Journal of Asian Islamic Educational Management (JAIEM)
Vol. 2, No. 2, July 2024, pp. 79-86
e-ISSN: 3021-7520, DOI: 10.53889/jaiem.v2i2.581

The Impact of the Jigsaw Cooperative Learning Approach on Students' Achievement in Islamic Education and Character-Building Subjects

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Article Info

Article history:

Received: March 18, 2024
Revised: April 11, 2024
Accepted: July 28, 2024

Keywords:

Academic achievement,
Cooperative learning,
Jigsaw method,
Islamic Education

ABSTRACT

This study aims to analyze the learning outcomes of Islamic Education before and after applying the Jigsaw cooperative learning method and to evaluate its impact on improving students' academic achievement in Islamic Education subjects. The research specifically investigates the influence of the Jigsaw learning approach on student achievement in an experimental study conducted in Grade XI at SMAN 3 Pandeglang. The study employed a quasi-experimental design involving two groups: an experimental group and a control group. A quantitative research approach was used, utilizing a survey method. The sampling technique employed was simple random sampling, selecting 69 students as the sample based on the nonequivalent formula. Data were collected through test distribution. After implementing the Jigsaw approach, the findings indicate a significant improvement in students' academic achievement in Islamic Education and character-building subjects. The pretest mean score of the experimental group was 64.43, which increased to 69.35 in the posttest. Similarly, students' performance in the control group improved from a pretest score of 65.93 to a posttest score of 71.80. Hypothesis testing using the t-test revealed a t-value (t = 10.82) greater than the critical value (t = 2.03) at a 5% significance level, leading to the rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha). Thus, the Jigsaw cooperative learning approach impacts students' academic achievement. In contrast, conventional methods show no significant effect on the learning outcomes of Islamic Education and Character Building in Grade XI at SMAN 3 Pandeglang.

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1. INTRODUCTION

Education is an important element in the development of a developing country like Indonesia, as mandated in Law Number 20 of 2003, which defines education as a process of positive development of religious spirit, self-discipline, character, intelligence, noble morals, and skills needed for life in society, nation, and state (Singerin, 2022; Sakroni, 2023). Islamic Religious Education (PAI) plays a strategic role as a conscious and planned effort to guide students to know, understand, and practice Islamic teachings based on the Qur'an and Hadith (Nuzli et al., 2021; Syamsuddin, 2022; Cahyani & Masyithoh, 2023). In addition, PAI encourages students to respect adherents of other religions, create harmony between

religious communities, and strengthen national unity (Zulyadain, 2018; Ansari, 2019; Nasution, 2022).

Learning is a process of changing a person's behavior or personality through interaction with their environment (Hanafy, 2014; Setiawan, 2017). This process is shown in various forms, such as increasing knowledge, understanding, attitudes, behavior, skills, abilities, habits, and other aspects that develop in individuals who learn (Baartman, & De Bruijn, 2011). The jigsaw learning model is a collaborative approach that encourages students to actively participate, support, and motivate each other to achieve optimal understanding (Buhr et al., 2014; Berger & Hänze, 2015). In this method, students compete and work together to find solutions, overcome differences in perspective, and are responsible for understanding the material thoroughly without relying entirely on the teacher. By focusing on students, jigsaw facilitates more effective learning, increases student motivation, and supports their success. This model is expected to improve educational standards, especially in discussing the topic of Islamic Religious Education (Dewi & Arifin, 2016; Maftuhin, 2022).

The cooperative learning paradigm, according to Slavin, encourages students to engage in group discussions that allow for conversations about ideas or differences of opinion without interference from other groups. This approach, based on constructivist theory, emphasizes the importance of education in helping students develop skills, maximize potential, and encourage activities that support their growth as learners. In this case, the selection of learning models is very important. For example, the jigsaw cooperative learning model provides direct experiences that deepen students' understanding of Islamic Religious Education topics (Usman et al., 2022).

Based on the results of the pre-observation, several problems were found that hampered the learning process, such as the inability of some students to stay focused, easily feeling sleepy, and lack of attention to the material being taught. In addition, student boredom tends to increase, especially when studying material that is difficult to understand, especially during the day with hot weather. The focus of learning is still centered on the teacher lecturing so that students are less actively involved. This condition contributes to students' low understanding of the material and the minimal use of learning media that supports interactivity. Therefore, changing the learning approach, such as utilizing more interactive methods and innovative learning media, is important to increase student concentration and participation. After the learning activity, evaluation and motivation from the teacher are expected to motivate students to remain enthusiastic and innovative in the learning process. This study aims to analyze the learning outcomes of Islamic Education before and after applying the Jigsaw cooperative learning method and to evaluate its impact on improving students' academic achievement in Islamic Education subjects.

2. RESEARCH METHOD

A quasi-experimental research design design with a nonequivalent model (pretest and posttest) control group design was chosen to test the effect of treatment on the experimental group. This design involves two groups that are not randomly selected—the experimental group that receives the treatment and the control group that does not. In the pretest stage, both groups are given an initial test to measure their abilities. In contrast, in the posttest, only the experimental group is given treatment using the jigsaw cooperative strategy. The difference in pretest and posttest scores in the experimental group shows the impact of the treatment received. In contrast, the control group serves as a comparison to measure the effects of the treatment.

Measurements are taken before and after treatment to evaluate the changes produced. This design helps ensure that the differences found are not caused by external factors but by

the intervention given. This Quasi-Experimental model is expected to provide insight into the effectiveness of using the jigsaw cooperative method in improving student understanding and achievement.

3. FINDINGS AND DISCUSSION

The pre-test for class XI A was conducted on September 20, 2023, to measure students' initial abilities before receiving treatment. Students' initial learning outcomes are presented in a distribution table to provide a clear and structured picture of the data obtained. The frequency distribution table for the initial learning outcomes (pre-test) for class XI A shows a varied distribution of scores, which helps identify students' ability levels before treatment. This data is the basis for comparing learning outcomes after treatment so that the effectiveness of the learning methods applied can be measured.

Table 1. Scores (Pre-test) of Class XI A Students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	29-38	1	3.3	3.3	3.3
	39-48	1	3.3	3.3	6.7
	49-58	5	16.7	16.7	23.3
	59=68	8	26.7	26.7	50.0
	69-78	11	36.7	36.7	86.7
	79-88	4	13.3	13.3	100.0
	Total	30	100.0	100.0	

Table 1 shows the frequency distribution of pretest scores of class XI A students. Pretest scores are categorized into several intervals, namely 29-38, 39-48, 49-58, 59-68, 69-78, and 79-88. A total of 1 student (3.3%) has a score in the 29-38 category and one student (3.3%) in the 39-48 category. The highest score appeared in the 69-78 category with 11 students (36.7%), indicating that most students have better initial abilities. Meanwhile, scores above 79-88 were four students (13.3%). Overall, the distribution of scores shows that most students have pretest scores in the range of 59-78, indicating a fairly good level of understanding before treatment.

Table 2. Scores (Posttest) of Grade XI B Students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30-39	1	3.3	3.3	3.3
	50-59	4	13.3	13.3	16.7
	60-69	8	26.7	26.7	43.3
	70-79	6	20.0	20.0	63.3
	80-89	11	36.7	36.7	100.0
	Total	30	100.0	100.0	

Table 2 shows the frequency distribution of posttest scores of grade XI B students. Posttest scores are categorized into several intervals, namely 30-39, 50-59, 60-69, 70-79, and 80-89. The results show that most students' posttest scores are in the 80-89 category, with 11 students (36.7%) showing a significant increase after treatment. The 70-79 category is followed by six students (20.0%), while the 60-69 category has eight students (26.7%). Lower scores are found in the 30-39 and 50-59 categories, with only one student (3.3%) and four students (13.3%), respectively. This table illustrates a clear increase in post-test scores after implementing the treatment.

In this study, the normality test was conducted to compare the learning outcomes of students taught using the jigsaw method and conventional methods. Table 3 shows the results of the normality test using Kolmogorov-Smirnova and Shapiro-Wilk.

Table 3. Results of Normality Test

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	Df	Sig.	Statistic	Df	Sig.
Hasil Belajar Siswa	Pre-Test Eksperimen (Jigsaw)	.079	30	.200*	.961	30	.321
	Post-Test Eksperimen (Jigsaw)	.068	30	.200*	.971	30	.559
	Pre-Test Kontrol (Konvensional)	.158	30	.053	.912	30	.017
	Post-Test Kontrol (Konvensional	.118	30	.200*	.957	28	.300

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 3 presents the normality test results for the pretest and posttest data of students in the experimental group (taught using the jigsaw method) and the control group (taught using the conventional method). The Kolmogorov-Smirnova and Shapiro-Wilk columns were used to test the hypothesis that the data follows a normal distribution. In the experimental group (jigsaw), the significant value for the pretest was 0.200, and the posttest was 0.200, indicating that the data was normal at a significance level of 5%. On the other hand, in the control group (conventional method), the pretest results had a significance of 0.053, while the posttest was 0.200, which also indicated normal data. In the Shapiro-Wilk test, the control pretest showed a non-conformity to the normal distribution with a significance value of 0.017. However, the control posttest showed a significance value of 0.300, indicating normality. These results indicate that the data can be continued for further inferential analysis.

The homogeneity test was conducted to compare the posttest results between the experimental group taught using the jigsaw method and the control group taught using the conventional method. Table 4 presents the results of the homogeneity of variance test.

Table 4. Homogeneity Test of Final Test Learning Outcomes
(Experimental and Control Post-test)

		Levene Statistic	df1	df2	Sig.
Hasil Belajar Siswa	Based on Mean	.155	1	58	.695
	Based on Median	.196	1	58	.660
	Based on Median and with adjusted df	.196	1	53.022	.660
	Based on trimmed mean	.193	1	58	.662

Table 4 shows the results of the homogeneity of variance test for student learning outcomes based on the post-test. The test results using Levene's Statistic show significant values in all columns, namely 0.695, 0.660, 0.660, and 0.662, all greater than 0.05. It indicates no significant difference in variance between the experimental group (jigsaw method) and the control group (conventional method) in the post-test. Therefore, it can be concluded that the assumption of homogeneity of variance is met, and further analysis can be carried out safely.

The t-test in this study was conducted to compare the post-test results between the experimental group taught using the jigsaw method and the control group taught using the conventional method. The main purpose of the t-test was to test the hypothesis of whether there was a significant difference between the two groups in terms of student learning outcomes. Table 5 presents the results of the t-test for the post-test data.

Table 5. T-Test Results of Learning Outcome Data

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Belajar Siswa	Equal variances assumed	10.028	.002	-2.576	58	.013	-4.933	1.915	-8.767	-1.099
	Equal variances not assumed			-2.576	49.378	.013	-4.933	1.915	-8.782	-1.085

Table 5 presents the t-test results to compare the post-test results between the experimental (jigsaw) and control (conventional) groups. The t-test results indicate a significant difference between the two groups, with a significance value of 0.013 ($p < 0.05$). Levene's test shows that the group variances are considered equal ($p = 0.002$), which strengthens the use of the t-test. The average difference in post-test results is -4.933, indicating that the experimental group obtained higher results than the control group. Therefore, the jigsaw method is more effective in improving student learning outcomes than the conventional method.

This finding aligns with previous studies showing that cooperative learning models such as jigsaw can improve student understanding and facilitate more active collaboration (Johnson & Johnson, 2014; Slavin, 2015). Johnson and Johnson (2014) stated that jigsaw cooperative learning allows students to interact intensively, share knowledge, and work together to understand the material, which ultimately positively impacts their academic achievement.

The t-test showed that the experimental group of the jigsaw method produced higher post-test scores than the control group taught using conventional methods. This finding is consistent with research by Slavin (2015), which states that cooperative learning such as jigsaw can encourage students to participate actively, develop social skills, and increase their learning motivation. The jigsaw model facilitates independent learning and teaches students to share and integrate information to understand better and apply knowledge effectively (Sharan, 2012). Therefore, using the jigsaw method in learning can increase student engagement, motivate them to interact, and strengthen their cognitive abilities.

It aligns with constructivist theory, which emphasizes the importance of social interaction in the learning process (Vygotsky, 1978). According to Vygotsky, meaningful learning occurs through interaction between individuals and the social environment. In this context, the jigsaw learning model provides opportunities for students to discuss, share ideas, and help each other so that they understand the material individually and collaboratively. Research by Hattie (2009) confirms that collaborative learning, such as jigsaw, can strengthen critical thinking skills and improve student learning outcomes. Therefore, the t-test results indicate that jigsaw learning can positively impact learning outcomes, especially in the context of Islamic religious learning, where understanding complex concepts is essential.

4. CONCLUSION

The jigsaw cooperative learning model significantly improves student achievement in the material of aqidah and akhlak in class XI SMAN 3 Pandeglang. The posttest results showed that students who received treatment using the jigsaw method experienced an increase in average scores from 64.43 (pre-test) to 69.35 (post-test). A similar increase was

seen in the average pretest (65.93) and posttest (71.80) scores in the experimental class, while the posttest score in the control class only reached 79.03. The t-test results showed = 10.827 > 2.030 at a significance level of 0.05, which means that the alternative hypothesis is accepted and the null hypothesis is rejected. Therefore, jigsaw cooperative learning positively impacts student achievement in Islamic Religious Education (PAI) learning on the material of aqidah and akhlak. At the same time, the conventional method did not show a significant effect.

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