

**EFFORTS TO IMPROVE EARLY CHILDHOOD SCIENCE ABILITIES THROUGH THE
COLOR MIXING EXPERIMENTAL METHOD**

Aisyah Oktavia Siregar¹, Arnita Fitri², Anelvi Novita Sari³, Maiyida Safita⁴

¹² Program Studi Pendidikan Anak Usia Dini, Fakultas Ilmu Pendidikan, Universitas Rokania,
Indonesia

³Program Studi Bimbingan Konseling, Fakultas Ilmu Pendidikan, Universitas Rokania, Indonesia

⁴Program Studi Pendidikan Anak Usia Dini, STAI Nusantara, Indonesia

Correspondence Email: aissiregar41@gmail.com

ABSTRACT

This research is a literature review aimed at understanding efforts to improve early childhood science skills through the color-mixing experiment. The method used in this article is a literature review, which served as initial preparation for developing a research framework. In this literature review, the researcher utilized various written sources, such as articles, journals, and documents relevant to the research. The literature review revealed an improvement in early childhood science skills. The learning process focused on color-mixing games to improve children's science skills. Several studies have shown that color-mixing games can improve early childhood science.

Keywords: Science Learning, Early Childhood, Color Mixing

INTRODUCTION

Early childhood education is part of achieving the national education goals, as stipulated in Law Number 2 of 1989 concerning the National Education System, namely to educate the nation and develop the whole Indonesian person, namely a person who believes in and is devoted to God Almighty and possesses noble character, possesses knowledge and skills, is physically and mentally healthy, has a good and independent personality, and has a sense of social and national responsibility. The learning provided to early childhood should provide children with opportunities to engage in a scientific learning process. This will impact children's thinking skills and insight as they continue their education to higher levels (Suryana, 2017:2).

The area of basic skills development is activities prepared by teachers to enhance physical/motor and artistic abilities and creativity. Cognitive skills themselves develop children's thinking skills, enabling them to discover various alternative solutions to problems, and help children develop logical mathematical and scientific skills. Early science skills relate to various experiments, using a logical approach while still considering the child's stage of thinking. To improve early childhood science skills, stimulation is necessary so that children can carry out activities as planned by the teacher. With this stimulation, it is hoped that children will be interested and actively participate in science learning.

Nurwidaningsih et al. (2019: 2) stated that science comes from the Latin word *scientia*, meaning knowledge. Introduction to science should begin at an early age with fun activities and through familiarization so that children experience the scientific process directly, and so that they not only learn the results but also understand the processes and activities involved.

Teachers play a crucial role in introducing science to children in school. Teachers should be able to relate various simple scientific concepts to events around them and frequently encountered in everyday life. This aligns with the opinion of Fatonah & Prasetyo (2014: 3). The nature of science learning is also discussed, emphasizing that scientific learning can help children think logically about events in everyday life and enhance intellectual development. One example of introducing science is the concept of color mixing. Children see many colors around them in everyday life. According to Papalia (2014: 138), citing Haith (1986), the ability to follow a moving target also develops during the first months, as does color perception. From this opinion, it can be concluded that children can perceive color from an early age, or from birth.

When children see a curved sequence of red, yellow, and green, they will define it as a rainbow. However, when they see a real rainbow, they will see various colors within it, not just red, yellow, and green. These colors include "MEJIKUHIBINIU" (red, orange, yellow, green, blue, indigo, and violet). These colors are formed by the mixing of colors within a rainbow. Teachers can use this phenomenon to teach children simple science concepts about color mixing.

Based on the description above, it can be concluded that the essence of science is as a process and science as a product, as well as science as an attitude, as a process, namely through experimental methods and as a product, namely the results of systematically arranged experiments that have been carried out using scientific methods, or science has results from a scientific experiment that has been carried out, and as an attitude, science guides students to behave like a scientist.

RESEARCH METHODS

This study aims to provide an overview of efforts to improve early childhood science skills through the color-mixing experiment method. The research method used in this study is a literature study. Data collection in this study is sourced from books or journals analyzed based on the existing problem. Zed (2014:3) defines a literature study as an activity using library data collection methods, reading, recording, and processing research materials. The data sources for this study were several documents in the form of books and journals, as well as previous research results relevant to this research. This study analyzed references from journals and books and then connected them with existing events.

According to Nazir (2014:27), a literature study is a data collection technique that involves conducting a review of books, literature, notes, and reports related to the problem being solved. Based on the problem being studied, namely improving early childhood science skills through the color-mixing experiment method, this research is a literature study, reviewing several journals related to early childhood science skills. The results of various literature reviews will be used to identify whether

there is an increase in early childhood science abilities through the color mixing experimental method.

RESULTS AND DISCUSSION

Early Childhood Science Learning

In science learning, children should be guided to observe their surroundings directly and conduct simple scientific experiments, allowing them to gain factual knowledge and answer their own questions. Learning solely from picture books and magazines can lead to children becoming less enthusiastic and uninterested, leading them to become preoccupied with other children because they are not directly involved. Children must be taught how to feel, experience, and try to solve problems with others. Science learning activities stimulate children's creativity and provide them with outstanding scientific skills for the future.

Research by Salim and Hariyanti (2019) found that Group B's initial learning achievement was 15.78% due to inappropriate methods and approaches. After corrective actions were taken using the inquiry method, including experiments with jet balloons and volcanic eruptions, the results in cycle I were 52.63%, while in cycle II, the children's scientific ability using the inquiry method was 89.47%. This shows an increase in children's science abilities with the inquiry method carried out in cycles I and II in group B of Mojokerto 3 Kindergarten, Kedawung, Sragen. Based on the results of classroom action research, it can be concluded that through the inquiry method, children's science abilities can be improved in early childhood.

Based on the above description, it can be concluded that selecting the right play method can enhance children's science literacy. Playing while learning will provide a fun experience for children in learning science.

Early Childhood Science Skills

Science process skills are an individual's ability to apply a series of scientific methods and understand, develop, and discover knowledge. Process skills provide children with the initial foundation for applying scientific methods to develop science and acquire new knowledge. Process skills are divided into two categories: basic science process skills and integrated science process skills. Basic science process skills are the foundation for integrated process skills. Basic science process skills include observing, comparing, classifying, measuring, and communicating.

Aghniarrahmah (2017: 1) defines science skills in kindergarten as fun and engaging learning activities carried out through play through observation, investigation, and experimentation to discover or find answers about the realities of the world around them. Science activities must achieve learning objectives. The goal of science learning is to train children to explore various objects around them. In exploration, children use their five senses to recognize natural phenomena through observation. The results of Aghniarrahmah's research (2017) The results of the analysis of t count = 6.62 obtained are greater than the t table value = 1.74, so there is an influence of the project method on the science abilities of children of TK B PAUD Terpadu Happy Kids Palembang. This is evident from the average posttest value of children of 77.33 and is in the category of Developing According to Expectations (BSH) with the indicator of conducting color mixing experiments being the indicator with the most prominent value. A total of 55.55% are in the BSB category, 33.33% are in the BSH category, 11.11% are in the MB category and no children are in the BB category. A total of 40% of children are in the BSB category, 35.2% are in the BSH category, 23.52% are in the MB category and no children are in the BB category.

The Experimental Method of Mixing Colors Improves Children's Science Skills

The experimental method is a teaching and learning method that actively engages students by experiencing and proving the process and results of the experiment themselves. Furthermore, the experimental method involves teachers and students trying something and observing the process and results of the experiment, providing students with ample opportunity to implement the steps involved in scientific thinking.

Teachers should use appropriate learning methods to introduce science. "A learning method is a way used to deliver a lesson." One method that can be used to introduce science is the experimental method. "An experiment is a process using scientific tools with the aim of discovering something new (at least for the child, although not new to others)" (Sukarno et al., 1981: 47). During experiments,

children actually conduct experiments to discover something new, one of which concerns the scientific concept of color mixing.

Research Results Fajriani, Liana (2019) the results of observations and research were carried out by referring to several aspects or indicators which include: Children are able to experiment with mixing colors, children are able to mix with the appropriate colors, children are able to tell the results of simple science experiments. After conducting research that ran for two cycles, it was proven that there were changes after the action was taken or after the application of the appropriate method when playing mixing colors. The following is an explanation of the improvement in learning outcomes in cycles I and II, in cycle I with an average percentage of completion value reaching 50%, in cycle II there was an increase with an average percentage of completion value reaching 90%. The conclusion that can be drawn from this study is that mixing colors with simple science experiments can improve cognitive development in the field of science in children aged 5-6 years at Silmi Islamic Kindergarten in North Samarinda. The results of the research by Hidayati, et al (2020) showed that the average value of the increase in children's color recognition abilities in the pre-action was 11% with the category Not Yet Developing (BB), cycle I was 23% with the category Starting to Develop (MB), cycle II was 67% with the category Developing According to Expectations (BSH), and cycle III was 86% with the category Developing Very Well (BSB). Based on the results of the classroom action research carried out, it can be concluded that color mixing activities can improve children's color recognition abilities in group A of Elfhaluy Tenggara Kindergarten.

CONCLUSION

Science comes from the Latin word *scientia*, meaning knowledge. Introduction to science should begin at an early age, with fun activities and familiarization, so that children experience the scientific process directly. This allows them not only to learn the results but also to understand the processes and activities involved. The experimental method is a teaching and learning method that actively engages students by experiencing and proving the process and results of experiments themselves. Furthermore, the experimental method involves teachers and students trying to do something and observing the results of the experiment, providing students with ample opportunity to implement the steps in scientific thinking. One way to introduce science is the concept of color mixing. Children see many colors around them in their daily lives. According to Papalia (2014: 138), citing Haith (1986), the ability to follow a moving target also develops during the first months, as does color perception. From this opinion, it can be concluded that children can perceive color from an early age, or from birth. When children see a curved sequence of red, yellow, and green, they will define it as a rainbow. However, when they see a real rainbow, they will see various colors in it, not just red, yellow, and green, including the colors "MEJIKUHI BINI" (red, orange, yellow, green, blue, indigo, and violet). These colors are formed by the mixing of colors in the rainbow. Teachers can use this event to teach children simple science concepts about color mixing.

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