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THE EFFECT OF COLORING ACTIVITIES WITH GRADATION TECHNIQUES IN PRESCHOOL CHILDREN

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ABSTRACT

This study aims to examine the effect of coloring activities using gradient techniques on the creativity of Group B children at KH Dewantoro Pembina State Kindergarten, Gorontalo Indonesia. An experimental method with a one-group pretest-posttest design was employed. The study population consisted of Group B children at the Kindergarten, and a sample of 17 children from Group B3 was selected through purposive sampling. Data were collected using observation, documentation, and performance tests. The instrument used to measure children's creativity comprised five indicators: fluency, flexibility, elaboration, persistence, and originality. Data were analyzed using a paired-sample t-test. The results revealed that coloring activities using gradient techniques significantly enhanced children's creativity, as indicated by an increase in the mean pretest score from 39.55 to 75.73 in the posttest. Hypothesis testing using SPSS software produced a two-tailed significance value of 0.000, which is less than the 0.05 threshold. Therefore, the alternative hypothesis was accepted. It can be concluded that coloring activities employing gradient techniques are effective in improving children's creativity.

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1. INTRODUCTION

Childhood, often referred to as the golden age, represents a critical period of early growth and development that forms the foundation for future life. Early childhood education (PAUD) plays a vital role in shaping children's character and recognizing their individual uniqueness. The social, moral, physical, and psychological aspects of development vary among children, reflecting their distinctive traits and learning needs. Therefore, educators and parents must understand these differences to provide appropriate approaches that nurture each child's potential and

support holistic development (Hesti & Ismaniar, 2021).

Based on Law of the Republic of Indonesia Number 20 of 2003 concerning National Education System, Chapter 1 Article 14 states that "ECE is something effort targeted at coaching children from born until with age of six years carried out through giving stimulation education to help growth and development physically and spiritually so that children are ready to enter education more continuously." Article 28 also emphasizes that the implementation of ECE can be done through formal, nonformal, and informal channels.

Education is a vital part of human life and is needed throughout life. Through education, humans can develop themselves to face the various changes that occur in life (Ningsih et al., 2025). Early childhood education aims to create a fun and structured learning environment to foster spiritual strength, personality, intelligence, noble character, and the skills necessary for life in society, the nation, and the state (Laila et al., 2020). One of the important things that children develop early is creativity. This has to develop early because one's own influence is significant to the development of children. To create creative work, a high level of intelligence and imagination is required (Tuti et al., 2021). Creativity, according to Sulastya et al., (2023) is the ability to produce something new and original, such as ideas and tools, and the skill of finding new matter (inventiveness). Meanwhile, Yetti et al., (2019) view creativity as a rare characteristic that is difficult to teach but can be developed through chance and appropriate training, like a muscle in the body that can be strengthened through exercise.

Based on observations conducted at KH Dewantoro Pembina State Kindergarten, it was found that during coloring activities, the children were not yet able to blend colors creatively. Those who demonstrated limited creativity in coloring showed weaknesses in control techniques, color gradation, fluency, flexibility, exploration, persistence, and originality. The children were unable to produce two or more gradations or combine three colors in a fluent, smooth, and cohesive manner. These findings indicate that the children still face difficulties in developing creativity when engaging in coloring activities using the gradient technique.

Fine art as a medium of expression greatly supports the development of children's creativity. Art activities such as music, dance, drama, and visual arts stimulate children's imagination and help develop various aspects, including flexible thinking and active learning (Mulyana & Sari, 2021). In coloring activities, children



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can use several techniques, including block, gradation, scraping, and graffiti (Fadilla & Rahmawati, 2021). The gradation technique is considered interesting and fun for children because it involves mixing colors, which produces a new variation of color. This technique not only broadens children's understanding of color but also provides new experiences that stimulate their creativity. Most young children tend to use bright colors such as red, yellow, and blue. However, by understanding the gradation technique, they can create hundreds of new color combinations from a limited set of materials, such as 12-color crayons (Aisyah, 2020).

Based on this background, the researchers were motivated to examine the effect of coloring activities using the gradient technique on the creativity of Group B children at KH Dewantoro Pembina State Kindergarten. This study aims to evaluate the extent to which the gradient technique enhances children's creativity, as reflected through indicators of fluency, flexibility, elaboration, persistence, and originality. The findings of this research are expected to contribute to the development of creative and innovative learning strategies in early childhood education.

2. METHOD

This study employed a quantitative approach to directly examine the influence of coloring activities using the gradient technique on children's creativity. The research utilized a one-group pretest–posttest experimental design. In this design, the participants first completed a pretest, followed by a treatment in the form of a coloring activity using the gradient technique, and finally a posttest to measure the effect of the treatment. The study population comprised all Group B children at KH Dewantoro Pembina State Kindergarten, totaling 78 students. The research sample was selected using purposive sampling, consisting of 17 children from Group B3 who met the criteria of being 5–6 years old and possessing basic coloring abilities.

Data were collected through observation and documentation techniques. Children's creativity was assessed based on five indicators: fluency, flexibility, elaboration, persistence, and originality. The collected data were analyzed using a paired-sample t-test with the assistance of SPSS software. This statistical test was applied to determine whether there was a significant difference between the pretest and posttest results after the children received the treatment. Through this approach, the study is expected to provide empirical evidence of the effectiveness of the gradient technique in enhancing the creativity of young children.

4. RESULT AND DISCUSSION

This study aims to analyze the effect of coloring activities using the gradient technique on the creativity of Group B children at KH Dewantoro Pembina State Kindergarten, Gorontalo, Indonesia. Observations conducted across ten sub-indicators related to children's coloring skills provided a clear picture of their creative development. The results illustrate measurable improvements in children's creativity following the implementation of the gradient technique.

The observation results indicate that the children were able to color fluently using two- and three-color gradients. This ability was evident from the increased frequency with which they completed the activities smoothly and without interruption. Most children demonstrated interest, confidence, and ease in applying the gradient technique, which contributed positively to their creative experience. Children who showed a natural talent for coloring with gradients were also more explorative and expressive in their work. They not only followed instructions effectively but also displayed initiative in creating compositions with appealing color combinations. These findings suggest that coloring activities using gradient technique can enhance children's artistic skills and stimulate their imagination.

Observations revealed that children who confidently explored with colors were also able to add texture and detail to their artwork. This activity involved not only coloring techniques but also enhanced the children's creativity in utilizing various visual elements, thereby enriching the final outcomes of their work. The children also demonstrated persistence during coloring activities, particularly when applying two-and three-color gradients, which reflected an improvement in their positive attitudes and focus. Such persistence serves as an important indicator of character development, influencing their ability to complete tasks that require concentration and determination. The following indicators were used as references in this study:

Table 1. Indicators Creativity Child

Variables	Indicator		
	Smoothness		
C1 11 1	Flexibility		
Child	Elaboration		
Creativity	Tenacity		
	Authenticity		

The pre-test aims to assess the level of creativity of children before they are involved in the activity of coloring. With know condition beginning, researchers can understand how far children can express their creativity. Pre-test allows researchers to



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do a comparison between results before and after the intervention (coloring activity using the gradation technique). It is important to evaluate whether the activities are effective in improving the creativity of the children of a total of 17 students who follow a pre-test, with an obtained minimum mark of 25 and a maximum value of 65, with an average value of 39.56. The total pre-test score was 672.5. A minimum value of 25 indicates the existence participant Which experience difficulty in developing creativity. A temporary mark of a maximum of 65 shows that some children have shown better creativity. The average score of 39.56 indicates that many participants still need to improve their creativity in order to be able to achieve better results. So researchers feel it is very important to give an intervention coloring gradation to increase the creativity of children.

Table 2. Pretest-Test Interval

Interval	Frequency	Percentage
25-32	6	35.29%
33-40	5	29.41%
41-48	2	11.76%
49-56	3	17.65%
57-65	1	5.88%
TOTAL	17	100%

The pretest analysis of Group B children's creativity at KH Dewantoro Pembina State Kindergarten revealed their initial abilities in applying the gradient coloring technique. Most of the children, six participants, representing 35.29%—scored within the 25–32 interval, indicating that they experienced difficulties in expressing creativity during the pretest phase.

Meanwhile, 5 children or 29.41% of students are in the 33-40 interval, which shows that they have a better understanding, which is better compared to the group previously, although still in the category of low. Only 2 children or 11.76% students who reach the interval 41-48 signifythat their creative ability creativity they good enough, but the proportion is still low. Matter. This shows that only A little child can explore their creativity effectively at this stage. In interval 49-56, there are 3 children or 17.65% who show potential creative Which more tall, capable of using coloring techniques effectively. However, only one student reached the highest interval, 57-65, which reflects creative ability. Which Good, however, mark Which obtained is still below 75.0. This indicates that there are still many children who need to be encouraged to

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increase their creativity. Overall, the results of this *pre-test* show that the majority of children are still at a basic level in terms of creativity, with much to be desired. Guided to increase their ability. Researchers then analyze results pre-testing children based on the indicator of creativity alone.

Post-test is an evaluation carried out after a learning program. to measure achievement or change in students. In the context of children's creativity, this post-test aims to assess the extent to which children have developed creative abilities after participating in a series of activities designed for learning. For the 17 children who took this post-test, the scores The minimum score obtained was 65, while the maximum score reached 97.5. The average score of the children was 75.74, indicating significant progress in creativity. The total mark achieved by all over children is 1287.5, reflecting the accumulated achievement they. Results show that the gradation technique used in teaching has been effective in stimulating creativity in children.

Table 2. Post-Test Interval

Interval	Frequency	Percentage	
65-71	8	47.06%	
72-78	3	17.65%	
79-85	3	17.65%	
86-92	2	11.76%	
93-99	1	5.88%	
TOTAL	17	100%	

Analysis table class interval post-test shows distribution markcreativity child after follow program learning Technique coloring gradation, which is significant. Of the total 17 children, there were 8 children with 47.06% in the range of 65-71, which reflects that almost half of the group it is already quite good to be at a level close to the index in terms of creativity. Matter This Possible indicates that several children do not yet fully understand the draft, which taught or need an approach Which more individualized in learning to increase skills and creativity. Some of them are small children, that is, 3-person children with a range mark 72-78 and 79-85, each filled by a percentage of 17.65% of children, showing that there are groups that are at a good value level. This indicates that children are already capable of reaching creativity, which researchers expect. Then there were 2 children with a percentage of 11.76% in the range 86-92. This value indicates that children are very good in terms of creativity, coloring at this post-test stage. Then, at the interval 93-99, with a total of 1,



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conchildren achieve near-perfect scores on the creativity scale. The comparative data from the pretest and posttest can be seen in the diagram below:

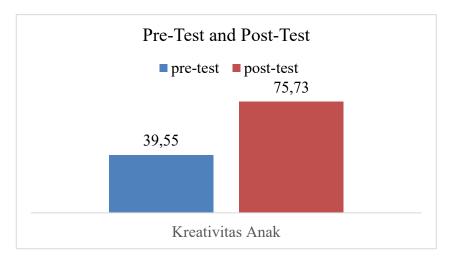


Figure 1. Comparison of Pre-test and Post-test Values

A comparison between *the pretest* and *posttest* showed a significant increase in children's creativity. In the pretest, the average creativity score was recorded at 39.55, while in the posttest, the average score increased to 75.73. This indicates that coloring activities using the gradation technique contribute positively to the development of children's creativity. This increase in scores reflects the effectiveness of the applied gradation painting technique in enhancing children's ability to express themselves creatively.

The hypothesis testing in this study aimed to determine whether coloring activities using the gradient technique had a significant effect on the creativity of Group B children at KH Dewantoro Pembina State Kindergarten, Gorontalo. Through statistical analysis, the researchers compared the average creativity scores of the children before and after participating in the coloring activities. This analysis helped identify whether the observed changes in creativity were the result of the gradient coloring activity or influenced by other factors.

Table 3. Hypothesis Testing

Paired Samples Test

Mean	Pair Std. Deviation	red Differer Std. Error Mean	15% Confidenterval of the Difference			Sig.	
			Lower	Upper	t	Df	(2- taile d)
3,617,64	1,086,557	263,52 9	4,176,30	3,058,99	13,72 8	16	.000

Analysis test hypothesis use Paired Samples T-Test aim Forto see whether there is a significant difference between the pre-test and post-test scores children's creativity test after doing coloring activities using gradation techniques. Based on the T-Test table, it shows that the average post-test score taller compared to pre-test, with a difference as big as 36.18 points. Mark Sig. (-2-tailed) as big as 0,000, which smaller than the level of significance standard 0.05, shows that the difference between pre-test and post-test is significantin a statistical way. This means that activity coloring with technique gradation has a real impact on increasing children's creativity. Because the Sig. (0.000) smaller from 0.05, so hypothesis (H₀) is rejected and the alternative hypothesis (H₁) is accepted. This means that the coloring activity using the gradation technique has significantly increased the creativity of group B children at KH Pembina State Kindergarten Dewantoro South City.

Table 4 Test Normality

Tests of Normality									
Kolmogorov-Smirnova Shapiro-Wilk									
	Statistics	df	Sig.	Statistics	Df	Sig.			
pretest	.163	17	.200*	.920	17	.146			
posttest	.188	17	.114	.896	17	.058			

Normality tests are carried out to determine whether the data used in research it is normally distributed or not. Normal distribution is an assumption important in many statistical tests, including the t-test or ANOVA. There are two methods generally used for testing normality: test Kolmogorov-Smirnov-Smirnov (KS) and the Shapiro-Wilk. The results of these two tests show value statistics and significance (Sig.) for pre-test and post-test data. In the test results the normality of the Kolmogorov-Smirnov Test is Pretest with a Sig. value of 0.200 (bigger from 0.05) shows that data pretest is distributed normally.Posttest with a Sig. The value of 0.114 (greater than 0.05) also



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shows that the posttest data is normally distributed. The Shapiro-Wilk Test shows that the pretest with a Sig. value of 0.146 (greater than 0.05), indicating that the data The pretest was normally distributed. The posttest had a Sig. value of 0.058 (close to 0.05, but is still considered normal) indicates that the posttest data is almost normal. This means that in this normality test, because all Sig. values in both tests (Kolmogorov-Smirnov and Shapiro-Wilk) bigger from 0.05. can it was concluded that the pretest and posttest data in this study were normally distributed. thus, assumptions of normality are fulfilled, which allows researchers for continue statistical analysis that requires a normal distribution, such as paired samples t-test.

Study This aims for evaluate the influence of activity coloring with technique gradation to improving creativity child Group B at KH Dewantoro Pembina State Kindergarten. Creativity is important aspect in the development of children, especially in the face of future challenges (Syafi'i & Solichah, 2021). Based on research results, significant improvement in creativity after child given intervention through activity coloring with technique gradation. Findings this in line with (Sulastya Ningsih et al., 2025) that children develop through repetitive involvement in fine motor movements, such as coloring, which encourages control and coordination hands. Activities: this also means to express imagination and creative ideas visually. Moeslichatoen (Sulastya Ningsih et al., 2025) also stated that activity coloring practice helps children develop creativity.

A study previously conducted by Syafi'i and Solichah (2021) showed that activity coloring gives room for children to express themselves, imagine, and explore ideas through the medium of color. This is also evident in the results of this study, where the children show enthusiasm, height, and increased ability in combining colors through technique gradation. In terms of specific improvement seen in every indicator of creativity. First, the indicator of smoothness shows children are more capable produce combination color gradation without break up, with combination smooth and aesthetic colors. (Sulastya Ningsih et al., 2025) emphasized that smoothness is the ability to produce lots of ideas in time relatively short, which in context, is reflected in the variation the resulting colors of children. Second, the indicator flexibility or flexibility also increased indicating ability child for try different and bold coloring, combining colors that is not usual. Courage. This shows that the child is capable of thinking divergently and is open to approaching new, appropriate with characteristic features child creativity (Sulastya Ningsih et al., 2025). Third, the indicator tenacity

notes the most significant improvement. Children show patience and perseverance, moments fill the image area in a way slowly and carefully with gradation color. (Sulastya Ningsih et al., 2025) stated that tenacity is an indicator that brave children take risk, have perseverance, and not easily give up. However, the indicator elaboration still take notes of relative value more low compared to aspect others. This shows that although child already capable use gradation, they Still need guidance more carry on for add details and creativity in their work they. Elaboration demand ability child for enrich work in a way detailed and systematic (Sulastya Ningsih et al., 2025).

However, in a way overall, activities coloring with technique gradation have proven effective in increasing the creativity of children. Children become more interested in coloring, can recognize and use two to three color in One field images, and show improvement in almost all aspect of creativity. Findings this reinforced by (Sulastya Ningsih et al., 2025) who stated that technique gradation in activity coloring give a positive effect to interests and abilities of children in creating new. This shows that through proper stimulation, child can develop become creative and expressive individuals. In addition, as stated by (Syafi'i & Solichah, 2021) stimulation to arrange color can help child in blend colors with harmoniously and aesthetically, enriching the artistic mark from their work they.

When viewed from the two variables examined in this study, the gradient coloring technique as the independent variable and children's creativity as the dependent variable, the relationship between them can be explained both logically and empirically. The gradient coloring technique trains children to create smooth color transitions, requiring focus, patience, and sensitivity to aesthetic elements. This activity is not merely an artistic endeavor but also serves as a medium to stimulate learning and creative thinking in a comprehensive manner. Creativity, as the outcome of this treatment, is reflected in the children's ability to generate new ideas in coloring, make decisions in color selection, and demonstrate courage in experimentation. The application of the gradient technique provides both challenges and opportunities for children to think creatively and produce unique works. In other words, the more intensive and structured the gradient coloring activities are, the greater the potential for improving children's creativity. Therefore, the relationship between these two variables is not only statistically significant but also practically relevant in the context of early childhood learning.

4. CONCLUSION

Based on results analysis, statistics and discussion, can be concluded that activity



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coloring with technique gradation influential significant to improving creativity child Group B at KH Dewantoro Pembina State Kindergarten, South City. This indicated by an increase the average score increased from 39.55 in the pre-test to 75.73 in the post-test. Hypothesis testing using the Paired Samples T-Test produces Sig. value (2-tailed) of 0.000, which is more small from 0.05, so that hypothesis zero rejected and the alternative hypothesis is accepted. Activities coloring with technique gradation proven capable of increasing various aspect creativity children, especially fluency, flexibility, and tenacity. Although aspect elaboration still need strengthening, in a way, general activity is effective as a fun, educational, and innovative learning strategy to increase the potential creative child early age.

This conclusion reinforces the importance of integrating visual arts methods into the learning process in early childhood education. The gradient coloring technique not only introduces children to the exploration of color but also helps shape their character in terms of perseverance, curiosity, and aesthetic appreciation. Therefore, it is recommended that educators develop and adapt gradient coloring activities within the learning curriculum to optimally support the development of children's creativity.

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