

# Colored Flour Plasticine Media as a Means of Early Childhood Creativity Development

Sofiah¹ and Sri Katoningsih²(⊠)

Early Childhood Education, Muhammadiyah University of Surakarta, Surakarta, Indonesia
Faculty of Education, Muhammadiyah University of Surakarta, Surakarta, Indonesia
sk773@ums.ac.id

**Abstract.** Early age is often referred to as the golden age (golden period), where children begin to experience rapid growth and development. Children begin to experience growth in height, weight gain, development of thought patterns, and development of creativity. Teachers must be able to use learning methods that attract children's attention, and be able to make children active and participate in learning. One of the appropriate learning methods for the development of child ren's creativity is the method of learning to play with colored flour plasticine media. This study aims to improve the development of creativity in early childhood by using the method of learning to play with colored flour plasticine media. This research is an experimental research using two cycles in the study. This research was conducted in Jati Village Kindergarten with 12 children as respondents. After observing, it can be seen that learning in Jati Village Kindergarten is still considered monotonous so that children's creativity is still not optimally developed. From these problems, the researchers used the method of learning to play with colored flour plasticine media to improve the development of children's creativity. From the pre-cycle, cycle 1 and cycle 2, it can be seen that the development of children's creativity increases with the colored flour plasticine playing method. In the pre-cycle, the creativity level of the Jati Village Kindergarten children was still in the medium and low categories. After cycles 1 and 2, the level of children's creativity development has increased in the medium to high category. Thus, it can be said that the colored plasticine playing method can improve the development of children's creativity.

Keywords: Children's creativity · Early Childhood · Colored flour plasticine

## 1 Introduction

Early childhood is an individual who is different, unique, and has its own characteristics according to the stages of their age. Early childhood 0–6 years is a golden age where stimulation of all aspects of development plays an important role in further developmental tasks. The early period of a child's life is the most important period in a child's life span. at this time brain growthis experiencing very rapid development (explosive). Early age is often referred to as the golden age (golden period), where children begin to experience rapid growth and development. The growth and development of children at this age

occurs physically and mentally. Children begin to experience growth in height, weight gain, development of thought patterns, and development of creativity. Development is interpreted as a process of changes experienced by humans from birth to the level of maturity that takes place progressively, systematically, and continuously, both physically and mentally (Yusuf. in Wardhani and Surtikanti, 2019).

Children's growth and development must be known by parents and educators as facilitators to provide good stimulation for children's growth and development. The formation of human values and personality is determined from an early age, where early education begins. In this case, early childhood education as a determinant of character formation in line with the development and growth of children. Early childhood is a very bright time to be educated and given an education. Experts say that period is the golden age, which is the golden age of a child or where children have enormous potential to develop. Experts say it is the golden age, where the development of intelligence at this time has increased by up to 50%. At the golden age, children's creativity continues to develop along with the stimulus provided both from the home and school environment. Good and appropriate stimulation can make children's creativity emerge and continue to develop. The child's ability to give birth to something new or to explore something new learned with his own ideas is a determinant of how creativity develops. Creativity is a person's ability to give birth to something new, both in the form of ideas and real works that are relatively different from what has existed before (Munandar, 2014). Creativity is very important to be developed because creativity can improve academic achievement. The higher the creativity that a person has, the higher the academic achievement he will achieve. Creativity is very important to develop, because creativity plays an important influence in one's life. Therefore, creativity needs to be developed from an early age. But sometimes children's creativity can be hampered due to lack of training and lack of children's imagination in shaping, so that children's enthusiasm in creating can be reduced. Given the importance of the role of early childhood education, educators as facilitators should present interesting and relevant learning to children's growth and development. The use of irrelevant and monotonous learning methods results in ineffective learning patterns. This can hinder the growth and development of children, especially children's creativity. The role of early childhood education in formal schools has a major role in the development of children's creativity. Activities that are interesting and contain a stimulus for children's growth and development will go hand in hand with the development of children's creativity. Children are trained to use imagination to create or create a building or object according to their imagination such as alphabets, numbers, fruits, animals and others. Educators as facilitators are required to be able to present learning in the form of games that are interesting and contain stimulation for children's creativity. Conventional learning is no longer in line with current educational developments. The lecture method or just explaining without any interesting media or methods will only make children bored and not stimulate their growth and development. Teachers must be able to use learning methods that attract children's attention, and be able to make children active and participate in learning. Game-based learning methods must be able to stimulate children's growth and development and creativity. One of the appropriate learning methods for the development of children's creativity is the method of learning to play with natural materials. Natural materials used by children can

stimulate children's creative imagination and artistic expression. Many media are found in the natural environment around children that can be used as a medium for learning. Utilization of natural material media as learning media can provide real experiences to children, so that children absorb knowledge more easily (Charney in Fauziah, 2013). To increase creativity, children can use colored flour plasticine in the learning process. The activity of forming and producing a work through a variety of materials is one of the children's activities in being creative in the field of art. Through these activities, children can develop their imagination and self-confidence, so that children's creativity can develop well in the golden age. But sometimes children's creativity can be hampered due to lack of practice and opportunities in shaping activities so that it affects children's imagination and enthusiasm. Various strategies can be used to optimize activities in creativity, namely by using good media so that children's creativity can increase. (Mirna Sari, Prof.Dr.M. Yusuf Aziz, and M.Pd Dra. Yuhasriati, "Improving Children's Creativity Through Playing Plasticine in One-Roof Kindergarten Sdn Lamlheu, Aceh Besar District," Scientific Journal of Children's Education Students After Early Childhood 1, no. 1 (2016): 132. p. 132.).

The development of children's creativity through play activities can be done from an early age, so that children will feel to think creatively, because with creativity children are able to produce a work that is different from what has been there before. According to Mulyasa, creativity is the ability to look for various possibilities in solving a problem as a form of thinking. Creativity allows every early childhood to develop various potentials and personal qualities, this creativity can produce new ideas, and new discoveries. For this reason, creative attitudes, thoughts, and behaviors must be nurtured from an early age so that children are free to improvise and be creative. Learning media can have a positive impact on children, both with regard to the process of brain development and related to creativity. There are many media that can be used by teachers in learning, in order to develop and stimulate children's creativity, one of which is flour plasticine media. Flour plasticine is a safe medium for children and easy to make, the ingredients consist of flour, oil, salt, food coloring, food essence and water. This flour plasticine is a soft object that can be kneaded, flattened, twisted, pulled, pressed, rolled so that it can be shaped according to the imagination and desires of children. Children can be creative freely by making animals, fruits, flowers, cars and so on. Aspects of the development of creativity can be developed through flour plasticine playing activities.

Playing plasticine is a form of play in making a shape using ingredients from flour, food coloring, water, oil and salt. By using plasticine, children can express their creativity through their creation and imagination. Through plasticine the child can squeeze, press, touch and manipulate it into various shapes according to the child's imagination. According to Dorothy Einon, children really like to make a shape according to their wishes and imagination. Plasticine is a game that children really like because plasticine media is easy to shape and we can make our own. Plasticine can be made using wheat flour with added oil, salt, water, and food coloring. Children can use their fingers to interact in various ways by tapping, slamming, squeezing to produce a child's work according to their imagination.

According to Swartz, plasticine is a material used for playing by children in class. Plasticine has a very tough structure so it is very easy to shape into anything according to

the imagination that is in the child's mind. Plasticine is very soft, it will be easy to shape it after the child forms the object, the child can dry it to make it look even more attractive. Plasticine media which is one of the media used in learning activities or forming an idea or object according to the child's imagination. The advantages of the plasticine media used in the learning process at school are that it is easy to shape, leaves no dirt on the arms or clothes, provides direct, concrete experience, lacks verbalism, objects can be shown in their entirety, both in construction and how they work, have been colored so that when used can be mixed.

Colored flour plasticine was chosen because the basic ingredients to make plasticine are easy to obtain and safe for children. The reason for using colored flour plasticine media is because playing has a strong influence on all aspects of children's development, both physical, cognitive, social, emotional, and moral as well as children's creativity. Play provides an opportunity for children to experiment with new ideas. One of the play activities that can develop children's creativity is using plasticine. The benefit of using plasticine media in early childhood learning is to train sensory abilities, one way children.get to know something is through touch, by playing plasticine children learn about textures and how to create something.

Developing thinking skills, playing plasticine is able to hone children's thinking skills and imagination in making new ideas, Useful for increasing self-esteem, playing plasticine is playing without rules so it is useful for developing children's imagination and creativity, as well as teaching about problem solving, Sharpening language skills, squeezing, rolling and twisting are some of the words that children often hear when playing plasticine, Cultivatingsocial skills, this is because when playing together gives children the opportunity to interact with their friends, Train tenacity and patience and develop imagination and creativity children and give children confidence.

To develop creativity, children need to be given the opportunity to be creatively busy. Educators should be able to stimulate children to involve themselves in creative activities, by helping to provide the necessary facilities and infrastructure. In this case, what is important is to give children the freedom to express themselves creatively, of course with requirements that do not harm other people or the environment. First of all, what is necessary is the process of getting busy creatively without the need to always or too quickly demand the production of meaningful creative products. This will come naturally in a climate of support, acceptance, and appreciation. Creative children are children who always try to realize their ideas in creative activities to produce works. Factors inhibiting children's creativity are the lack of training in the formation and limitations of learning media that will be used again in the next learning process, so that children cannot appreciate work and they get bored quickly in learning. Apart from the response of children during the learning process to form creative activities, it is considered lacking, because some children are not too enthusiastic about the media used in the learning process.

Based on observations made by research using colored flour plasticine media carried out at Jati Village Kindergarten, in order to develop children's creativity Colored flour plasticine media is expected to help teachers in teaching and learning activities, and make children more enthusiastic to participate in teaching and learning activities. From

this background, the researcher intends to conduct a study with the title "colored flour plasticine media as a means of developing creativity in early childhood".

### 2 Method

This research is using experimental method. The experimental method is part of the quantitative method, and has its own characteristics, especially in the presence of a control group. In the field of science, research can use experimental design because variables can be selected and other variables that can affect the experimental process can be tightly controlled. So in this method, the researcher manipulates at least one variable, controls other relevant variables, and observes its effect on the dependent variable. This manipulation of independent variables is one of the characteristics that distinguish experimental research from other studies (Sugiyono, 2011). With the experimental method, this study aims to determine theeffect of the application of the method of playing natural materials on the creativity of early childhood.

The population is a generalization area consisting of: objects that have certain qualities and characteristics determined by researchers to be studied and then drawn conclusions (Sugiyono, 2010). The population in this study were all students in TK Desa Jati, totaling 12 students. The sample is part of the population. The sample in this study was taken 12 students. If the subject is less than 100, it is better to take all so that the research is a population study. Furthermore, if the number of subjects is large, it can be taken between 10%-15% or 20%-25% or more. Based on the explanation above, the researchers took an experimental sample of 12 students, because the research objects were under 100, based on the theory above if the number of samples was below 100, the sample used was entirely. So the sampling in this experimental study amounted to 12 students.

This research was carried out at the Jati Village Kindergarten which is located at Jati Village Rt. 01 Rw. 02, Gatak District, Sukoharjo Regency. The research was carried out in the even semester of the 2021/2022 academic year. Data collection techniques in this study using observation techniques, documentation. Observation is a complex process, a process composed of various biological and psychological processes. Two of the most important are the processes of observation and memory. The checklist is carried out by direct observation to the research site using a checklist () in the appropriate column, namely very well developed, given a score of 4, developing as expected, given a score of 3, starting to develop, given a score of 2, undeveloped, given a score of 1. Documentation techniques are used to obtain data about the profile of the Jati Village Kindergarten school, obtain data about the names of students who will be the research sample, and obtain data about student test scores.

Data analysis technique is a very important element in every time doing research. All the data that has been collected will be meaningless if there is no analysis, providing an overview and direction as well as the aims and objectives of the research. In quantitative research, the data analysis technique used by the author is descriptive statistics. Descriptive statistics, namely "Statistics used to analyze data by describing or describing the data that has been collected" (Sugiyono, 2010).

Statistical data that seeks to describe a symptom that has been recorded through research instruments. The data obtained is then processed using the steps as stated

No	Value	Category
1.	85 – 100	High
2.	65 – 84	Medium
3.	45 – 64	Low
4.	25 – 44	Very Low

Table 1. Criteria for Assessment of Children's Creativity Level

by Siregar regarding data processing in the first quantitative research, namely editing, namely theprocess of checking or checking data that has been successfully collected from the field, because there is a possibility that the data that has been entered does not meet the requirements or does not. Needed. In this step, there are several things that need to be considered, namely sampling, data clarity, data completeness, completeness of entries, and compatibility of answers. Second, coding is the activity of giving a certain code to each data that belongs to the same category. Code is a signal made in the form of numbers or letters to distinguish between data or the identity of the data to be analyzed. Third, tabulation is the process of placing data into a table that has been coded according to the needs of the analysis. The tables that are made should be able to summarize in order to facilitate the process of data analysis, namely the data are grouped in the tables that have been provided.

Based explanation above, it can be understood that the data processing stage in quantitative research needs to be carried out in three steps, namely editing, coding, and tabulation. Following is an explanation of each: First, editing is re-examining the questionnaire that has been filled out by respondent. Second, coding is to code each data in the same category. Finally, tabulation is entering data that has been coded into a table, to make it easier for the author in the analysis process. Thus, the three steps are interrelated with each other. Determine the level of creativity of children, authors determine in 4 categories, namely (Table 1).

#### 3 Research Results and Discussion

Based on the results of research that has been carried out by the author, it can be seen that the creativity of early childhood in Jati Village Kindergarten has not developed optimally during pre-action. The initial activities carried out before the action were interviews, observations, and documentation at the Jati Village Kindergarten. From these activities, it can be seen that so far teachers are still applying conventional learning and are less attractive tostudents, so that students' creativity is not optimally developed. The teaching methods and media used by the teacher are only limited to existing tools and have been used for generations for years, so that learning seems monotonous and not close to the student's condition. The following table shows the development of students' creativity from pre-cycle, cycle 1, and cycle 2 (Table 2).

Based on the table, it can be concluded that the provision of appropriate learning methods can increase the development of creativity so that children can be trained optimally. Based on observations, the results of children's creativity when teachers are still

No Door	Des	Cyrolo 1	Cyrolo 2
No Resp	Pre	Cycle 1	Cycle 2
1.	60	75	92
2.	63	70	85
3.	65	72	90
4.	61	70	86
5.	58	65	80
6.	48	60	87
7.	50	68	83
8.	61	78	95
9.	60	74	88
10.	58	71	89
11.	49	70	84
12.	50	73	82
Average	56.91	70.50	86.75

**Table 2.** Research Results of Children's Creativity

using conventional methods and monotonous learning media can be seen that of the 12 respondents, there are students who are in the low and medium categories.

Based on this, the researchers decided to provide interesting learning methods and media that are close to students that are able to improve the development of children's creativity so that they can be trained optimally. The method and learning media used by the author is playing with colored flour plasticine. In applying the learning method, the teacher must be able to adjust the type of method used. In early childhood, where learning is more dominated by games, the teacher must be able to find types of games that are interesting and relevant to the age of the students. One method of playing that is relevant and in accordance with the age of children at the PAUD level is the method of playing with natural materials. Methods that involve objects and things around them make children more interested and can stimulate their knowledge. Play means practicing, exploiting, fabricating, repeating, whatever practice can be done to imaginatively transform the same things as adults. Therefore, teachers develop children's creativity, through the methods chosen are methods that can move children to increase motivation, curiosity and develop imagination. The method of playing with natural materials is considered closer to children and learning is more interesting because the media used are familiar to children, and learning by playing is considered to be more interesting for children (Hildbrand in Helnita, 2015).

From the table that has been presented, it can be seen that the development of children's creativity from pre-cycle, cycle 1, and cycle 2 continues to increase. In cycle 1 the researchers observed when the teacher used the play method using colored flour plasticine media, the children became interested and had curiosity about the media. In this cycle the children feel enthusiastic about learning so that the class feels alive and

the learning process is fun, but in this cycle there are still some children who are less focused on learning so the results show that the category of creativity is still low. The use of new teaching materials made some students less focused so that the teacher had a little difficulty controlling the class and not focusing on the teaching material. From pre-cycle to cycle 1, it can be said that the development of children's creativity with the application of colored flour plasticine media increased by 11.5 and the majority of students had entered the medium category, although there were still low student developments. In cycle 1, out of 8 respondents the developmental children have not entered the high category so the researchers decided to continue cycle 2. In cycle 2 the teacher provides material with colored flour plasticine media with the same material in cycle 1, but in this cycle the teacher is able to control the class and students more focused on learning. Children are better able to be creative with the media provided by the teacher and focus on what they are doing. The results of cycle 2 there is an increase of 17.5. The significant increase in these results indicates that most children have developed optimally and are included in the high category, but there are still 4 children who are in the medium creativity category.

From this research the authors can conclude that children's creativity is trained and develops optimally through the method of playing natural materials. Fun learning with mediathat are familiar to children and can be created to the maximum, making children's creativity develop optimally. One's creativity is formed from an early age, where formal education is introduced to children. In this case, the role of education and teachers is very important in the growth and development of children, including in the aspect of developing creativity. According to Dasmita, the indicators of children who have creativity are having a great curiosity, often asking questions, having strong self-confidence, having and appreciating a sense of beauty, having a high sense of humor, having a strong imagination, being able to work alone and happy. Try new things.

Early Childhood Education (PAUD) is one of the providers of education that focuses on physical growth and development, both fine motor and gross motor, increasing thinking power, creativity, spiritual intelligence, socio-emotional which includes attitudes and behavior and religion as well as language and communication that uniqueness and stages of early childhood development. When a child's golden age occurs, the learning process must involve something that stimulates the creativity and socio-emotions of the child. Learning methods and media used by teachers as facilitators must attract students and improve student competencies, especially the development of creativity (Katoningsih, 2021). Plasticine media can train children's thinking power, children feel free to form various shapes that children like. Therefore, it is better to do learning using plasticine media, the teacher must also be more creative.

## 4 Conclusion

Early age is a golden age where children experience growth and development. The growth and development of children at this age occurs physically and mentally. Children begin to experience growth in height, weight gain, development of thought patterns, and development of creativity. Considering that this age is an important age in determining the growth and development of children, stimuli or stimuli related to growth and

development are considered very important, especially in the development of children's creativity. Education as a facilitator has an important role in increasing the development of children's creativity, thus it is necessary to have interesting learning and media that can stimulate the development of children's creativity. Appropriate and fun learning methods and learning media can stimulate the development of children's creativity. Learning methods that are suitable for early childhood must be game-based or by educational play and with media that are familiar to children such as natural materials that are often found in the surrounding environment. After making observations, it can be seen that the level of creativity of children in TK DesaJati is still low because learning is still conventional and considered less attractive, and the media used is still monotonous by using existing tools and has been used for years. After being given treatment in the form of playing methods with colored flour plasticine media, students' creativity increased because children became interested and the learning atmosphere became fun.

The use of educational props from bottle caps makes it easy for children to recognize early abilities in language and cognitive aspects. The materials that have been collected are made into educational props which is able to stimulate children's abilities. Early childhood development can be stimulated by playing a fun game and giving an interesting impression to the child. If children are happy when playing, then the learning.

**Acknowledgments.** The authors would like to acknowledge Universitas Muhammadiyah Surakarta for providing financial support.

**Author contribution.** S conducted data analysis and wrote the manuscript. SK supervised and article review.

#### References

Ahmad zaina, "Play as a Learning Method for Early Childhood", Scientific Journal, Vol. 3. No. 1 (2015), p. 199

Diana Vidya Fakhiriyani, "Early Childhood Creativity Development", Journal of Educational and Scientific Research Thought, Vol. 4, No. 2. December 2016, p. 193

Dyana Wahyu Pertiwi Sari, "The Effect of Playing Plasticine on the Creativity of Children aged 5-6 Years Viewed from Playing Individually and in Groups", Journal of Educational and Developmental Psychology, Vol. 2, No. 03 (2013), p. 220

Desmita, Developmental Psychology, (Ed. 4), (Bandung: PT Remaja Rosdakarya Offset, 2010), p. 177 Einon Dorothy, Creative Games for Children, (Jakarta: Karisma Publishing Group, 2012), p.50

Elizabeth B. Hurlock, Child Development, (Ed. 2), (Jakarta: Erlangga, 2012), p.4

Fadlillah, M. (2012). PAUD Learning Design: A Theoretical and Practical Review. Ar-Ruzz Media. Fathurrohman, P., & Sutikno, S. (2007).

Teaching and Learning Strategies Through Planting General Concepts & Islamic Concepts. PT Refika Aditama. Fauziah, N. (2013). The Use of Natural Materials Media to Increase Children's Creativity. Jiv, 8(1), 23–30. https://doi.org/10.21009/jiv.0801.4 Fadlillah, Early Childhood Education Education (Ed 1), (Jakarta: Kencana Prenadamedia Group, 2014), p. 21 Ginting, A. (2008).

Practical Essence of Learning and Learning. Humanities. Helnita, Novita, R., & Kasmini, L. (2015). ISSN 2355–102X Volume II Number 2. October 2015 | 27. II, 44–49. Heru Kurniawan, Creative School, (Yogyakarta: Ar-Ruzz Media, 2016), p. 166

Kartini, Sujarwo, "Use of Plasticine Learning Media to Improve Early Childhood Creativity", Journal of Education and Community Empowerment, Vol. 1, No. 2, (2014), p.201

Khasan Ubaidilah, "Bac Center Learning (Liquid Natural Materials) To Develop Children's Creativity Case Study RA Ar-Rasyid" Al-Athfal Journal of Children's Education, Vol. 4 (2), (2018), p. 165

Orientation. date. Murdin, Early Childhood Education and Learning (Ed.1), (Bandung: PT Remaja Rosdakarya Offset, 2015), p. 115 Munandar, U. (2014).

Development of Gifted Children's Creativity. PT Rineka Cipta. Mulyasa, PAUD Management, (Ed. 3), (Bandung: PT Remaja Rosdakarya Offset, 2014),

Mirna Sari, Prof.Dr.M.Yusuf Aziz, and M.Pd Dra. Yuhasriati, "Increasing Children's Creativity Through Playing Plasticine in One Roof Kindergarten Sdn Lamlheu, Aceh Besar District," Scientific Journal of Children's Education Students After Early Childhood 1, no. 1 (2016): 132. p. 132

Meity, Fun Learning Strategies, (Ed. 2), (Jakarta: PT. Luxima Metro Media, 2015), p.

Nugraha, A., & Ratnawati, H. (2003). Tips for Stimulating Children's Intelligence. Puspa Swara. Patmonodewo, S. (2003). Preschool Education. PT Rineka Cipta. Pamandhi Hajar, Sukardi Evan, Children's Arts, (Jakarta: Open University, 2010), p. 45

Siti Arlinah, "Improving Children's Creativity Through Playing Plasticine in Group A at PAUD Plus Al Fattah Distance Kulon, Jombang Regency", Journal of PG-PAUD Faculty of Education, State University of Surabaya, (2014), p. 3

Siswanto, S., Zaelansyah, Z., Susanti, E., & Fransiska, J. (2019). Early Childhood

Learning Methods In The Generation Of Excellence And Success. Paramurobi: Journal of Islamic Religious Education, 2(2), 35–44. https://doi.org/10.32699/paramurobi.v2i2.1295

Sugiyono. (2010). Quantitative, Qualitative, and R&D Approaches. Alphabeta.

Susanto, A. (2011). Early Childhood Development. PT. Kencana Prenada Media

Group. Susanto, A. (2017). Early childhood education programs. PT Bumi Aksara.

Wardhani, J. D., & Surtikanti. (2019). Early Childhood Learning Strategies. Muhammadiyah University Press.

Wartini, "Efforts to Develop Creativity Through Playing Plasticine in Children Group A Kindergarten Bandung 2 Ngrampal District, Sragen Regency 2013–2014", Scientific Publication Journal, (2014), p. 4–5(Jogjakarta:IKAPI,2012),p.8

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

