

# The Effect of Treffinger Learning Model in Building Students' Creative Disposition in Elementary School Science Learning

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## Article Info

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**Abstract:** This study aims to find and describe the effect of Treffinger learning model on students' creative disposition. The number of subjects in this study consisted of two class groups, namely the experimental class with a total of 20 students and the control class with a total of 24 students conducted at SDIT Generasi Muslim Cendekia. Data collection methods were carried out by means of documentation, observation, questionnaires and tests. The results of this study indicate the effect of Treffinger learning on the creative disposition of students in the experimental class group with the results of the creative disposition hypothesis test obtained an F value of 77.362 with a significance of  $0.000 < 0.05$ , then  $H_0$  is rejected, so  $H_a$  is accepted. Based on the results of the analysis that the Treffinger learning model is proven to be able to improve the creative disposition of science of SDIT Generasi Muslim Cendekia students.

**Keywords:** Learning model; Treffinger; Creative Disposition; Science; Elementary School

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## Introduction

Science education at primary school level plays an important role in shaping the basis of scientific thinking and creative attitudes of students (Ali, 2018, 2021; Mellyzar et al., 2022; Meng, 2023; A. A. Sukarso & Muslihatun, 2021). Creativity is one of the important competencies that need to be developed in education, especially in the context of science learning (Darminto, 2010; Munandar, 2016; Safi'i, 2019). In this modern era, creativity is not only designed as an artistic ability, but also as an ability in various fields, including science and maths.

Creativity involves divergent thinking or creative thinking, which includes the skill to find many alternatives or solutions to a problem (Carroll & Guilford, 1968; Sternberg, 2018). Creativity that is

formed from creative thinking is also inseparable from creative disposition. Creative disposition describes the pattern of creative behaviour of learners naturally without coercion. Learners who have a creative disposition not only show the ability to generate new ideas, but also to evaluate and apply those ideas effectively in diverse situations (Davison-Jenkins, 2003; Thornton, 2010). This creative disposition is one of the aspects that must be developed in science learning, especially at the elementary school level. One approach that can be used to improve students' creativity in science learning is through the application of the Treffinger Model.

The Treffinger model is one of the learning models designed to develop creative thinking skills through a structured problem-solving process (Fitriana

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*et al.*, 2024). This model consists of three main stages: divergent thinking, convergent thinking, and problem-solving (Annuuru *et al.*, 2017; Dassa *et al.*, 2020; Putri & Fatah, 2023; Sumiati *et al.*, 2022; Widayanti & Aisyah, 2019). Each stage of the Treffinger model is designed to help learners explore new ideas, develop diverse ideas, and choose the most appropriate solution to the problem at hand.

Research on the application of the Treffinger Model at the primary school level is growing, especially regarding its impact on learners' creative disposition, namely the tendency of learners to think creatively consistently (Eprilian *et al.*, 2015; Wirahayu *et al.*, 2018). Creative disposition indicators are inquisitive, persistent, imaginative, collaborative, disciplined (Lucas, 2016; Nevid *et al.*, 2011; Permanasari *et al.*, 2021; Porajow, 2021; Rosalinda *et al.*, 2023; A. Sukarso *et al.*, 2019). Therefore, the use of the Treffinger Model in science learning is expected to facilitate the improvement of learners' creative disposition, so that they are able to face scientific challenges more innovatively and adaptively.

However, many studies show that the learning process in schools still often focuses on memorisation and procedures without providing enough space for learners to develop their creativity (Leasa *et al.*, 2023; Safi'i, 2019). One learning model that is considered effective in improving learners' creativity is the Treffinger model. The Treffinger model is an approach designed to develop creative thinking and problem-solving skills through a step-by-step process involving exploration, idea development and solution implementation (Treffinger *et al.*, 2023). Through this model, learners are invited to be actively involved in the learning process, thus improving their creative disposition.

This research focuses on the application of the Treffinger model in building the creative disposition of grade five learners in one of the primary schools in Central Lombok, West Nusa Tenggara. Several previous studies have shown that the Treffinger model is effective in improving learners' creativity across a range of subjects, including science (Hasanah *et al.*, 2022; Lestari, K.L., & Yudhanegara, 2025; Mashuri, 2021). However, there is no information related to how creative disposition is built in previous studies. Thus, this research is expected to contribute to the role of the Treffinger learning model in building creative dispositions that underlie the emergence of creative thinking skills.

## Method

The research design used was *Pretest-posttes Control Group Design* (Sugiyono, 2018). In this design

there are two groups that are randomly selected. The population and samples in this study were fifth grade students of SDIT Generasi Muslim Cendekia School Year 2024. Sampling in this study used the *clustering* or *cluster sampling* method. *The clustering or cluster sampling* method is a sampling technique in which the population is divided into several groups (clusters), each of which serves as a small representation of the population (Cohen *et al.*, 2022; Sonawane & Patil, 2020). Each cluster should have similar characteristics to the population as a whole (Kumar & Kanavalli, 2021). The number of students is 44 people with details of the control class of 24 people and the experimental class of 20 people.

**Table 1.** *Pretest-Posttes Research Design Control Group*

Group	Pretest	Treatment	Posttest
Experiment	O <sub>1</sub>	X	O <sub>2</sub>
Control	O <sub>3</sub>		O <sub>4</sub>

The instruments used in this study include teaching modules, student worksheets and creative disposition questionnaires. The research data were collected using a creative disposition questionnaire distributed to students. The questionnaire was developed using five indicators: inquisitive, perceptive, imaginative, collaborative and disciplined (Lucas, 2016) and translated into 30 questionnaire statement items. The type of questionnaire is a closed-ended questionnaire. The questionnaire developed was limitedly tested and tested for reliability and validity. All questionnaire statement items were declared reliable (0.764) and valid (0.902) for use in research. The questionnaire answer scores were quantified using a Likert scale of 1-5. The implementation of the research was carried out by conducting learning using the Treffinger model for the experimental class and the demonstration model for the control class. Before learning, all students in the experimental and control classes were given a pretest to get data on students' initial creative disposition. Furthermore, the learning process/treatment was applied in the form of applying the Treffinger learning model to students in three meetings. Similarly, three meetings for the control class. The material discussed was about a harmonious Ecosystem. Each learning meeting ensured that the process could run according to the scenario, assessed using the learning implementation observation sheet. At the end of learning, students are given a *posttest* to see the results of the application of the Treffinger model. The research data in the form of quantitative data were processed and statistically analysed using

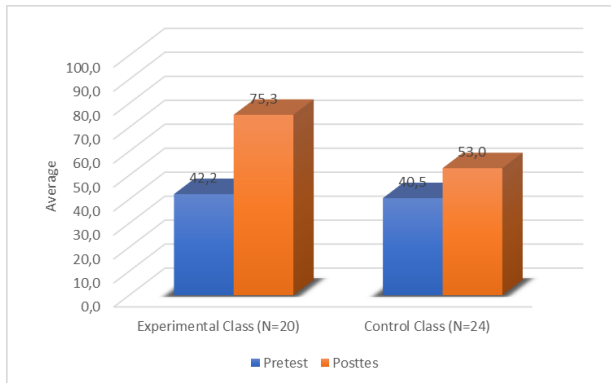
the ANOVA test. The processing technique uses the help of the SPSS version 25 application program.

**Result and Discussion**

**A. Research Results**

**1. Students' Creative Disposition**

Students' creative disposition was obtained by using a creative disposition questionnaire which was carried out at the beginning and end (*Pretest* and *Posttest*) of the implementation of the learning model, with the results as summarised in Figure 1.



**Figure 1.** Comparison of Average *Pretest* and *Posttest* of Creative Disposition of Experimental and Control Class Students

Experimental class students who used the Treffinger learning model obtained a difference with an average *pretest* score and *posttest* score of 33.1 points, while the control class using the demonstration model only showed a difference of 12.5 points. Thus the difference in the average value of creative disposition of experimental and control class students is 20.6 points.

The average N-Gain of increasing students' creative disposition in the experimental class (0.57) is included in the category of moderate improvement and in the control class (0.19) is included in the category of low improvement (Figure 2). This shows that the potential of the Treffinger learning model in improving students' creative disposition is better than the demonstration model. The statistical test results of the research data are summarised in Table 2.

Table 2 Summary of data processing results

Component	Experiments		Control	
	Pretest	Posttest	Pretest	Posttest
Number of Students	20	20	24	24
Average	42,2	75,3	40,5	53
Normalitas (Shapiro-Wilk)	.917	.917	.942	.975
Homogenitas (Levene)	.239	.359	.239	.359
	homoge	homoge	homoge	homog

Statistic)	n	n	n	en
N-gain		0,57		0,19

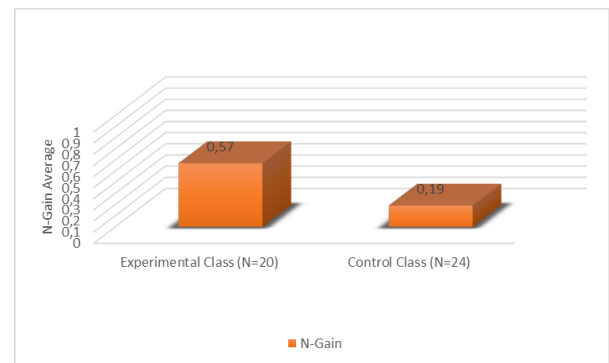
Based on Table 2, it appears that both the experimental class and the control class data are normally distributed and homogeneous. Furthermore, the results of further tests using ANOVA test are summarised in Table 3..

Table 3. Results of Anava Analysis of Creative Disposition

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	5437.152	1	5437.152	77.362	.000
Within Groups	2951.825	42	70.282		
Total	8388.977	43			

The anova test results based on Table 3 on the Treffinger learning model for students' science creative disposition variables obtained an F value of 77.362 with a significance of 0.000 <0.05; so it can be inferred that the Treffinger learning model has a significant effect on increasing students' creative disposition. In other words, the Treffinger model has a positive potential in building students' creative disposition.

The experimental class experienced an increase in creative disposition at N-gain = 0, 57 in the category of moderate improvement and the control class N-gain = 0.19 in the category of low improvement. The minimum N-Gain value of 32.69% and a maximum of 76.92% were obtained in the experimental class. The minimum N-Gain value of 0.02 and a maximum of 48.39% were obtained in the control class. This shows that the potential of Treffinger learning model is better in improving students' creative disposition.

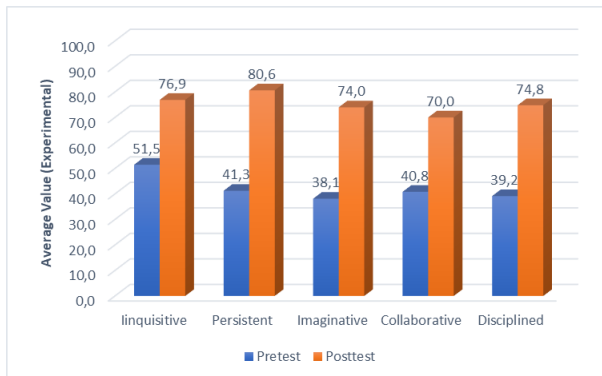


**Figure 2.** Comparison of Average N-Gain Value of Students' Creative Disposition

**2. Creative Disposition of students per indicator**

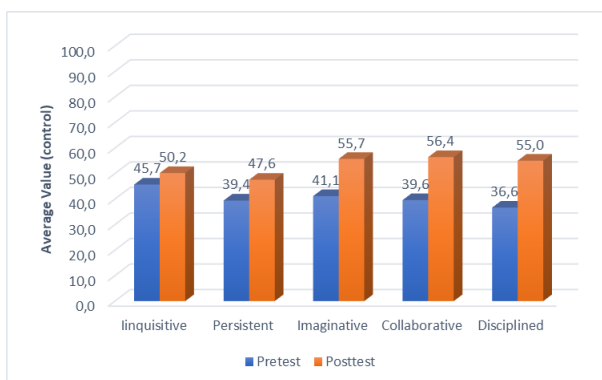
The increase in the creative disposition of experimental class students per Indicator is shown (Figure 3) showing an increase in all indicators of students' creative disposition. However, the biggest

increase occurred in the indicators of persistent and imaginative. Meanwhile, the disciplined and persistent indicators showed an increase in almost the same value. The difference in the average value per indicator of creative disposition, namely curiosity (inquisitive) by 25.4; persistent (persistent) by 39.4; having high ideas (imaginative) by 35.8; cooperation (collaborative) by 29.2; and discipline (disciplined) by 35.6.



**Figure 3.** Average score per indicator of creative disposition in the experimental class

In the control class, the biggest increase occurred in the indicators of cooperation (collaborative) and disciplined (disciplined) (Figure 4). Other indicators showed an increase in almost the same value. The difference in the average value per indicator of creative disposition, namely curiosity (inquisitive) by 4.5; persistent (persistent) by 8.2; having high ideas (imaginative) by 14.6; cooperation (collaborative) by 16.8; and discipline (disciplined) by 18.4.



**Figure 4.** Average score per indicator of creative disposition in the control class

**B. Discussion**

**1. The Effect of Treffinger Model in Improving Creative Disposition**

The results of the analysis of creative disposition data obtained in Tables 2 and 3 show that in general there is a significant difference in creative disposition between the experimental and control classes, where

the achievement level of the experimental class is higher than the control class. These results indicate that the Treffinger learning model is significant in building students' creative disposition.

The significance of this finding lies in its theoretical and practical implications. Theoretically, the results of this study enrich our understanding of the Treffinger learning model. Practically, the findings have implications for educators, policy makers or practitioners. The findings can be used as a basis for developing more effective training or learning programmes (Fitriani *et al.*, 2022; Permanasari *et al.*, 2021; Rosalinda *et al.*, 2023; A. Sukarso *et al.*, 2019).

Increasing creative disposition through the Treffinger model is done by inviting students to be trained to bring up creative disposition. The Treffinger model seeks to invite students to think creatively in solving problems by paying attention to important facts in the surrounding environment and then generating various ideas and choosing the right solution to be implemented in real life (Lasaiba, 2022). Treffinger's model focuses on divergent thinking, convergent thinking, and practical application of creative ideal (Lucas, 2016). The influence of this model on students' creative disposition is significant as it facilitates an environment that supports freedom of thought, exploration and experimentation (Mashuri, 2021).

The application of the Treffinger model encourages students to explore various possible solutions without fear of making mistakes, thus increasing their confidence and openness to new ideas. This contributes to the development of creative disposition, which is the tendency of students to engage in creative activities, such as generating new and innovative ideas, and thinking outside the box (Mulyoto *et al.*, 2023; Permanasari *et al.*, 2021; Porajow, 2021; Rosalinda *et al.*, 2023).

**2. Effectiveness of Treffinger Learning Model on Creative Disposition**

Based on Table 2 shows that the average N-Gain value of students' creative disposition in the experimental class (Treffinger Learning Model) is 0.57 including in the medium category and in the control class (demonstration) is 0.19 including in the low category. This shows that the Treffinger Learning Model on Creative Disposition in science lessons at SDIT Generasi Muslim Cendekia in 2024 is better in improving the emergence of students' creative disposition habits than the demonstration class.

The results of this study are in accordance with several previous studies that show the effectiveness of Treffinger learning model in learning such as research Hanafi *et al.*, (2017) shows that the application of the

Treffinger learning model can improve the activities and learning achievements of students in grade VIII SMP, namely an increase in classical completeness of students in cycle I of 66% and in cycle II of 88%; research Simangunsong et al., (2018) shows that the Treffinger learning model is effectively used in learning, it can be seen from the level of student mastery reaching 80.47 including the high category, student learning completeness reaching 91.18% including the complete category, the achievement of indicators reaching 100% including the achieved category, and the creative thinking ability of students reaching 75.04% including the creative category; other research from Safutri (2022) shows that the Treffinger learning model is effective in improving students' creative thinking skills; research from Hasanah et al., (2022) revealed differences in students' creative thinking between the experimental class using the treffinger learning model and the control class with the conventional learning model where the average score of the experimental class was higher, it was concluded that the treffinger learning model influenced students' creative thinking.

Thus, it can be concluded that the application of the Treffinger Learning Model to Creative Disposition in science lessons at SDIT Generasi Muslim Cendekia in 2024 is better in increasing the emergence of students' creative disposition habits than the demonstration class.

## Conclusion

Based on the results of research and discussion, it can be concluded in this study, namely: Treffinger learning model is proven to be able to build creative disposition of 5th grade students of SDIT Generasi Muslim Cendekia through science learning presentation. This potential is evidenced by the difference in significant improvement in the emergence of students' creative disposition in each test indicator compared to the control class. The increase in the emergence of creative disposition of the class with Treffinger learning method is in the category of moderate improvement, better than the improvement that occurred in the control class.

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