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THE EFFECT OF THE JIGSAW TYPE COOPERATIVE LEARNING MODEL ON THE LEARNING OUTCOMES OF PAI STUDENTS OF SMA NEGERI 10 SIGI

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh penerapan model pembelajaran kooperatif tipe jigsaw terhadap peningkatan hasil belajar siswa dalam mata pelajaran Pendidikan Agama Islam. Penelitian ini menggunakan pendekatan kuantitatif dengan *jenis quasi experiment* melalui *One Group Pretest–Posttest Design*. Sampel penelitian berjumlah 23 siswa yang dipilih menggunakan teknik *purposive sampling*. Data dikumpulkan melalui tes pilihan ganda yang diberikan sebelum dan sesudah penerapan model pembelajaran *jigsaw*, kemudian dianalisis menggunakan perbandingan nilai *pretest-posttest*, N-Gain, dan tes signifikansi. Hasil penelitian menunjukkan bahwa rata-rata skor *pretest* 56,5 meningkat menjadi 80 pada *posttest*. Nilai N-Gain 0,53 berada pada kategori sedang, sedangkan nilai signifikansi 0,001 < 0,05 menunjukkan peningkatan hasil belajar yang signifikan setelah penerapan *model jigsaw*. Kontribusi penelitian ini terletak pada penguatan bukti empiris bahwa model pembelajaran kooperatif tipe jigsaw dapat menjadi strategi yang efektif untuk meningkatkan partisipasi aktif, kerjasama, tanggung jawab belajar, dan capaian belajar siswa dalam pembelajaran Pendidikan Agama Islam. Implikasi dari penelitian ini menekankan pentingnya guru PAI menerapkan pembelajaran kooperatif yang terstruktur, partisipatif, dan kolaboratif untuk menciptakan proses pembelajaran yang lebih aktif, bermakna, dan berorientasi untuk meningkatkan kompetensi akademik dan sosial siswa.

Kata kunci: model pembelajaran kooperatif, teka-teki, hasil pembelajaran, Pendidikan Agama Islam.

Abstract

This study aims to determine the effect of the application of the jigsaw-type cooperative learning model on improving student learning outcomes in Islamic Religious Education subjects. This study uses a quantitative approach with a *quasi experiment* type through *One Group Pretest–Posttest Design*. The research sample amounted to 23 students who were selected using *purposive sampling* techniques. Data were collected through multiple-choice tests administered before and after the application of *the jigsaw* learning model, then analyzed using a comparison of *pretest-posttest* scores, N-Gain, and significance tests. The results showed that the average *pretest* score of 56.5 increased to 80 in the *posttest*. The N-Gain value of 0.53 was in the medium category, while the significance value of 0.001 < 0.05 showed a significant improvement in learning outcomes after the application of *the jigsaw model*. The contribution of this research lies in strengthening the empirical evidence that the jigsaw-type cooperative learning model can be an effective strategy to increase active participation, cooperation, learning responsibility, and student learning outcomes in Islamic Religious Education learning. The implications of this study emphasize the importance of PAI teachers implementing structured, participatory, and collaborative cooperative learning to create a more active, meaningful, and oriented learning process to improve students' academic and social competence.

Keywords: cooperative learning model, jigsaw, learning outcomes, Islamic Religious Education.

Introduction

The change in the educational paradigm in the 21st century era demands a more active, collaborative, creative, and student-centered learning process (Mahsusi et al., 2023). Education is no longer enough to be understood as a process of transferring knowledge from teachers to students, but must be able to develop critical thinking skills, cooperation, communication, independence, and learning responsibility. This demand also applies to the learning of Islamic Religious Education, which is not only oriented to the understanding of religious concepts, but also to the formation of religious attitudes, moral values, and character of students. However, in practice, PAI learning in schools is still often dominated by conventional methods centered on teachers. This kind of learning pattern tends to make students passive, less involved in discussions, low in the courage to express opinions, and not optimal in understanding the material in depth. Therefore, a learning model is needed that is able to encourage active student participation, increase cooperation, and strengthen learning outcomes, one of which is through a cooperative learning model jigsaw.

By Literature, jigsaw-type cooperative learning models have been widely seen as one of the effective learning strategies to increase student activeness and learning outcomes (Handriadi, 2025). This model was first developed by Elliot Aronson and his colleagues as a form of cooperative learning that places students in the home group and the expert group (Aronson & Bridgeman, 1979). Each student is responsible for studying a specific piece of material, discussing it in an expert group, and then explaining it back to the original group members. With this mechanism, students not only learn for themselves, but are also responsible for the understanding of their peers. Several previous studies have shown that jigsaw models have a positive effect on learning outcomes. Heriawan and Taufina found that the application of the jigsaw model had a significant influence on the learning outcomes of Indonesian language in elementary schools. Meanwhile, Widyaningrum and Harjono showed that the use of the jigsaw model was able to improve the social studies learning outcomes of elementary school students with a fairly high percentage increase. The findings reinforce the view that jigsaw learning can be an alternative to active learning strategies that are relevant for a variety of subjects.

The uniqueness of this research lies in the application of a jigsaw-type cooperative learning model in the learning of Islamic Religious Education on the material of faith in the books of Allah swt. at SMA Negeri 10 Sigi. This material not only requires students to understand the concept of faith cognitively, but also encourages them to realize the importance of God's books as a guide for life. Thus, learning this material requires an approach that is not only informative, but also participatory and reflective. The jigsaw model becomes relevant because it provides space for

students to discuss, explain, listen, and take responsibility for mastery of the material. In the context of SMA Negeri 10 Sigi, this research is important because the previous PAI learning still used many conventional methods, so students were not fully active in the learning process. The application of jigsaw is expected to create a more lively, collaborative, and student-centered learning atmosphere.

Although a lot of research on the jigsaw learning model has been conducted, there are still research gaps that need to be considered. First, most of the previous research was conducted more on general subjects, such as Indonesian language and social studies, while studies on the influence of the jigsaw model on the learning outcomes of Islamic Religious Education are still relatively limited. Second, previous research generally emphasized the improvement of learning outcomes in general, but not many have specifically examined the learning outcomes of the cognitive realm in the material of faith, especially faith in the books of Allah SWT. Third, in the context of SMA Negeri 10 Sigi, the results of the initial analysis showed that the learning outcomes of grade XI A students were still low. The average score of the students' pretest only reached 56.5, below the Minimum Completeness Criterion of 70. Of the 23 students, only 3 students have achieved completeness, while the other 20 students have not completed. This condition shows that there are real problems in the PAI learning process that need to be overcome through a more active and collaborative learning model.

Based on these problems, this study aims to determine the effect of the application of the jigsaw-type cooperative learning model on student learning outcomes in Islamic Religious Education subjects at SMA Negeri 10 Sigi. In particular, this study is directed to measure the difference in student learning outcomes before and after the application of the jigsaw learning model on the material of faith in the books of Allah SWT. This study uses a quantitative approach with a quasi experiment type through the One Group Pretest–Posttest Design. Through this design, student learning outcomes are measured before treatment through pretest and after treatment through posttest, so that it can be known to what extent the application of the jigsaw model has an influence on improving student understanding.

The significance of this research can be seen from theoretical and practical aspects. Theoretically, this research is expected to enrich the study of the effectiveness of the jigsaw-type cooperative learning model in Islamic Religious Education learning, especially in faith materials. This research can also expand on the empirical evidence that jigsaw models are not only relevant for general subjects, but can also be applied in PAI learning that emphasizes concept understanding, cooperation, and learning responsibility. Practically, the results of this research can be an alternative strategy for PAI teachers in increasing active participation and student learning outcomes. For schools, this research can be an input in the development of a more innovative, student-centered, and

student-centered learning model. Thus, the application of the jigsaw-type cooperative learning model is expected to be able to improve the quality of PAI learning and help students achieve more optimal learning outcomes.

Research Methods

This research is a research *quasi exeperimen* With design *One Group Pretest-Posttest Design* (Nurlan, 2019). The data collection technique in this study uses tests. The test is used to measure student learning outcomes in the subject of PAI material of faith in the books of Allah SWT. Instrument The test is in the form of a multiple-choice written test of 20 questions prepared based on indicators of competency achievement in the material being studied. The source of data in this study is data obtained from the results of student learning tests in the control class and the experimental class. The population in this study includes all students at SMA Negeri 10 Sigi. The research sample was determined in class XI A which amounted to 23 people. The determination of the sample was carried out purposively by considering the suitability of the class characteristics to the purpose of the study. Details of the number of samples in this study are presented as follows:

Table 1
Research Sample

Classes	Male	Women	Total
Pretest and Posttest	7	16	23

Data were analyzed descriptively and inferentially. Descriptive analysis aims to describe student learning outcomes through the calculation of average scores, minimum and maximum scores. Furthermore, the inferential analysis begins with a normality test using Shapiro–Wilk to ensure that the distribution of pretest and posttest data follows the normal distribution. After it was known that the two data were normally distributed, a t-paired test was carried out to compare the average difference between pretest and posttest scores. Hypothesis testing was carried out at a significance level of 0.05. In addition, the N-Gain Score calculation was carried out to determine the level of improvement in student learning outcomes after the implementation of the jigsaw-type cooperative learning model.

Findings and Discussion

This research was conducted in a high school environment on 23 students as a research sample. The data obtained were the result of providing treatment in the form of the application of jigsaw-type cooperative learning nodes in the learning process. The results of the treatment are in the form of pretest and posttest scores which are then analyzed to determine the improvement of student learning outcomes. The description of the pretest and posttest data is presented as follows.

Based on the results of the descriptive analysis, the average score of the students' pretest was 56.5 with a minimum score of 40 and a maximum of 70. Meanwhile, in the posttest, an average score of 80 was obtained with a minimum score of 65 and a maximum of 95. Descriptively, there is a difference in values between the pretest and the posttest. Details of the results of the descriptive analysis are presented in table 2

Table 2
Results of Descriptive Analysis of Pretest and Posttest Class Scores

Value	Pretest	Posttest	Total
Minimum	40	65	105
Maxsimum	70	95	165
Average	56,7	80	136,7

Table 2 shows that the average score of the posttest shows a higher result compared to the average score of the pretest. In addition, the minimum and maximum scores on the posttest have also increased compared to the pretest. Descriptively, the findings indicate an increase in student learning outcomes after being given learning treatment. To ensure that the data obtained meets the requirements for advanced statistical analysis, before testing the hypothesis, the analysis prerequisites test, namely the normality test.

Normality tests are performed to determine whether the data used meet the basic assumptions required in parametric statistical analysis. If the data is distributed normally, then the results of the analysis can be interpreted appropriately. Conversely, if the data is not normally distributed, the researcher should consider using nonparametric statistical methods or performing data transformations. Through the implementation of the right normality test, researchers can minimize errors in data interpretation. Therefore, the application of normality tests is very important in research because it can affect the selection of analysis methods at the next stage (Santoso et al., 2021).

In this study, normality tests were carried out on pretest and posttest data. Normality testing uses the Shapiro-Wilk test because the sample count is less than 50. This test aims to find out whether the data used is normally distributed or not.

Table 3
Kolmogorov Smirnov Normality Test Results Pretest and Posttest Data

Data	Sig.	Shapiro-Wilk Sig.	Remarks
Pretest	0,200	0,215	Normal
Posttest	0,200	0,520	Normal

The results of the analysis test in table 3 show that a significant value of pretest data was obtained of 0.215 and posttest of 0.520. The significant value of the two data is greater than 0.05, so it can be concluded that the research data is normally distributed and is eligible for further analysis.

After it is known that the research data is distributed normally, then an analysis is carried out to determine the level of improvement in student learning outcomes after being given learning treatment. The analysis of improving learning outcomes in this study uses the calculation of N-Gain score which aims to find out how much the students' ability has improved from pretest scores to posttest scores. The N-Gain value was then interpreted based on the category of learning outcome improvement to determine the effectiveness of the implementation of the jigsaw-type cooperative learning model . Complete data on the mean value of N-Gain can be seen below:

Table. 4
N-Gain Score Descriptive Statistics Test Results Pretest and Posttest Data

Value	Minimum	Maximum	Red
N-Gain score	0,29	0,83	0,5339
N-Gain Percent	28,57	83,33	53,3926

From the results of the analysis of the N-Gain Score test, the results of data analysis using the N-Gain test showed an average value (mean) of 0.53 which was defined in the medium category. This shows that the application of *the jigsaw* cooperative learning model provides a significant improvement in student learning outcomes. Thus, this learning model can be said to be quite effective in increasing students' understanding of the material that has been studied.

N-Gain or *Normalized Gain* is a method used to measure the level of learning effectiveness by comparing the increase in scores between pretest and posttest. This method aims to find out the extent to which students' understanding is improved after following the learning process. The N-Gain value is derived from the difference between the maximum score that can be achieved and the pretest score (Nugraha & Hidayatullah, 2024).

In addition to determining the level of improvement in learning outcomes through N-Gain analysis, this study also conducted hypothesis testing to find out if there was a significant difference between students' pretest and posttest scores. Hypothesis testing was carried out using a paired test of t-test because the data compared came from the same group before and after being given treatment. This test aims to find out whether the application of the teaching model used in the study has a significant influence on student learning outcomes.

Table 5
Paired Hypothesis Test Results T-test Data Pretest and Posttest

Data	Mean Difference	t	Sig. (200).
Pretest and posttest	0,200	0,215	0,001

The paired test of the t-test resulted in a significant value (Sig. 2tailed) of 0.001. This score is less than 0.05, so it can be concluded that there is a significant difference between students' pretest and posttest scores. Thus, the application of the jigsaw-type cooperative learning model has an effect on improving student learning outcomes.

The jigsaw *learning method* has several advantages or benefits, including the following:

1. Improve students' ability to understand learning materials.
2. Fostering an attitude of mutual acceptance and appreciation of shortcomings between students.
3. Reduce the potential for conflict that can occur between students in the learning process.
4. Minimize student complaints during learning activities.
5. Help students gain a deeper understanding of the material being studied.
6. Increase students' motivation to learn.
7. Encourage the achievement of more optimal learning outcomes
8. Help students retain information or learning materials for a longer period of time.
9. Fostering patience and increasing students' sensitivity to others (Handayani, 2005).

These various advantages, *the jigsaw learning method* is considered to be able to create an active and collaborative learning process so that it has the potential to increase student understanding and learning outcomes. This is in line with the results of this study which shows an increase in students' posttest scores after the implementation of the jigsaw-type cooperative learning model.

Conclusion

Based on the results of data analysis and research discussion, it can be concluded that the application of the jigsaw-type cooperative learning model has an effect on improving student learning outcomes in the subject of Islamic Religious Education material of faith in the books of Allah SWT at SMA Negeri 10 Sigi. This is shown by the increase in students' average scores from the pretest by 56.7 to 80 in the posttest. The results of the N-Gain calculation showed an average score of 0.5 which was enforced in the medium category, which means that the application of the jigsaw-type cooperative learning model is quite effective in improving student learning outcomes. In addition, the results of the paired test of the t-test sample showed a significant value of 0.001<0.05, so it can be concluded that there is a significant difference between the students' pretest and posttest scores after the application of the jigsaw cooperative learning model.

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