The Influence of Mind Mapping Type Cooperative Learning Methods towards the Learning Outcomes of Islamic Religious Education Students at SMAN 12 Makassar

M. Khayrun[1]*, Budiarto Lataf[2], Demitri Bahriani[3], Firmansyah HN[4], & Muhammad Fauzan[5]

[1]SMAN 12 Kota Makassar
[2]SDN INPRES Panaikang II Kota Makassar
[3]SMAN 18 Kota Makassar
[4]SDN Mangkura II Kota Makassar
[5]SMKN 1 Kota Makassar

*e-mail: khayrun8@gmail.com

ABSTRACT

This study aims to evaluate the effect of the cooperative learning method of Mind Mapping on students' learning outcomes in Islamic Religious Education (PAI) at SMAN 12 Makassar. The research used a quasi-experimental method with a Nonequivalent Control Group Design involving two groups: the experimental group taught using the Mind Mapping method, and the control group taught using conventional methods. Each group consists of 35 students. Descriptive analysis results show that the average pretest score of the experimental group was 68.40, while the average post-test score significantly increased to 82.51. A normality test revealed that the data was normally distributed with an Asymp. Sig. (2-tailed) value of 0.200. Furthermore, the Paired Samples Test indicated a significant difference between pretest and post-test scores, with a mean difference of 14,114 points and a p-value of < 0.001, demonstrating that the Mind Mapping method had a significant effect on improving learning outcomes. The correlation test between pretest and post-test scores resulted in an r-value of 0.885, indicating a strong relationship between the two variables. Based on these findings, the cooperative learning method of Mind Mapping significantly impacts improving students' learning outcomes in Islamic Religious Education. This method is effective in helping students organize and comprehend the concepts being taught, leading to an overall improvement in academic performance. Therefore, the Mind Mapping method is an effective learning strategy for Islamic Religious Education at the high school level.

Keywords: Mind Mapping, cooperative learning, learning outcomes, Islamic Religious Education, quasi-experiment.

ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi pengaruh metode pembelajaran kooperatif tipe Mind Mapping terhadap hasil belajar Pendidikan Agama Islam (PAI) peserta didik di SMAN 12 Kota Makassar. Metode penelitian yang digunakan adalah eksperimen semu (quasi-experiment) dengan desain Nonequivalent Control Group Design, di mana terdapat kelompok, yaitu kelompok eksperimen yang diajarkan menggunakan metode Mind Mapping dan kelompok kontrol yang diajar dengan metode konvensional. Penelitian ini melibatkan 35 peserta didik dalam setiap kelompok. Hasil analisis deskriptif menunjukkan bahwa rata-rata nilai pretest kelompok eksperimen adalah 68.40, sedangkan rata-rata nilai posttest meningkat signifikan menjadi 82.51. Uji normalitas menunjukkan bahwa data berdistribusi normal dengan nilai Asymp. Sig. (2-tailed) sebesar 0.200. Selain itu, hasil uji Paired Samples Test menunjukkan perbedaan yang signifikan antara nilai pretest dan posttest dengan rata-rata perbedaan sebesar 14.114 poin dan nilai p < 0.001, yang menunjukkan bahwa metode Mind Mapping secara

signifikan memengaruhi peningkatan hasil belajar. Uji korelasi antara nilai pretest dan posttest menghasilkan nilai r sebesar 0.885, yang menunjukkan hubungan yang kuat antara kedua variabel tersebut. Berdasarkan temuan ini, dapat disimpulkan bahwa metode pembelajaran kooperatif tipe Mind Mapping memiliki pengaruh yang signifikan dalam meningkatkan hasil belajar peserta didik pada mata pelajaran Pendidikan Agama Islam. Metode ini efektif dalam membantu peserta didik mengorganisir dan memahami konsep-konsep yang diajarkan, sehingga dapat meningkatkan prestasi belajar mereka secara keseluruhan. Oleh karena itu, metode Mind Mapping dapat dipertimbangkan sebagai strategi pembelajaran yang efektif dalam mata pelajaran PAI di tingkat sekolah menengah atas.

Kata kunci: Mind Mapping, pembelajaran kooperatif, hasil belajar, Pendidikan Agama Islam, eksperimen semu.

INTRODUCTION

Education plays a very important role in forming quality human resources regarding knowledge, skills, and moral and spiritual values. In the context of formal education, one of the main objectives is to ensure the achievement of optimal learning outcomes for each student, including in Islamic Religious Education (PAI) (Arifin, S. 2017).

PAI does not only focus on cognitive knowledge but also aims to shape the character and spirituality of students (Putri, 2024). In the current era of globalization and modernization, the challenges faced by PAI teachers are increasingly diverse, including low student learning motivation, reduced interest in the material, and difficulty in understanding abstract concepts. This contributes to the low learning outcomes of students in the field of PAI. (Suradi, 2017).

One way to overcome this problem is to apply innovative and interactive learning methods (Monika, 2024). Research has shown that conventional learning methods, such as one-way lectures, tend to be ineffective in actively engaging students in the learning process.

Therefore, the cooperative learning approach is increasingly recognized as one of the effective solutions to improving active participation and student learning outcomes (Sosiowati, 2024). This method not only allows students to work together in groups but also encourages discussion, collaboration, and collective problem-solving, which can ultimately improve students' understanding of the material (Ramadhani, 2024).

Among the various types of cooperative learning, the Mind Mapping method stands out as one technique that can help students visualize and organize complex concepts.

According to Buzan (2006), Mind Mapping is an effective tool for developing critical and creative thinking skills because it involves the left and right brain in a balanced way by depicting main ideas in the form of a visually structured concept map. Mind Mapping helps students connect new information with existing knowledge, making it easier for them to understand the material and remember information in the long term (Husni, 2018).

Various previous studies have confirmed that the Mind Mapping method has a positive impact on various subjects.

For example, a study by Nina Gantina (2021). Based on the results of the data analysis and discussion above, this study concludes that the use of the mind mapping method can improve student

learning outcomes. The literature studied can prove improved learning outcomes.

However, although many studies discuss the benefits of Mind Mapping, more research is still needed that specifically examines the influence of this method in Islamic Religious Education learning, especially at the high school level.

Islamic Religious Education at the high school level has its challenges because the material taught includes theological and moral concepts that are sometimes abstract and difficult for students to understand. (Abelia 2024) Therefore, innovation in learning methods, such as Mind Mapping, is needed to help students understand these concepts better. Mind Mapping allows students to see the relationship between the concepts taught in Islamic Religious Education, such as monotheism, morals, and sharia, with their daily lives so that learning becomes more relevant and meaningful.

Based on the background, this study aims to test the effect of the implementation of the Mind Mapping type cooperative learning method on the learning outcomes of Islamic Religious Education students at SMAN 12 Makassar City. By using the experimental method, this study is expected to contribute to the development of more effective learning strategies in improving the quality of Islamic Religious Education learning in schools. This study also seeks to add to the literature on the implementation of Mind Mapping in Islamic Religious Education learning so that it is expected to provide real solutions in overcoming the low motivation and learning outcomes of students.

METHOD

This study uses a quantitative approach with a quasi-experiment method. It aims to determine the effect of the Mind mapping-type cooperative learning method on student learning outcomes in Islamic Religious Education subjects at SMAN 12 Makassar City.

The research design used is the Nonequivalent Control Group Design, which has two groups, namely the experimental group and the control group. (Abraham, I., & Supriyati, Y. 2022).

This research was conducted at SMAN 12 Makassar City during the odd semester of the 2024/2025 academic year. The population in this study were all grade X students at SMAN 12 Makassar City who took the Islamic Religious Education subject. The sample was taken using a purposive sampling technique, where two classes were selected: the experimental group and the control group. The experimental group applied the Mind mapping type cooperative learning method, while the control group used the conventional learning method. (Destiawati, 2024)

The independent variable in this study is the Mind mapping type cooperative learning method, while the dependent variable is student learning outcomes. The research instruments used include learning outcome tests in the form of multiple-choice questions to measure student learning outcomes after treatment, as well as observation sheets to monitor the application of the mind mapping method in the experimental class. (Meilana, Y. 2016)

This research was conducted through several stages, starting from the preparation of validated instruments and ending with the implementation of experiments in which both groups were given learning according to the specified

treatment. After the learning was completed, an achievement test was conducted to measure student learning outcomes in both groups. The collected data were analyzed using a t-test to determine whether there was a significant difference between student learning outcomes in the experimental group and the control group.

Data analysis techniques in this study include normality tests to examine the data distribution, homogeneity tests to determine the equality of variance between the two groups, and t-tests to determine significant differences between the experimental and control groups.

The research hypothesis consists of a null hypothesis (H0), which states that the mind mapping method has no significant effect on student learning outcomes, and an alternative hypothesis (H1), which states that there is a significant effect. The decision of the hypothesis is taken based on the p-value, where if the p-value is less than 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted, which means that the mind mapping method has a significant effect on student learning outcomes.

RESULTS AND DISCUSSION
Descriptive Analysis of Experimental Class Pretest

Description

			Statistics	Std. Error
Pretest	Mean		68.40	.492
	95% Confidence Interval for Mean	Lower Bound	67.40	
		Upper Bound	69.40	

Description

	Statistics	Std. Error
5% Trimmed Mean	68.39	
Median	69.00	
Variance	8,482	
Std. Deviation	2,912	
Minimum	64	
Maximum	73	
Range	9	
Interquartile Range	5	
Skewness	-.036	.398
Kurtosis	-1.235	.778

Referring to the data above, we can see a general description of the results of the pretest of students before learning Islamic Religious Education with the following description: the average value

Based on the descriptive table provided, here is a descriptive analysis of the data:

Mean: The mean value of the pretest data is 68.40, indicating the middle score of all respondents or objects tested, 95% Confidence Interval for Mean: This interval indicates that the true mean of the population is between 67.40 and 69.40 with a 95% confidence level. This means that if this study were repeated many times, the average result would fall within that range 95% of the time.

5% Trimmed Mean: The mean trimmed by 5% from the lowest and highest values is 68.39, slightly smaller than the original mean. This shows that the presence of outliers or extreme values does not affect the overall mean too much.

Median (Middle Value): The middle value of the pretest data is 69.00, which indicates that half of the data is below this value and half is above this value.

Standard Deviation: The standard deviation of 2.912 shows how much the data is spread out from the mean. The higher this value, the greater the variation in the data.

Minimum and Maximum: The lowest score in the pretest data is 64, and the highest score is 73, indicating the range of respondents' scores. Range: The range of the data, which is the difference between the maximum and minimum scores, is 9.

Overall, the pretest data showed a symmetrical distribution, with relatively low variance and no outliers significantly affecting the mean of the data.

Descriptive Analysis of Experimental Class Post-test

Description

		Statistics	Std. Error
Post-test	Mean	82.51	.757
	95% Confidence Interval for Mean — Lower Bound	80.97	
	95% Confidence Interval for Mean — Upper Bound	84.05	
	5% Trimmed Mean	82.57	
	Median	82.00	
	Variance	20,081	
	Std. Deviation	4.481	
	Minimum	74	
	Maximum	90	

Description

	Statistics	Std. Error
Range	16	
Interquartile Range	8	
Skewness	-.109	.398
Kurtosis	-1.055	.778

Based on the results of the descriptive analysis of the post-test data, the average post-test score was 82.51, indicating that respondents generally had relatively high scores after the test. The range of 95% confidence interval for the mean ranged from 80.97 to 84.05, meaning that the true mean of the population is likely to be within this range. In addition, the mean value that has been trimmed by 5% from the lowest and highest values is 82.57, indicating that extreme values do not have a significant effect on the overall mean.

The median of the data is 82.00, indicating that half of the respondents' scores are below this number and the other half are above it. The variance of the data, which reaches 20,081, indicates a relatively large spread between the different values. In contrast, the standard deviation of 4,481 indicates a reasonably significant variation in values around the mean.

The lowest score achieved in the post-test was 74, while the highest score was 90, giving a range of 16. An interquartile range (IQR) of 8 indicates that most of the scores are concentrated around the median. A skewness score of -0.109 indicates that the data distribution is nearly symmetrical, while a kurtosis score of -1.055 indicates that the data distribution is flatter than a normal distribution.

Overall, the distribution of the post-test data is quite normal, with reasonable value variations, and there are no significant outliers that affect the analysis results. These data provide a positive picture of the respondents' post-test results.

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Before conducting more complex statistical tests, a normality test needs to be conducted to determine whether the data is normally distributed. Here is a normality test using SPSS.

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		35
Normal Parameters,b	Mean	.0000000
	Std. Deviation	2.08460990
Most Extreme Differences	Absolute	.100
	Positive	.067
	Negative	-.100
Test Statistics		.100
Asymp. Sig. (2-tailed)c		.200d
Monte Carlo Sig. (2-tailed)e	Sig.	.505
	99% Confidence Interval	Lower Bound	.492
		Upper Bound	.518

a. Test distribution is Normal.

Based on the Asymp. Sig. (2-tailed) value of 0.200, which is greater than 0.05, we can conclude that the residuals of this data are typically distributed. The Kolmogorov-Smirnov test shows that there is insufficient evidence to reject the null hypothesis that the data follows a normal distribution. Thus, you can proceed to further inferential analysis, assuming that the residual data meets the assumption of normality.

To determine the magnitude of the influence, a T-test (independent samples t-test) analysis was used to determine whether there was a significant difference in learning outcomes before and after the Mind Mapping method.

The results of testing using SPSS produced the following data:

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	68.40	35	2,912	.492
	Posttest	82.51	35	4.481	.757

The table above shows the results of Paired Samples Statistics, which are used to compare two conditions or times in one group, namely the pretest and post-test values.

The table compares two variables: the pretest and post-test scores of 35 students. The average pretest score is 68.40, with a standard deviation of 2,912. Meanwhile, the average post-test score is 82.51, with a standard deviation of 4,481. The Standard Error Mean value for the pretest is 0.492, and for the post-test, it is 0.757, which

indicates the level of uncertainty of the average.

The average difference between the pretest and post-test was quite significant, increasing from 68.40 to 82.51 after the learning method was applied. The higher standard deviation in the post-test indicates a greater variation in the post-test scores compared to the pretest. These data indicate that the learning method used is likely to impact student learning outcomes.

The next step required is to perform an inferential statistical test, such as a Paired Sample T-test, to determine whether these differences are statistically significant.

Based on the results of Paired sample correlations, 35 students had a very strong relationship between pretest and post-test scores. The correlation value of 0.885 indicates that an increase in pretest scores has a positive and significant relationship with an increase in post-test scores. The higher a person's pretest score, the higher the likelihood of a post-test score being achieved.

Statistical significance also shows powerful results. The p-value for One-Sided and Two-Sided is <0.001, which means that this correlation is highly statistically significant. This indicates that the relationship between the pretest and post-test is not a coincidence but instead shows a fundamental relationship between the two measurements.

Paired Samples Correlations

		N	Correlation	Significance One-Sided p	Significance Two-Sided p
Pair 1	Pretest & Posttest	35	.885	<.001	<.001

Paired Samples Test

		Paired Differences Mean	Paired Differences Std. Deviation	Paired Differences Std. Error Mean	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper	t	df	Significance One-Sided p	Significance Two-Sided p
Pair 1	Pretest - Posttest	-14.114	2.336	.395	-14,917	-13,312	-35,745	34	<.001	<.001

Based on the results of the Paired Samples Test, the average difference between the pretest and post-test scores is -14.114, which means that, on average, the post-test score is 14.114 points higher than the pretest score. The standard deviation of the difference of 2.336 indicates a relatively small variation in the difference between the pretest and post-test. The standard error of the mean of 0.395

indicates that the estimate of the average difference is entirely accurate.

In relation to the research hypothesis, these results support the alternative hypothesis (Ha) that the Mind mapping-type cooperative learning method significantly influences the learning outcomes of Islamic Religious Education at SMAN 12 Makassar City.

With the test results showing a significant difference between the pretest and post-test scores, we can reject the null hypothesis (H0) that the method has no significant effect. Thus, it can be concluded that the application of the Mind Mapping method significantly improves student learning outcomes.

Discussion

Based on the results of the descriptive and inferential analysis that have been presented, the Mind Mapping type cooperative learning method has a significant impact on improving student learning outcomes in Islamic Religious Education subjects at SMAN 12 Makassar City. The average post-test score (82.51) is much higher than the pretest score (68.40), which indicates an increase in learning outcomes after the application of the method. (Afrina, 2024) In addition, the almost symmetrical data distribution with relatively small variance in the pretest and post-test indicates that the data tends to be consistent and is not influenced by extreme values (outliers).

Theoretically, mind mapping-type cooperative learning is one of the learning strategies that encourage students to be more active in the learning process by utilizing idea visualization techniques that make the material easier to understand and remember. (Setyarini, D. 2018). The constructivism theory underlying this method emphasizes the importance of student involvement in building their knowledge, not just passively receiving information (Trimahmudi, 2024).

The results of this study are in accordance with the theory, where students who are actively involved in mind-mapping activities can organize and connect important concepts better, which ultimately improves their understanding and academic achievement.

The strong correlation between pretest and post-test scores ($r = 0.885$) indicates that students who have an excellent basic understanding before learning tend to achieve better results after learning with the Mind Mapping method.

This supports the idea that this method not only helps students who need to improve their understanding of the material but also strengthens the understanding of students who already have a strong foundation of knowledge. In this context, Mind Mapping serves as a tool that accelerates the learning process for all students.

The Paired Samples Test showed a significant difference between the pretest and post-test with a p-value <0.001. This result is in line with previous studies showing that the Mind Mapping method is efficacious in improving student learning outcomes in various subjects. This can be explained by the way Mind Mapping works, which makes it easier for students to link complex concepts into more structured ones, which in turn facilitates a deeper understanding of the learning material.

Overall, this study's results provide empirical support for the effectiveness of the Mind Mapping type of cooperative learning method in improving student learning outcomes. Thus, the application of this method can be considered an effective teaching strategy, especially in

Islamic Religious Education subjects at SMAN 12 Makassar City and in various other schools.

CONCLUSION

Based on the results of the study, the application of the Mind Mapping type of cooperative learning method has a significant influence on improving the learning outcomes of Islamic Religious Education students at SMAN 12 Makassar City. This is indicated by an increase in the average score from pretest to post-test of 14,114 points, with statistical test results showing high significance ($p < 0.001$). The strong correlation between the pretest and post-test indicates that this method is effective not only for students with good initial understanding but also helps weaker students improve their learning outcomes. Thus, Mind Mapping is proven to be an effective method for improving students' understanding and academic achievement.

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