



## The Bubble Painting Activities as a Science Teaching Media to Improve Cognitive Skills in 4-5 Years Old Children

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### Abstract

Science learning in Kindergarten is still existed and integrated with another subject in every topic. Science introduction and learning which are implemented in Kindergarten have a characteristic as an integrated learning including the development. The development of science learning in children has included another development field and it has very important role in placing base ability and form expected human resources. Various nature phenomena such as rain, wind, thunder, fire, and breeding animal attract children's interest. Those objects can be learned by scientific method which should be simplified for Kindergarten student. Simple observation, exploration, and experimentation can be done by the children. They can do other science processes like mixing primary color, measurement, doing classification, etc. Science product for children is dominant in the form of knowledge about facts and phenomenon of nature. The aim of this study is to know method and result of Bubble Painting as a media usage in improving the cognitive ability of children age 4-5 years old in TK Pertiwi 49 Semarang. The sample were all of the students in group A with amount 24 students. The study steps include pre-study, data collection, and data analysis. Researcher used observation and documentation as the data collection method. According to the observation and the documentation that had been done, it can said that by using the method of Bubble Painting is by mixing yellow, red, or blue, children can explore the change of new colour such as orange, green, and purple. In Bubble painting games, the activity consist of mixing primary color till they produced new color, measuring detergent, introduce substance characteristic (liquid, solid, gas). The result showed that the children could improve cognitive ability whether in science knowledge concept and the concept of shape, color, size, and model. The cognitive ability improvement also increase from 69,37 to 78,19, the result of T-test is 78,19% (30,31 > 2,013). From that result, we can conclude there is a significant difference between children cognitive ability before and after using Bubble painting media.

### How to cite

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## INTRODUCTION

Children age 0-8 years old are they who need education efforts to reach optimum development aspects whether physical and psychological aspects. It includes intellectual, language, motoric, and socio-emotional development. This period of a golden age is permanent intelligent development in which they can absorb very high information. Intelligence development in this period increases from 50% to 80%. The researcher found that 50% of human study ability is decided in the early 4 years and 30% of other ability reached before 8 years old.

According to Piaget, Kindergarten students are in pre-operational period. In this phase, children start to realize that understanding of things around them can be done by symbolic activity. The phase gives important role in children cognitive development.

Early childhood education actually is education to facilitate the whole children growth and development or focus on the development of all children development dimensions which are including cognitive, social, emotion, physical, and motoric. Psychologically, children have a holistic development, it means there is a tight relation between one development aspect and others.

Science subject is not included in kindergarten curriculum, but it doesn't mean there is no science in kindergarten. Science is still existed and integrated with another subject in every topic. Science learning in kindergarten is integrated learning, so science learning is integrated with other development. The development of science learning in children has included another development field has very important role in placing base ability and form expected human resources.

The most important science learning for children is they understand science process, from science experimental study to simultaneous and integrated attitude form. The suitable science learning activity to science learning development is by implementing process skill at every stage.

Children should have science process skill in order to develop their knowledge. We should introduce science to children from early age according to the development stage because early age is the fundamental age for individual development and often called by a golden age. It a means in childhood period, all children development aspects ongoing very fast, so the experience got by children will be carried in the rest of their life.

The result and success of one development field (especially science) for early childhood is influenced by several factors. Among them, the fundamental factor is a science teacher. In order that children science learning run optimum, people that are related to science education should really understand the essence of science and children correctly. The development of science learning in early childhood has very important role in placing base ability and form expected human resources. Realization of the important science aptitude to children will be higher if they realize that they live in a dynamic world, develop and change continuously even more and more head to the future that need science.

The problem that found in the field from the result of early observation in TK Pertiwi 49 Semarang is science learning by process skill is still low, mainly in children learning process and result. The difficulty in this science process skill is a teacher who still lack using media in science learning, the teacher also lacks in giving the opportunity to the children in using their ideas variously and originally, so the answers given by children are mostly same. The other condition is teacher becomes the center of science learning activity (teacher centered), so the learning activity becomes monotone and the children are bored.

A good media usage could not separate from teacher ability and skill in designing, make, and developing learning media. Kindergarten teacher should have the creativity to solve problems faced in learning process especially which are related to delivering a message which is difficult to understand by the students if delivered by verbal explanation. The objective of this research was to know the effect of the implementation of bubble painting media in teaching and learning process.

## RESEARCH METHOD

The research design used in this study is quantitative research design. If we look at the analysis approach, quantitative research design analysis focuses on data collected from the research field which is processed by the quantitative method. After that, the result of the study is described by paraphrase the conclusion which is based on data that is already processed by that descriptive method.

In collecting data, the researcher uses observation method. This observation is focused on the students before and after the treatment given. In analysis stage, the researcher uses

the descriptive quantitative approach with percentage formula and T-test to know whether there is influence caused by that treatment or manipulation or not.

This method which used to investigate the description of every variable consist of many observation results in indicators that are written on the observation sheet. Analysis descriptive technique has several steps, they make score distribution table, T-test analysis, and T-test formula calculation.

## RESULTS AND DISCUSSION

### How to Use Bubble Media

The method of making Bubble painting is simple. Materials which should be prepared are; water, detergent, natural dye or watercolor, small pot, straw, HVS paper, napkin. The activity steps are; (1) Put detergent, water, and natural dye or watercolor into several small pot with different natural dye or watercolor so that we can get various color, (2) Use a straw to mix that mixture and blow it to make a bubble, (3) Let the bubble flow from the top edge of the pot, (4) Take a straw and put it on the paper napkin, (5) Show how to put the HVS paper to children. Let it for a while and the shape of the bubble will be seen from the other side of the HVS paper. (6) Take the paper and look the bubble motive in it, (7) After the draw of bubble dried, ask the children to say several sentences about the bubble, and (8) Ask children to throw the straw away after they paint to bubble.

The media Bubble learning is a simple science learning to improve the cognitive skill of children age 4-5 years old in science area is one of alternative learning processes in the class using media as a teaching model. Bubble painting learning media is an effective way to introduce children how to find experiment result directly. Children can look and practice the direct activity

like blowing soap water using straw can make the reaction to the paint (bubble produced). When children blow the soap water, they can make bubble shape by pushing the paper until a paint is created.

Otherwise, children also can develop their soft motoric skill when do bubble painting activity by controlling hands, mouth, and throat. Blowing using a straw to control respiration, and holding the straw to exercise holding skill that is actually hard to do by children's little hands. In bubble painting game, actually, there is a primary color mixing activity to produce new color, detergent measurement, and substance characteristic introduction (liquid, solid, and gas).

Cognitive skill in learning activity using bubble painting media can significantly improve and stimulate children creativity so they can grow and develop well and also widen children knowledge about simple science in every development stage.

From Table 1, we can conclude that cognitive skill level of the post-test group reach the average of children cognitive skill score 51,75% and included in good category whereas children the cognitive skill of; pre-test group only reach 42,25% and included in the bad category. T-test also proved that there is a significant difference between children cognitive skill level before and after the implementation of bubble painting media in teaching and learning process. This fact also proved by t count value is bigger than t table ( $30,31 > 2,013$ ). From those facts, we can conclude that there is a significant difference between children cognitive skill before and after the implementation of bubble painting media in teaching and learning process.

## CONCLUSION

According to the result and discussion of the study, the conclusion are as follows: (1) the

**Table 1. Cognitive Skill of Children ages 4-5 Years Old in Science Area Average Score Children Cognitive Skill Post Test and Pre-Test group**

Dimension	Score		Ideal Score
	Post-test Group	Pre-test group	
General and Science Knowledge	529	391.5	920.5
Color, shape, and size concept	538	389	927
Amount	1067	780.5	1847.5
Percentage	57.75	42.25	
Category	Good	Bad	

method usage of Bubble Painting learning media is by mixing the color such as yellow, red, or blue which can produce new color; orange, green, and purple. Through this mixing color, children can explain which color used and appear in the paper. This activity can be the foundation of children knowledge about primary and secondary color. Mixing one color to other can produce a new color. (2) A Bubble painting game includes mixing primary color activity until producing new color, detergent measurement, and substance characteristic introduction (liquid, solid, gas). (3) The result of Bubble Painting media usage in the process of learning for children age 4-5 years old in TK Pertiwi 49 Semarang can improve cognitive skill whether in knowledge and science concept or shape, color, size, and pattern concept. (4) Student's cognitive skill improvement in the post-test group reach 69,37% whereas in pre-test group only reach 54,17%. The result of the next experiment is children cognitive skill level in the post-test group reaches 78,19% whereas in pre-test group only reach 54,31%. T-test result also showed that t-count value is bigger than t-table ( $30,31 > 2,013$ ). From those facts, we can conclude that there is a significant difference between children cognitive skill before and after the implementation of bubble painting media in teaching and learning process.

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