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The Effectiveness of Collaborative and Discovery Learning Methods in Improving Students' Creative Thinking Ability in "*Aqidah Akhlaq*" Learning in Madrasah Tsanawiyah

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ABSTRACT

Objective: The researcher chose a topic of discussion regarding the comparison of 2 learning models that are theoretically effective for use in the classroom when learning *Aqidah Akhlak*. In its application, learning the Aqidah Morals can be delivered through several methods. This research aims to test the effectiveness of collaborative and discovery learning models on students' creative thinking skills. **Method:** The research method used was a pre-test and post-test design experiment. The research sample consisted of 2 classes divided into two groups, namely two experimental groups that used collaborative and discovery learning models. The data analysis technique used in this research is the normality test using the Shapiro-Wilk, independent sample t-test, paired sample t-test, and N-Gain tests. **Results:** After the treatment, the data analysis from the post-test scores can be seen. Based on the N-Gain Test shows that creative thinking skills increased significantly in both groups after treatment, with data results in the collaborative group being 0.46 < 0.70 in the medium category and the discovery group only 0.27 < 0.30 in the low category. These data showed a more significant improvement in the group that received collaborative learning than in the discovery group. **Novelty:** This research presents novelty, which lies in the comparative approach taken to analyze the two methods simultaneously, as well as the use of holistic, quantitative measuring tools to identify significant changes in students' creative thinking abilities.

INTRODUCTION

Education is a conscious and planned effort to create a learning environment where students can actively develop their potential in the learning process. Learning obtained is not only general lessons but also prioritizes religious lessons to regulate social norms in the environment students will face (Chan et al., 2021; Sari & Lahade, 2022). The importance of national education goals is the presence of Islamic religious subjects in public schools. In addition, religious education is also the core of learning in madrasah schools. One is studying *Akidah Akhlak*, which is part of Islamic religious education and focuses on emotional aspects. The subject "*Akidah Akhlak*" (Attitude and morals) is found at the Madrasah Tsanawiyah and Madrasah Aliyah levels, which is one of the subjects that aims to enable students to recognize, understand, appreciate, and practice Islamic behavior. This means that students must be able to perfect their ideas and develop their creative thinking to achieve the subject's objectives.

Education today is faced with the demand to produce individuals who are not only able to master academic material but also have the social, critical, and collaborative skills necessary for success in a changing world. One of the skills that learners need to have is

the ability to think creatively. Creative thinking is a mental activity that develops or discovers original, aesthetic, and constructive ideas related to conceptual views, emphasizing aspects of intuitive and rational thinking (Sinnema et al., 2020). Someone who can think creatively must also have critical thinking skills. People with creative thinking skills, called divergent thinking, are very creative and helpful for many people. With the ability to think creatively, a person will easily explore knowledge conveyed in general and require reasoning to accept this knowledge. With creative thinking, teachers and learners will more easily go hand in hand and towards learning goals effectively (Redifer et al., 2021; Zhong, 2022).

Some of the activities carried out when thinking include reasoning by memorizing, imagining, putting together several thoughts, comparing, evaluating, analyzing, and drawing conclusions from the thought process (Chen et al., 2022). In this case, the thinking process is to find analysis and connect with real situations, then conclude and get the results of the thinking. When considered contextually, efforts to develop creative thinking in Madrasahs are minimal in scope, and students' independence could be much better because facilitators only measure students' achievements in quantity, not how far they understand and can conclude with the ideas they have.

In this context, a teacher can use a variety of learning models to improve students' creative thinking, including collaborative and discovery learning models. Collaborative learning models have attracted attention for their potential to facilitate the development of such skills while promoting better academic achievement (Aggarwal et al., 2021; Akhrif et al., 2020). In the era of evolving education, learning is no longer limited to traditional teaching, where the teacher is the primary source of knowledge. Instead, learning models that focus on collaboration between students and teachers are increasingly in the spotlight, including collaborative learning models. This model places students as active participants in the learning process, allowing them to learn from each other with the support of a facilitator (Galkin et al., 2021; Jafari et al., 2022).

VHS 2 Depok before implementing the Merdeka Curriculum, MTs An Nuur still uses the 2013 Curriculum in the learning process. As we know, the 2013 curriculum was developed to improve the learning mindset, which began with teachers tending to be accustomed to using conventional teaching methods, causing students to be less active and bored in participating in the learning process. Along with the change in curriculum, such teaching methods were changed to prioritize the learning process over learning outcomes. This aims to create active students who can think creatively during the learning process. Learning that has been carried out is not a few teachers who still use the lecture method. The lecture method is one of the methods used at the beginning of learning; this model requires students to be more independent in analyzing the material; the teacher is only a facilitator in delivering the material (Kiewra, 1991; Ulimaz et al., 2023).

Based on the researcher examines the research described in this article on increasing student activity through the development of creative thinking skills in the subject of *Akidah Akhlak* by using collaborative learning methods, and discovery must be provided. The collaborative learning model is an interaction between two or more people, a teacher and a student, who learn something together. This learning model emphasizes the active participation of educators and students in building a classroom climate (Lock & Redmond, 2021; Wang et al., 2023). Learning with this model makes collaboration more accessible by providing opportunities for students to share their ideas and be responsible

for group learning outcomes. Discovery learning is a learning process in which students systematize their learning methods while discovering concepts rather than presenting them in a final form. This learning model is designed to provide students with learning scenarios to solve real-world problems and help them solve their problems (Rahayu et al., 2023; Zhang et al., 2021).

This research brings novelty in comprehensively examining the effectiveness of Collaborative Learning and Discovery Learning models on creative thinking skills in *Akidah Akhlak* subjects. This area has yet to be widely explored. The urgency of this research lies in the importance of improving the quality of education that focuses on cognitive aspects and developing creative thinking skills needed in this modern era. The contribution of this research is expected to provide practical guidance for educators in choosing and implementing the most effective learning methods and encourage curriculum development that is more responsive to 21st-century learning needs, especially in religious education. Based on several considerations of the problem and the results of previous research, researchers will apply a learning model that requires teachers to make students comfortable, make lessons easy to understand, and help students improve their creative thinking skills. Therefore, the researcher intends to conduct research titled Effectiveness of Collaborative and Discovery Learning on Creative Thinking Ability in *Akidah Akhlak* Subjects for Class VIII Students at Mts An Nuur Trisono.

RESEARCH METHOD

A quantitative approach was used in this research. The quantitative approach is a research method based on the philosophy of positivism, where a specific population or sample is studied, data is collected using research instruments, and the aim is to describe and test a given hypothesis. Quantitative research uses various types of research, including experiment, ex post facto, description, development, survey, and evaluation (Arga et al., 2022). The researcher chose a quantitative approach with experimental research using a control group pre-test and post-test design specifically for a particular sample (Arga et al., 2022; Heru et al., 2021). There are two classes in the quasi-experimental research: experimental class 1 and experimental class 2. Experimental Group 1 and Experimental Group 2 were not chosen randomly, so they used classes at MTs An Nuur. Therefore, researchers chose this method. Experimental group 1 received treatment by applying a collaborative learning model, and experimental group 2 received treatment by applying a discovery learning model (DL).

Table 1. Experiment design.

Group	Class	Pre-test	Treatment	Post-test
E1	VIII A	O_{11}	X_1	**O_{12}**
E2	VIII B	O_{21}	X_2	**O_{22}**

Description:
E1 = group with CL learning model
E2 = group with DL learning model
X1 = treatment in the form of learning with CL learning model
X2 = treatment in the form of learning with the DL learning model
O1 = initial test results (Pre-test) Experiment 1 class
O2 = initial test results (Pre-test) of Experiment 2 class
O1 = final test results (Post-test) Experiment 1 class
O2 = final test results (Post-test) Experiment 2 class

The research design for data collection was based on a non-equivalent control group design pre-test and post-test. Two tests were carried out to determine the cognitive impact: an initial test (pre-test) and a final test (post-test). The pre-test was used to determine the abilities of the two groups before being given treatment in the form of a learning model. The post-test was carried out at the end of the lesson and was used as a learning model to determine the learning outcomes of the two groups after treatment. The pre-test and post-test results were then compared, and a Pretest-Posttest Non-Equivalent Control Group Design research design was used in Table 1. In this research, the type of measurement instrument uses pre-test and post-test, and pre-test and post-test instruments are tested using validity and reliability tests. Next, a normality test, homogeneity test (if the data is normally distributed), and hypothesis testing are carried out (Dwi et al., 2022).

Hypothesis:

H_0: There is no difference in the average cognitive learning outcomes between students in experimental class 1 using the Collaborative Learning model and experimental class 2 using the Discovery Learning model.

H_1: There is an average difference in cognitive learning outcomes between students in experimental class 1 using the Collaborative Learning model and experimental class 2 using the Discovery Learning model.

The researchers then conducted a normality test using the Shapiro-Wilk test because the respondents numbered less than 50. Table 2 is a lattice of instruments from the *Akidah Akhlak* Semester 2.

Table 2. Grid of pretest-posttest instruments.

Basic Competencies	Aspect	Indicator	Question Number	Question Items
Understand the nature of praiseworthy morals and get used to praiseworthy moral behavior. (*Husnudzon, Ta'awun, Tasamuh, Tawadhu', Tawakkal*)	Knowledge	We identify the praiseworthy moral behavior of Husnudzon, Ta'awun, Tasamuh, Tawadhu', and Tawakkal.	1, 2, 12, 4, 9, 13	6
	Understanding	Understand some behaviors that include praiseworthy morals (Husnudzon, Ta'awun, Tasamuh, Tawadhu', Tawakkal)	3, 5, 14, 6, 7	5
	Application	Explore the application of students' praiseworthy moral behavior	8, 10, 11	3
	Assessment	Summarize the understanding of praiseworthy morals	15, 16, 17	3
		Summarize the relevance of some praiseworthy morals	18, 19, 20	3
Total				20

A normality test is a statistical procedure to test whether the observed data comes from a normal distribution. A normal distribution is a symmetrical, bell-shaped probability distribution. Normality tests are generally used before applying specific parametric statistical analyses, such as the t-test and analysis of variance (ANOVA) because the basic assumption of those methods is that the data come from a normal distribution. If the data does not meet the standard distribution assumption, it may be necessary to apply non-parametric statistical methods that are more appropriate for the data analysis. Normality tests can be carried out by various methods, including visual tests such as histograms and formal statistical tests such as the Kolmogorov-Smirnov test, the Shapiro-Wilk test, or the Lilliefors test (Prahani et al., 2020; Wardani & Jatmiko, 2021). Based on this, this study uses the Shapiro-Wilk test. The Shapiro-Wilk normality test is a statistical method used to test whether a data sample comes from a normal distribution. This method is based on calculating the correlation coefficient between each observation in the sample and the expected values of the normal distribution, considering the correlation between these observations. The Shapiro-Wilk normality test produces a p-value that indicates the significance level at which a sample of data can be considered to come from a normal distribution.

The independent sample t-test is a statistical method used to compare the means of two independently different groups. In this test, data from two different groups are taken randomly and considered independent of each other. This test aims to determine whether there is a significant difference between the means of the two groups. This test is often used in scientific research to test the difference between treatments or conditions on a particular variable. The results of the independent sample t-test provide information on whether the difference between the two groups can be considered statistically significant or merely coincidental (Sawilowsky & Hillman, 1992).

The paired sample t-test is a statistical method used to compare two means derived from the same or paired samples. Each individual or pair is measured twice under different conditions in this test. For example, in a clinical study, patients are measured before and after a particular intervention. The paired sample t-test is used to determine whether there is a significant difference between the values before and after the intervention (Afifah et al., 2022). This procedure is beneficial in scientific and clinical research because it reduces inter-individual variability and increases the sensitivity of the analysis to changes that occur at the individual level. Thus, this test assists researchers in evaluating the effectiveness of an intervention or treatment by comparing pre-and post-treatment values directly on the same subject.

Table 3. Classification of N-Gain values.

N-Gain Values	Category
G > 0.70	Tall
0.30< g <0.70	Currently
G < 0.30	Low

Table 3 shows N-gain test is a statistical method used to measure the improvement of students' understanding or performance before and after following a specific learning or intervention. It specifically focuses on the difference between the pre-test and post-test of a group of individuals following a learning program. N-gain can provide valuable information to educators to evaluate teaching effectiveness and improve learning strategies to achieve better results in increasing students' understanding of the subject

matter taught (Yusanto, 2020). The higher the N-gain value, the more significant the increase in student understanding or performance that can be achieved.

RESULTS AND DISCUSSION

Results

The cognitive learning results of class VIII students were obtained after carrying out a pre-test before studying in the CL experimental and DL experimental classes, after which the researchers provided treatment or action by carrying out learning in the CL experimental class with a collaborative learning model, and a discovery learning model in the DL experimental class. Learning activities usually begin with opening, core, and final activities. Students listen and ask questions about the learning material, evaluate and summarize it at the end of the lesson, and provide a post-test LKPD at the end of the lesson to see the learning results. Based on the number of respondents, namely 38 respondents, the number of respondents in this study was less than 50, so the normality test used was the Shapiro-Wilk test. The Shapiro-Wilk normality test is a statistical test used to test whether a data sample comes from a normal distribution. The Shapiro-Wilk normality test is often used before parametric statistical analysis because many statistical techniques assume the data comes from a normal distribution. The following are the data results from the Shapiro-Wilk normality test in Table 4.

Table 4. Shapiro Wilk normality test.

		Shapiro-Wilk			Decision
		Statistic	**df**	**Sig.**	
Pretest	Experiment CL Experiment DL	0.91	38.00	0.05	**Significant**
Post-test	Experiment CL Experiment DL	0.94	38.00	0.06	**Significant**

a. Lilliefors Significance Correction

This output shows that the Sig. The pre-test was 0.91, and the Sig value was in the Experimental group's CL and DL. The post-test is 0.94. The value produced in this normality test is > 0.05, so according to the Shapiro-Wilk normality test decision, the test results data for students from the CL experimental group and the DL experimental group are normally distributed. Next, to see the average value of two unpaired samples, use the independent sample t-test, which requires that the data is usually distributed and homogeneous. By calculating the t value and comparing it to the critical value in the t distribution, this test provides insight into whether the difference between the two groups results from true variability or just chance. Following are the data results from the independent sample t-test.

Table 5. Independent sample t-test (pre-test).

Independent Samples Test						
		Levene's Test for Equality of Variances		**t-test for Equality of Means**		
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
Pre-test	Equal variances assumed	.007	.93	-1.31	36.00	.19

	Equal variances are not assumed.			-1.31	35.48 .19

Based on the pre-test homogeneity test table for the CL and DL experimental groups shown in the Table 5, the probability value (signification) with Levene's Test for Equality of Variances is 0.62 > 0.05, which means the data has a homogeneous variance. Then, the significance value with Equality of Means is 0.19 > 0.05, so Ho is accepted. So, the average pre-test results between the CL experimental group and the DL experiment group before being given treatment were the same. Next, an independent sample t-test analysis of the post-test scores of the CL experimental and DL experimental groups aimed to determine whether there was a significant difference in post-test scores in the CL experimental and DL experimental classes after treatment. Table 6 summarizes the post-test t-test for the CL experimental and DL experimental groups.

Table 6. Independent sample t test (posttest).

Independent Samples Test						
		Levene's Test for Equality of Variances		**t-test for Equality of Means**		
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
Post test	Equal variances assumed	.34	.56	5.36	36.00	.00
	Equal variances are not assumed.			5.36	35.89	.00

Based on the homogeneous post-test table for the CL and DL experimental groups shown in Table 6, it can be seen that the probability value (significance) with Levene's Test for Equality of Variances is 0.56 > 0.05, which means the data has a homogeneous variance. Then, the significance value with Equality Of Means is 0.00, indicating the sig value. < 0.05, then Ho is rejected. So, there are differences in student learning outcomes between those who use the Collaborative Learning learning method and those who use the Discovery Learning learning method in class VIII in learning Moral Creeds material on Praiseworthy Morals. Next, to see the difference in average values in the two samples, researchers used the paired sample t-test in Table 7.

Table 7. Paired sample t-test.

		t	**df**	**Sig. (2-tailed)**	**Decision**
Pair 1	Pretest-Posttest	-13.66	18.00	.00	**Significant**
Pair 2	Pretest_DL - Posttest_DL	-10.83	18.00	.00	**Significant**

Based on the results of the paired sample t-test, the Sig value was obtained. (2-tailed) is 0.00 < 0.005, so there is a difference in the average student learning outcomes for the pre-test and post-test experimental classes CL and DL. The aim is to see the average difference in cognitive learning outcomes between CL and DL experimental class students through the N-Gain Test or by comparing Post-test scores in Table 8.

Table. 8 N-Gain test data score.

Group	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**	**Decision**

	Exp CL	19	.46	.36	.83	**Effective enough**
N-Gain	Exp DL	19	.27	.14	.01	**Less effective**

The average N-gain percent value from Table 9 for the CL Experiment class is 0.46, so it is based on the interpretation category of the effectiveness of the N-gain value < 0.70 on medium criteria. Furthermore, the average N-gain value for the DL Experiment class is 0.27. Based on the effectiveness interpretation category, the N-gain value <0.30 is in the low category for improving students' creative thinking abilities. With a minimum N-gain value of 0.30 and a maximum of > 0.70. Based on the t-test results from several calculations by researchers, the Collaborative Learning model is more effective than the Discovery Learning model.

Discussion

This research was conducted at Madrasah Tsanawiyah An Nuur Trisono, Babadan, Ponorogo. The researcher took a sample of 2 classes to compare from class VIII A and B in the Aqidah Moral Subject. In this research, the researcher compares the use of 2 learning models, namely the collaborative and discovery models. The results of this research show that the collaborative learning model and the discovery model have their respective advantages and disadvantages. The effectiveness of both depends on how the teacher delivers and how students learn and receive the teaching. The data analysis results show that the learning model is more effective than the discovery model (Adhami & Taghizadeh, 2024; Mora et al., 2020). However, these two learning models certainly have their respective advantages and disadvantages. The advantage of the collaborative model lies in its ability to increase students' understanding through active interaction. Students work together to complete assignments or projects, exchange opinions, and discuss complex concepts in this context. This method allows students to learn from each other through sharing their ideas, experiences, and knowledge (Beskara, 2024; Boud & Bearman, 2024).

Apart from the advantages of the collaborative learning model, the discovery learning model has advantages and disadvantages. The discovery learning learning model has several advantages that make it a practical approach to the learning process. One is its ability to stimulate students' active involvement in the learning process (Baso et al., 2024; Rafiei et al., 2023). By providing opportunities for students to discover and construct their knowledge through exploration, experimentation, and discovery, this model allows students to understand concepts in depth. In addition, the discovery learning model also encourages the development of critical thinking skills, creativity, and problem-solving abilities because students must think independently and face challenges as they explore learning material. Thus, this learning model improves understanding of concepts and helps students develop skills that are important for facing challenges in the real world (Sahari & Ayunis, 2024; Sulastri et al., 2024).

Increasing the results of students' creative thinking abilities in data analysis carried out by researchers using the Independent Sample t Test gave the results of the probability value (significance) with Levene's Test for Equality of Variances, which was 0.56 > 0.05, which means the data has a homogeneous variance. Then, the significance value with Equality Of Means is 0.000, indicating the sig value. < 0.05, then Ho is rejected. So, there are differences in student learning outcomes between those who use the Collaborative Learning learning method and those who use the Discovery Learning learning method

in class VIII in learning Moral Creeds material on Praiseworthy Morals. Apart from using the Independent Sample t-test to determine the average value of the CL and DL learning models, researchers used the Paired Sample t-test to help researchers evaluate the effectiveness of an intervention or treatment by directly comparing the values before and after the treatment. The results of the Paired Samplt-testst on the post-test results using the CL and DL models are Based on the results of the paired sample-test, the Sig value is obtained. (2-tailed) is 0.00 < 0.005, so it can be concluded that there is a difference in the average student learning outcomes for the pre-test experimental class and the post-test experimental class CL and DL.

Next, the researchers used the N-Gain Test to see the difference in average cognitive learning outcomes between CL and DL experimental class students by comparing the Post-test scores. Based on the results of the post-test N-Gain test for the CL Experiment class, it was 0.46, so it was based on the interpretation category of the effectiveness of the N-Gain value < 0.70 on the medium criteria. Meanwhile, the average N-gain value for the DL Experiment class is 0.27, so based on the effectiveness interpretation category, the N-gain value <0.30 is in the low category for improving students' creative thinking abilities. With a minimum N-gain value of 0.30 and a maximum of > 0.70. The results of the N-Gain t-test show the difference in the effectiveness of using the learning model, where the Collaborative Learning model is more effective than the Discovery learning model.

Research and practical experience show that collaborative models are often more effective than discovery models in learning contexts (Halawa & Darmawan, 2024; Sahari & Ayunis, 2024). This is due to its ability to foster student cooperation, promote active communication, and encourage the exchange of ideas and joint problem-solving (Indrawan & Alim, 2022; Saqr et al., 2024). In a collaborative model, students can support each other, broaden their perspectives through discussion, and build a shared understanding of the concepts learned. Additionally, through collaboration, students can hone social and teamwork skills that are important for life outside the classroom. Thus, the collaborative model offers a more holistic and in-depth approach to the learning process, better preparing students to face real-world challenges (Boud & Bearman, 2024; Zhang, 2024). Using collaborative learning methods to improve learning outcomes in the Moral Akidah Subject and Material "Praiseworthy Morals" for Class VIII students at MTs An-Nuur Trisono can be very effective. On the other hand, the use of the Discovery Learning method is less effective in improving learning outcomes in the MTs An-Nuur Trisono Akhlak Aqidah Subject for Academic Year 2023/2024 Learning Material for Class VIII Students "Praiseworthy Morals."

CONCLUSION

Fundamental Finding: Findings in the article regarding the effectiveness of the Discovery Learning learning model in the *Aqidah Akhlak* subject show that this method significantly increases student understanding and engagement. The research results indicate that students who learn through Discovery Learning show improvements in critical thinking, creativity, and problem-solving abilities. They also participate more actively in the learning process, show greater interest, and can better apply the concepts of faith and morals in real situations. **Implication:** Researchers took the theme of comparing two learning methods, namely discovery and collaboration, to test how effectively the learning model is used to improve students' creative thinking abilities. The implications of the article regarding the effectiveness of the Discovery Learning learning

model in the *Aqidah Akhlak* subject show that the application of this method can increase the understanding and application of faith and moral values in a more in-depth and contextual manner. **Limitation:** However, it is essential to remember that these conclusions may be specific to the context of the research conducted at MTs An Nuur Trisono and cannot be directly applied to other contexts. However, these results provide a basis for educators to consider using collaborative learning models to improve students' creative thinking skills in *Akidah Akhlak* or other subjects. **Future Research:** Research on the effectiveness of the Discovery Learning learning model in the *Aqidah Akhlak* subject shows positive results. This application model helps students learn actively and independently and improves their understanding of the material being taught. This research presents novelty, which lies in the comparative approach taken to analyze the two methods simultaneously and the use of holistic, quantitative measuring tools to identify significant changes in students' creative thinking abilities.

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