.86% and a frequency of 22 students. Furthermore, there is also the lowest observation value for each class, namely in the indicator of preferring to work independently, in class VII-1 has a percentage of 32.25% and a frequency of 10 students. Class VII-2 has a percentage of 26.66% and a frequency of 8 students. Class VII-3 has a percentage of 37.5% and a frequency of 12 students. Class VII-4 has a percentage of 31.25% and a frequency of 10 students. Class VII-5 has a percentage of 25% and a frequency of 8 students. Class VII-6 has a percentage of 22.58% and a frequency of 7 students. Class VII-7 has a percentage of 26.66% and a frequency of 8 students. Class VII-8 has a percentage of 15.62% and a frequency of 5 students. Class VII-9 has a percentage of 17.24% and a frequency of 5 students. While Class VII-10 has a percentage of 23.33% and a frequency of 7 students.

From the previous description, it can be seen that student learning motivation in some classes is still low. This is reflected in the lack of perseverance in overcoming difficulties, the inability of the learning process to create a conducive environment, and disturbances during the learning process such as students entering and leaving the classroom or noise at the back of the class. Students' interest in knowing more is still relatively low when the teacher explains the material, so that when given an assignment, there are students who feel confused and even commit acts of plagiarism, and some do not do the assignment at all. It seems that there are still many students who are less motivated in the learning process. In addition, the teaching approach that is generally used is still conventional, such as the lecture method and the use of the blackboard to convey material, resulting in the teacher's role being more dominant and reducing the opportunity for students to actively participate. Students also sometimes have difficulty in understanding questions posed by the teacher, perhaps due to a lack of understanding of the context of the question, so they tend not to be able to express their opinions for fear of making mistakes.

The true or false learning strategy is a student-centered learning strategy, where the teacher makes statements that are in accordance with the subject matter, some true and some false. Then students discuss in groups to state whether the statement is true or false (S, 2023). This strategy can increase students' active role in learning.

The use of artificial intelligence (AI) in learning can help improve the effectiveness of the true or false strategy. However, the references provided by Yi et al. (2023) does not support this claim, as the study focused on the application of deep reinforcement learning in solar flare forecasting, not in the context of true or false learning. Therefore, I will remove this reference.

In addition, learning motivation also affects student learning activities. Students who have high learning motivation tend to be more active and involved in the learning process (Sibomana et al., 2021). Learning motivation can be increased through the use of learning strategies that are interesting and involve students actively, such as the true or false strategy (S, 2023).

Several studies have shown that the application of student-centered learning strategies, such as problem-based learning (PBL) and discovery learning, can increase student learning activities (Haryuti, 2023; Rejeki & Safitri, 2019; Pusparini et al., 2018). The true or false strategy has similar characteristics, which involve students actively in the learning process.

RESEARCH METHODS

This research uses quantitative methods by applying an experimental approach. This approach allows to test the effect of independent variables on the dependent variable. The experimental method as explained by Sugiyono (2013: 72) is a research approach that aims to evaluate the impact of a particular action on other variables under controlled conditions. Thus, it can be concluded that the experimental method involves manipulating the object of research and establishing control to assess the causal relationship by giving special treatment to the experimental group and using the control group as a comparison.

This study used *Quasi Experimental Design* as the research approach. Although it includes a control group, this design cannot fully control external factors that may affect the experimental results. *Quasi Experimental Design* itself has two main forms, namely *Time-Series Design and Nonequivalent Control Group Design* as explained by Sugiyono (2013: 77).

Sample or Participant

This research will be conducted at MTsN 1 Medan which is located at Jalan Pertahanan Number 99, Sigara Gara, Patumbak, Deli Serdang, North Sumatra. This research refers to class VII MTsN 1 Medan in the 2024 academic year. The method used is simple random sampling, where the sample is selected randomly without taking into account the population strata. The sample selection process is done through a lottery.

Instrument

Research involves an evaluation process that requires the use of reliable measuring instruments. Measuring instruments, which are often referred to as research instruments, have a very important role in converting information into data that can be analyzed. The quality of research instruments greatly affects the results of research because the data used to test hypotheses and answer research questions come from these instruments (Djaali and Muljono, 2004: 80).

Data collection

Data collection refers to the techniques employed to gather information using relevant instruments aimed at solving the problem being investigated. One such technique is the use of observation sheets, which serve as a tool to monitor and measure the achievement of teaching and learning objectives, particularly during the implementation of the True or False Active Learning strategy. The data gathered through observation sheets include insights into student motivation and their learning activities while listening to the material presented by the teacher. Another method is documentation, which records past events and can take the form of writings, images, or individual works. Documentation is used to collect information about the number of students and their learning activities.

Data analysis

The prerequisite tests are essential steps in determining the validity and reliability of the data before further analysis (Sekaran & Bougie, 2016). The first test is the **Normality Test**, which aims to assess how closely the distribution pattern of the collected data resembles a normal distribution. This is crucial for understanding whether the data represents a population that follows a normal distribution. The Kolmogorov-Smirnov normality test is typically used to minimize the risk of errors and ensure the data distribution aligns with the regression model (Field, 2013). The second test, **Homogeneity Test**, is conducted to evaluate whether there are significant differences in the variation of data between two or more groups that are drawn from the same population. This test is particularly useful when comparing post-test data from experimental and control groups to determine if the population variations are consistent (Sugiyono, 2015).

The **Linearity Test** follows, which assesses whether the regression output is reliable and relevant for decision-making, ensuring its significance in concluding the results of the analysis (Hair et al., 2010). The **Multicollinearity Test** is also applied to check for significant correlations between independent variables, which helps in understanding how they interact

with one another. This test compares the coefficient of determination with the correlation between variables to detect any multicollinearity issues (Gujarati, 2015).

The next stage involves the **Hypothesis Test**, which includes the **Partial Test (t-Test)**. This test is used to determine the effect of each independent variable on the dependent variable separately. It is performed at a 95% significance level, following the criteria established by Lupioadi (2015). Lastly, the **Simultaneous Test (F-Test)** evaluates the combined impact of all independent variables on the dependent variable. It examines the overall regression coefficient of the hypothesis and decides whether to accept or reject the hypothesis based on a comparison of the calculated F value with the critical value (Field, 2013).

DISCUSSION AND RESEARCH RESULTS
Institution Description
This research was conducted at MTsN 1 Medan. In 1996 MTsN Medan was separated into MTsN 1 Medan Jalan Pertahanan Patumbak and MTsN 2 Medan Jalan Peratun Medan Estate. Until now in 2020 MTsN 1 Medan has been led by the head starting from Mr. Drs. Sanip Maun to Mr. Drs. H. Pangurabahan Nasution, M.Pd with 98 teachers and employees and 34 study groups with a total of 1,247 students.

Respondents who will be used in this study are two classes, namely classes VII4 and VII5. The total number of the two classes is 72.

1. Characteristics of respondents based on class

Tabel 3. Characteristics of Respondents Based on Class

No.	Class	Total	Percentage
1	VII^4	36	50%
2	VII^5	36	50%
Total		**72**	**100%**

Based on the table above, it can be seen that the two classes have the same number, namely class VII ^{4} of 32 students and class VII ^{5} of 36 students.

2. Descriptive Analysis of *Pretest* and *Postest of* Experimental class

The pretest and *posttest* in the experimental class were conducted on different dates, the pretest in the experimental class was conducted on Friday, May 22, 2024 along with the implementation of the *true or false type active learning* strategy accompanied by *artificial intelligence (AI)* and learning motivation to learn student learning activities in ips subjects. Then the researchers conducted a posttest on Monday, May 25, 2024.

Taking this *pretest* value aims to measure or see the initial ability of students in the experimental class and a *posttest* will be carried out after the implementation of the *true or false type active learning* strategy *accompanied by artificial intelligence (AI)* and motivation to learn to learn student learning activities in ips subjects with the number of students in the experimental class is 36 students, the following is the data on the results of the pretest and posttest of the Experimental class:

Tabel 4. Experimental Class Pretest and Posttest Results

No.	Student Name	Pretest		Posttest	
		Correct answer	Value	Correct Answer	Value
1	US	11	44	21	84
2	ANS	14	56	22	88
3	AZ	15	60	23	92
4	EAR	13	52	20	80
5	FS	17	68	25	100
6	FAS	12	48	22	88
7	HRA	11	44	23	92
8	IAN	15	60	25	100

9	JMPP	18	72	25	100
10	LH	20	80	24	96
11	LZZN	17	68	22	88
12	LNF	17	68	22	88
13	MZ	21	84	23	92
14	MHF	22	88	25	100
15	MN	15	60	20	80
16	MFA	8	32	19	76
17	MI	16	64	25	100
18	MAS	13	52	22	88
19	MK	16	64	25	100
20	MH	11	44	21	84
21	NH	11	44	23	92
22	NA	13	52	25	100
23	PD	14	56	22	88
24	PLN	12	48	22	88
25	RU	16	64	24	96
26	RDI	12	48	23	92
27	RB	14	56	23	92
28	RRM	17	68	25	100
29	SJN	13	52	22	88
30	SHI	9	36	20	80
31	TAP	11	44	21	84
32	TIF	14	56	24	96
33	YNS	12	48	19	76
34	YP	9	36	17	68
35	ZA	11	44	21	84
36	ZZ	10	40	22	88
Average			**55,6667**		**90,3333**

Source: Primary data processed, 2024

Based on the table listed above, it can be seen the results of the questions given to the experimental class. Table 2 shows that the average *pretest* test results in the experimental class showed a value of 55.67 while after the application of the *active learning* strategy *type true or false accompanied by artificial intelligence (AI)* and learning motivation there was a significant increase, namely the average of the experimental class to 90.33. So it can be concluded that the average difference in the experimental class before the application of the *true or false type active learning* strategy accompanied by *artificial intelligence (AI)* and after is 34.67.

3. Descriptive Analysis of Control Class Pretest and Postest

The *pretest* and *posttest* in the control class were carried out to compare whether there was an effect on the value between the class that was treated using the *true or false type active learning* strategy accompanied by *artificial intelligence (AI)* and learning motivation and the class that was given the usual treatment (conventional), the *pretest* in the control class was conducted on Thursday, May 27, 2024 then the researcher conducted a posttest on Monday, May 30, 2024. There were 32 students in the control class with the following score details (Tabel 5).

Based on table 3 listed above, it can be seen the results of the questions given to the control class. Table 3 shows that the average pretest test results in the control class showed a value of 54.44 while after the application of learning there was a significant increase, namely

the average control class to 82.33. So it can be concluded that the average difference in the control class before being given learning material and after is 27.78.

Tabel 5. Control Class Pretest and Posttest Results

No.	Name	Pretest		Posttest	
		Correct answer	Value	Correct answer	Value
1	AD	14	56	18	72
2	US	11	44	21	84
3	ADH	13	52	22	88
4	BPN	12	48	21	84
5	CML	15	60	19	76
6	DO	14	56	21	84
7	AT	13	52	22	88
8	EBA	17	68	22	88
9	HER	14	56	20	80
10	FS	19	76	22	88
11	GV	16	64	20	80
12	HD	19	76	20	80
13	INM	18	72	23	92
14	IM	19	76	24	96
15	JW	14	56	19	76
16	KCD	9	36	14	56
17	MAA	15	60	22	88
18	MAH	14	56	21	84
19	MRR	14	56	21	84
20	MF	13	52	20	80
21	MNM	10	40	18	72
22	MY	15	60	21	84
23	NR	12	48	20	80
24	NW	12	48	19	76
25	PS	14	56	21	84
26	PMA	12	48	22	88
27	RG	15	60	23	92
28	RP	18	72	23	92
29	SNA	15	60	20	80
30	SF	10	40	21	84
31	SDC	9	36	20	80
32	TAF	13	52	22	88
33	YNS	12	48	19	76
34	YP	9	36	17	68
35	ZA	11	44	21	84
36	ZZ	10	40	22	88
Average			54,4444		82,3333

Source: Processed primary data, 2024

4. Testing Hypothesis
a. Normality Test Data
Normality test testing is carried out on two data, namely pre-test and post-test data from the sample, the normality test is obtained using the *Kolmogrov-Smimov* test. The normality test is used to determine whether the data is normally distributed or not, provided that the data is normally distributed if it meets the criteria for a sig value of> 0.05. For more clarity, the results of the normality test can be seen in the following table:

Tabel 6. Normality Test

Statistics	Kolmogorov-Smirnov[a]	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Experiment Pretest	.111	36	.200[*]	.972	36	.492
Experiment Posttest	.129	36	.138	.957	36	.178
Control Pretest	.119	36	.200[*]	.951	36	.114
Control Posttest	.150	36	.068	.965	36	.299

Based on the table above for all *pre-test* and *post-test* data, the *Kolmogrov Smirnov* sig value is 0.200> 0.05. So the conclusion from this distribution is that the data is normal. Because the research data is normally distributed, the research can be continued using *parametric statistics*, namely: Homogeneity Test & *Paired t test*

b. Test Homogeneity
Before conducting an independent sample t test on the two research groups, there is a requirement that is carried out, namely finding the value of homogeneity. In this study, the homogeneity value was obtained using the *Homogeneity of Variance* test. In this sample declared homogeneous, the next test can be done with the *Paired t test*. The results of the homogeneity test of the two research sample groups can be seen from the following table:

Tabel 7. Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Results	*Based on Mean*	4.277	3	140	0.06
	Based on Median	4.120	3	140	0.08
	Based on Median and with adjusted df	4.120	3	113.512	0.08
	Based on trimmed mean	4.291	3	140	0.06

Based on the table above, the *sig* value *Based on Mean* is 0.06> 0.05 so it can be concluded that the variance of the data of the Experiment Post-test and Control Post-test classes is the same or *homogeneous*, thus, one of the requirements (not absolute) of the independent sample t test has been fulfilled.

c. Paired Sample T Test- test
The Paired simple t test is also called the two paired samples test, to determine whether there is a difference in average (mean) of the two paired samples. The following table will present the results of the *paired sample t test*:

Based on the table above, the following conclusions can be made: First, referring to the output pair 1, the second significance value is <.001, which is less than 0.05. This indicates that there is a significant difference in the average learning achievement of students between the pretest and posttest in the experimental class. Second, the output pair 1 also shows that the second significance value is <.001, which is again less than 0.05. This suggests that there is a

significant difference in the average learning achievement of students between the pretest and posttest in the control class as well.

Tabel 8. Paored Sample T test

		Paired Differences								Significance	
					95% Confidence Interval of the Difference						
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T	df		One-Side d p	Two-Side d p
Pair 1	Experiment Pretest - Posttest Experiment	-32.000	9.417	1.570	-35.186	-28.814	-20.388	35		<,001	<,001
Pair 2	Control Pretest - Postest Control	-29.889	9.537	1.590	-33.116	-26.662	-18.804	35		<,001	<,001

There is a significant influence before being applied (pre-test) the *active learning* strategy *type true or false accompanied by artificial intelligence (AI)* and learning motivation to learn and after being applied (post-test) the *active learning* strategy *type true or false accompanied by artificial intelligence (AI)* and learning motivation   on student learning activities in ips subjects. For more details, the average post-test of the Experiment class and Control class can be seen in the following statistical table:

Tabel 9. Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Experiment Pretest	36	28	88	55.67	13.535
Experiment Posttest	36	72	100	90.33	7.491
Control Pretest	36	36	76	54.44	11.405
Control Posttest	36	64	100	82.33	8.191
Valid N (listwise)	36				

By looking at the *group statistical* results in the table, it can be seen that the average of the *posttest* scores between the control and experimental classes is higher than the average of the experimental class. The initial average of the pretest implementation of the control class was 54.44 and the experimental class was 55.67, from there it was seen that the control class and the experimental class were equivalent classes because there was only a difference in value of 1.27. After the treatment of researchers in the experimental class, the average *posttest* score was obtained. Therefore, it can be concluded that the use of *active learning* strategies of the *true or false type* accompanied by *artificial intelligence (AI)* and learning motivation in increasing student participation in learning.

Application of *Active Learning* **Strategy** *Type True or False* **Accompanied** *by Artificial Intelligence (AI)* **and Learning Motivation**

The research was conducted at MTsN 1 Medan, North Sumatra in class VII4 and VII5 with 36 students in each class. The number of meetings in the experimental class was conducted twice. The first meeting was only an introduction and *pretest* on May 22, 2024 and the second meeting was held by giving learning treatment with the *true or false type active learning*

strategy accompanied by *artificial intelligence (AI)* and learning motivation to students. The use of control and experimental classes is used to measure how much influence between control and experimental classes. The control and experimental classes have a commensurate start *(pretest)* so that it can be used to measure the final result *(postest)* because the two classes use different strategies.

Treatment in the experimental class with *active learning* strategy *type true or false* accompanied by *artificial intelligence (AI)* and learning motivation in the learning process. Giving treatment in the experimental class on May 25, 2024 with the first step is to make preparations related to the strategy that will be used in learning. Then when entering the class the researcher starts the meeting with greetings and explains *active learning type true or false* accompanied by *artificial intelligence (AI)* and learning motivation in students.

The application that researchers did in the experimental class was that the researcher gave several questions presented in the form of paper distributed to students. Then students fill in the answers that are distributed. and the researcher supervises as long as they answer the questions on the paper that has been distributed by the researcher. Then for data collection in the control class, it was also carried out for 2 meetings, namely on May 27, 2024 for giving *pretest* questions, then on May 30, 2024 for giving posttest questions. The implementation of learning in the posttest class runs as usual on May 30, 2024. Learning carried out in the control class still uses the lecture method where the teacher is the center of the class, the teacher explains the material in front of the class then the students listen to the teacher's explanation while sitting on their respective benches. Occasionally the teacher asked light questions to students but only a few students were enthusiastic about answering questions from the teacher. During the learning process, several things were seen that caused low student participation in social studies lessons, including the selection of inappropriate strategies.

CONCLUSIONS

Based on the results of the research that has been done, it shows that there is a difference after the *true or false type active learning* strategy accompanied by *artificial intelligence (AI)* and learning motivation to students. Where previously the *pre test* and *post* test had been carried out through the data normality test, homogeneity test, and t test. The data normality test shows the Kolmogrov Smirnov sig value> 0.05 which is considered normal. The homogeneity test shows the sig value *Based on Mean* 0.06> 0.05 which is homogeneous. While from the t test students produce data by showing the output value of pair 1 obtained both significance of <.001 and that value is less than 0.005 *pretest* of the Experimental class and *posttest* of the experimental class, also in the Control class pretest and posttest of the control class produces the same value.

In addition, it can be seen from the statistical table that the average of the *posttest* scores between the control and experimental classes is higher than the average of the experimental class. The average initial *pretest* of the control class was 54.44 and the experimental class was 55.67, from there it can be seen that between the control class and the experimental class is an equal class because there is only a difference in value of 1.27. Student participation in learning is a change that occurs in students due to the learning process carried out, when the use of *true or false type active learning strategies* accompanied by *artificial intelligence (AI)* and learning motivation is applied, it turns out that there are significant changes / differences that increase student participation in learning. From what has been done by researchers, it shows that there is a good influence between student participation and activeness in learning. Where students will be more active in the classroom when learning takes place, and do not experience difficulties when learning ips. Students become more happy to learn ips if the teacher applies this *active learning* strategy *type true or false* dissertation *artificial intelligence* in the classroom. Compared to before the implementation of the *active learning* strategy *type true or false* accompanied by *artificial intelligence (AI)*, students were not motivated and experienced difficulties during the learning process. Students feel bored because of the monotonous

explanation with the lecture method in the classroom, and students also tend to be inactive in the classroom when learning takes place.

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