International Transformative Education and Humanities Journal

The Effect of Mosaic Learning Media on the Development of Creativity in Children Aged 5–6 Years at GKPI Kindergarten - Tarutung City

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ABSTRACT

This study aims to examine the effect of mosaic learning media on the development of creativity in children aged 5–6 years at GKPI Kindergarten, Tarutung City. The research employed a quantitative approach with a quasi-experimental design. Data collection techniques included observation, interviews, and documentation. The population consisted of all 130 students enrolled at GKPI Kindergarten, Tarutung City. The research subjects were children aged 5–6 years, divided into two groups: class B2 as the experimental group and class B1 as the control group. The hypothesis was tested using an independent sample test with the assistance of SPSS version 22 and Microsoft Excel software. The analysis results indicated a significant difference between the experimental and control groups prior to the treatment. The normality test yielded a significance value ranging from 0.188 to 0.200 (> 0.05), and the homogeneity test produced a significance value of 0.642 (< 1.73). The t-test results showed that the calculated t_{count} = 13.829 exceeded the critical t_{table} = 2.021, with a significance level of 0.000 < 0.05. Therefore, the alternative hypothesis (Ha) was accepted, and the null hypothesis (H0) was rejected, indicating that mosaic learning media had a significant effect on the development of creativity in children aged 5–6 years. Based on these findings, it can be concluded that mosaic learning media significantly enhances the creativity development of children aged 5–6 years at GKPI Kindergarten, Tarutung City.

Keywords: *Mosaic, Learning Media, Children's Creativity*

INTRODUCTION

Education is a conscious and deliberate effort undertaken by adults toward children with the goal of developing all their potential and shaping them into whole human beings. As stated in Law No. 20 of 2003 on the National Education System, education is "a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners actively develop their potential to possess spiritual strength, self-control, personality, intelligence, noble character, and the skills necessary for themselves, society,

Received August 30, 2025; Revised Sept 17, 2025; Accepted Sept 30, 2025

the nation, and the state." Education consciously carried out by adults toward learners aims to enable them to develop their full potential, thereby equipping them with the readiness, skills, and abilities necessary to face global challenges in the future. According to the National Association for the Education of Young Children (NAEYC), *early childhood* refers to children aged 0–8 years, encompassing those enrolled in daycare centers, family childcare, preschool education (both private and public), kindergartens, and primary schools. This period represents a critical stage of growth and development across multiple aspects of a child's life. Learning processes for children at this stage must consider their developmental characteristics. Therefore, early childhood refers to the age range of 0–8 years, during which children experience rapid and significant growth and development. The Bible in *Proverbs 22:6* states: "Train up a child in the way he should go, and when he is old he will not depart from it." This verse highlights the essential role of educators or future teachers in nurturing, guiding, training, and leading children by introducing them to new knowledge, developing their creativity, and stimulating their developmental aspects. Creativity is one of the key aspects of child development. It is essential to cultivate creativity from an early age because it provides numerous benefits for children's future. Creativity should be recognized and nurtured early, in alignment with the child's developmental progression. According to Utami Munandar, the development of visual arts creativity in kindergarten children reflects their capacity for creation. Creativity must be nurtured and developed through education from an early age, as it enables individuals to realize their full potential. A child's creativity manifests as the expression of a fully functioning individual capable of self-realization. Moreover, creativity involves the ability to perceive various possibilities for solving a problem. Stefanus argues that creativity development is crucial for human life, as individuals must possess adaptive and inventive skills to find solutions to life's various challenges. Creativity is the ability to produce something new, whether in the form of ideas or tangible works that differ from existing ones. Well-developed creativity fosters a solution-oriented mindset, which includes the skills to identify problems and plan strategies to solve them. Creativity can be defined as an individual's capacity to generate new ideas or create something original through the interaction of their emotions, attitudes, and behaviors. Children's creativity refers to their inherent ability to combine existing elements into new forms of ideas or works. It involves stimulating and enhancing their creative thinking through diverse experiences and activities that encourage exploration of new ideas. This process helps children develop skills in imaginative thinking, problem-solving, and self-expression through various means such as art, music, and play. The development of children's creativity is a vital aspect of their overall growth that must be recognized and nurtured from an early age. Creativity provides lifelong benefits, such as problem-solving abilities, adaptability, and innovative thinking. Fostering creativity within educational contexts can enhance children's capacity to imagine, create, and express new ideas. Through this process, children can develop essential skills in identifying problems and planning innovative solutions.

Based on observations and interviews at GKPI Kindergarten, Tarutung City, the researcher found that out of 16 children observed, only 64% demonstrated adequate levels of creativity. Many children showed signs of boredom, were unable to express themselves, struggled to complete creative tasks independently, remained passive, and lacked sufficient learning media to enhance their creativity. The available learning media were limited to a single classroom and rarely used, leading teachers to rely repeatedly on

magazines and printed materials provided by the school. This teaching approach contributed to student passivity, boredom, and disengagement in learning activities. The available mosaic learning materials in the classroom were too rigid, making them difficult for children to manipulate. The researcher also found that children struggled to independently conceptualize and execute their creative ideas, often depending on teacher assistance to complete their projects. This finding indicates that the children's creativity had not yet developed optimally. These facts reveal a significant issue: children were not given sufficient freedom to express or articulate their creative ideas. To address this problem, the researcher proposed using mosaic learning media as an effective strategy for enhancing creativity among early childhood learners. According to Soemarjadi, mosaic activities involve assembling elements such as small tiles, cubes, or other uniformly shaped materials of varied designs, which are glued or affixed to a specific patterned surface. Maghfuroh and Khotimah describe mosaic activities as fine motor exercises involving cutting, pasting, and drawing—play-based learning activities that allow children to complete patterns using small pieces of material, thereby producing creative artworks. Through mosaic activities, children are encouraged to be active and meticulous so that the assembled pieces form images according to the desired patterns. In this process, teachers play an essential role as facilitators and guides. A mosaic is a visual artwork or design created from the arrangement of small pieces of materials such as stones, colored glass, or porcelain. Over time, mosaic art has enriched the diversity of fine art forms, including frescoes, calligraphy, handicrafts, decorative arts, and architecture. Mosaic creation requires precision and coordination between hand and eye to combine various materials into cohesive artwork. The primary goal and benefit of mosaic techniques are to enhance children's fine motor skills as they arrange and adhere small pieces of materials (e.g., fabric, paper, wood, seeds) to a patterned surface, while simultaneously fostering creativity through hands-on practice.

METHODS

The research method used in this study is a quantitative method, as it employs numerical data that can be processed using statistical techniques. The type of research applied is a True Experimental Method, involving one experimental (treatment) group and one control group. Therefore, the research design used in this study is the Pretest-Posttest Control Group Design. The Pretest-Posttest Control Group Design was chosen because it enables the researcher to examine the development of children's creativity both before and after the treatment. The pretest was conducted to determine the level of children's creativity prior to the implementation of the treatment, allowing for accurate comparisons between pre- and post-treatment conditions. The posttest, on the other hand, was used to measure the development of children's creativity after the treatment had been administered. The research procedure began with the administration of a pretest to both the experimental and control groups. Subsequently, the experimental group received treatment in the form of project-based learning media (mosaic), while the control group was taught using conventional learning methods. After the treatment phase, both groups were given a posttest to assess the development of the children's creativity following the intervention.

RESULT AND DISCUSSION

Creativity is one of the key aspects of a child's overall development. It is crucial to nurture creativity from an early age because it provides numerous benefits for the child's future. Therefore, creativity should be identified and developed as early as possible in accordance with the child's developmental stages. According to Utami Munandar, the development of visual arts creativity among kindergarten children reflects their capacity for creation. Creativity must be fostered and cultivated through education from early childhood, as it enables individuals to achieve self-realization. Children's creativity represents the manifestation of a fully functioning individual who expresses themselves through imaginative processes. Furthermore, creativity involves the ability to perceive and explore various possible solutions to a given problem. Stefanus asserts that the development of creativity is essential within the context of human life. Every individual must possess adaptive, inventive, and skillful capabilities to search for and discover solutions to the numerous challenges of life. Creativity is the ability to produce something new, either in the form of ideas or tangible works, that differ from what already exists. Well-developed creativity fosters a solution-oriented mindset-an ability to identify problems and design effective plans for resolving them. The development of children's creativity refers to the process of stimulating and enhancing their capacity for creative thinking through diverse experiences and activities that promote the exploration of new ideas. This involves nurturing children's skills in imaginative thinking, problem-solving, and self-expression through various means such as art, music, and play. Developing children's creativity is a vital aspect of their growth that must be recognized and implemented from an early age. Creativity brings numerous future benefits, including the ability to solve problems, adapt to new situations, and think innovatively. The development of creativity, particularly within educational contexts, encourages children to create, imagine, and express new ideas. As this process continues, children will enhance their ability to identify problems and formulate innovative solutions.

Factors Affecting Creativity

Creativity must be developed from early childhood, and to cultivate a creative personality, appropriate support and stimulation are essential. According to Rachmawati, several factors play a crucial role in developing creativity:

1. Mental stimulation factors, these relate to cognitive, personality, and psychological aspects. Educators must be open to and appreciative of any work produced by children so that they feel mentally supported, which is essential for the growth of creativity.
2. A conducive environment, children need an environment that allows them to explore freely-touching, observing, hearing, and playing with various materials that foster their creativity.
3. The teacher's role, teachers play a significant role in nurturing creativity. To raise creative children, teachers themselves must be creative and able to provide appropriate stimulation that encourages children's creative expression.
4. The parents' role, parents must appreciate, encourage, and support their children's creative activities at home to ensure continuous development.

Definition of Mosaic

The term mosaic originates from the Greek word *mouseios*, meaning a decorative art. According to Birdwood, mosaic art was first developed by the people of Byzantine Greece, who used it to adorn walls and enhance visual beauty and aesthetics. According to the Indonesian Dictionary (KBBI), mosaic refers to a decorative art made by arranging small, colored pieces of paper or other materials on a surface using adhesive. Syakir Muharrar and Sri Verayanti define mosaic as a type of decorative artwork that employs a *collage technique*. A mosaic is an image, ornament, or specific pattern created by attaching small, uniform pieces of material-whether in shape, size, or type-closely together on a surface.
A mosaic can be described as a decorative composition made by arranging small, colored, hard materials on a surface using adhesive. It involves organizing various elements and gluing them onto a base to form a picture or design. Mosaic art can take the form of two-dimensional or three-dimensional artworks, using cut or shaped pieces of material that are glued onto a flat base. According to Novitawati, mosaic is a creative process of making pictures or decorative images by attaching or adhering small pieces of material onto a surface. For early childhood education, mosaic serves as a medium for expressing aesthetic ideas rather than creating works of functional value. Pamadhi, as cited in Wahyudi, explains that mosaic is an art form—two- or three-dimensional—produced by arranging and gluing cut pieces of material onto a flat surface. For example, when working on the theme *animals* with the sub-theme *land animals*, teachers can provide children with different animal patterns. The children then select their preferred animal and creatively attach the pieces to form their own unique artwork, allowing freedom of imagination and expression.

Characteristics of Mosaic

Every form of visual art possesses distinctive characteristics that differentiate it from other art forms. As one of the visual arts, mosaic has several unique features:

1. Two- or Three-Dimensional Form
   Mosaic artworks can be two-dimensional or three-dimensional. Two-dimensional works can only be viewed from one angle, whereas three-dimensional works can be seen from multiple sides. The difference lies in the creation process, the chosen design, and the materials used.
2. Variety of Media Used
   Mosaic art utilizes a variety of materials. In addition to paper, it may include wood shavings, glass fragments, ceramic pieces, and other small materials. This diversity of materials distinguishes mosaic art from other visual art forms.
3. Educational Function
   Beyond its decorative purpose, mosaic art is often used as an educational tool to enhance children's creativity. The process of assembling mosaic pieces helps children develop concentration, patience, and fine motor coordination. Additionally, it offers an enjoyable learning experience, allowing children to engage actively in hands-on creative work.

Benefits of Mosaic

After understanding the purpose of mosaic play, it is also important to recognize its educational benefits. According to Rahim, Musi, and Rusmayadi, mosaic activities provide at least five major benefits for early childhood development encourages creativity through the use of diverse materials, trains accuracy and patience, enhances concentration, develops fine motor skills, cultivates an understanding of color harmony and coordination.

Steps for Making a Mosaic

Before beginning a mosaic activity, teachers should first explain to children that a mosaic is not a toy or food, but an art activity designed for play and creativity. The following are the materials and steps required to create a mosaic:

1. Prepare the tools and materials, including: A base or surface (paperboard, cardboard, wood, or canvas), glue, pencil, cutting tools (scissors or cutter), eraser, small pieces of materials such as eggshells, paper, leaves, etc.
2. Select the base or surface. Choose a sturdy and thick base so that the materials adhere properly. Suitable bases include cardboard, paperboard, wood, or canvas.
3. Draw the desired sketch. Determine the image and color scheme to be transferred onto the base surface. Draw with a pencil for easy correction. Suitable themes include animals, plants, vehicles, or traditional houses.
4. Apply glue on the sketch. Carefully apply glue to the designated areas where materials will be placed. Use only a small amount to avoid messiness.
5. Attach the material pieces. Begin by sticking larger pieces first, followed by smaller ones to fill in the details.
6. Allow the mosaic to dry. Let the artwork dry completely to ensure that all materials adhere properly. Once dry, the mosaic can be displayed by adding a string hanger secured with adhesive tape.

The primary objective of this study was to examine the effect of project-based learning media, specifically the use of mosaic activities, on the development of creativity among children aged 5–6 years at GKPI Kindergarten, Tarutung City. The hypothesis stated that there would be a significant difference in children's creativity levels before and after the implementation of mosaic-based project learning. To test this hypothesis, quantitative data were analyzed through pretest and posttest scores obtained from both the experimental and control groups.

Analysis of Pretest and Posttest Results

Based on the results of the pretest, it was observed that both groups-experimental and control-had relatively similar levels of creativity prior to the treatment. This indicates that the initial conditions between the two groups were equivalent and suitable for experimental comparison. After the implementation of project-based learning using mosaic media in the experimental group, posttest results showed a notable improvement in creativity scores compared to the control group, which continued using conventional learning methods. The calculation of the N-Gain Score further confirmed this improvement. Children in the experimental group achieved an N-Gain score within the medium to high category (0.3–>0.7), indicating substantial progress in creative thinking and artistic expression. In contrast, the control group demonstrated an N-Gain score

within the low category (<0.3), suggesting minimal improvement in creativity when conventional teaching methods were used. The normality test using the Kolmogorov–Smirnov method revealed that the data were normally distributed, as the significance value (p) was greater than 0.05. Likewise, the homogeneity test using Levene's Statistic confirmed that the data variances were homogeneous, with a significance level (p) also greater than 0.05. These results fulfilled the assumptions required for conducting the independent sample t-test. The independent sample t-test analysis revealed that the t_{count} was greater than the critical t-value ($t_{ta}b_{el}$) at a 95% confidence level ($\alpha = 0.05$). This finding indicates a statistically significant difference between the experimental and control groups in their posttest creativity scores. Therefore, the null hypothesis (H_o), which stated that there was no significant difference, was rejected, while the alternative hypothesis (H_1) was accepted. The results of this study demonstrate that the use of project-based learning through mosaic media had a significant positive impact on the development of creativity among children aged 5–6 years. The findings support the theoretical framework proposed by Utami Munandar, which emphasizes that creativity can and should be nurtured from an early age through meaningful and stimulating educational experiences. The mosaic activity, as a hands-on project-based task, encouraged children to explore ideas, make creative decisions, and express themselves through visual composition—all of which are core indicators of creative development. Children who participated in the mosaic-based learning process displayed enhanced abilities in creative problem-solving, fine motor coordination, attention to detail, and imaginative thinking. These improvements align with Rachmawati's view that creativity can be effectively developed through stimulating environments and supportive educational practices that encourage exploration and expression. The findings also confirm Stefanus's perspective that creativity plays an essential role in human adaptability and innovation. In this study, children learned to manipulate materials, combine colors, and plan their mosaic compositions, which fostered adaptive thinking and a sense of ownership over their creative process. Such experiences are crucial for building foundational skills that support lifelong learning and problem-solving abilities. This study highlights the importance of incorporating project-based and art-integrated learning strategies within early childhood education settings. Mosaic activities, as demonstrated, provide multidimensional benefits: they not only enhance children's creativity but also support the development of fine motor skills, cognitive flexibility, perseverance, and self-confidence. Moreover, when educators act as facilitators who encourage experimentation and self-expression, children are more likely to engage in deep, meaningful learning experiences. The results suggest that traditional teacher-centered methods may limit children's creative potential, while project-based learning approaches—such as those involving mosaics—create opportunities for active participation, imagination, and self-directed exploration. Therefore, early childhood educators should design learning environments that emphasize creativity, collaboration, and play-based inquiry.

CONCLUSION

The statistical analysis and interpretation confirm that the implementation of project-based learning media (mosaic) significantly enhanced the creativity of children aged 5–6

years at GKPI Kindergarten, Tarutung City. The research findings validate the theoretical assumptions and previous studies emphasizing that creativity can be effectively fostered through art-based, experiential, and project-oriented learning models. Consequently, mosaic-based learning can be considered an effective pedagogical strategy for promoting creative growth in early childhood education. In conclusion, this study employed a quantitative research approach using the True Experimental Method with a Pretest-Posttest Control Group Design. This design was chosen to accurately measure the effect of project-based learning media (mosaic) on students' creativity development. By comparing the results of pretests and posttests between the experimental and control groups, the researcher was able to determine the extent to which the applied treatment influenced students' creative abilities. The use of this method ensures that the research findings are both valid and reliable, as it allows for clear differentiation between the effects of the experimental intervention and other external factors.

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