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DATA IN SUMMARY | EDUCATION, LINGUISTIC

The Use of Clay Media to Improve Color Knowledge and Science Knowledge in The Exploration Process of Early Childhood

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Abstract: Clay media is a clay-like media that is easy to shape and has various colors. This media is safe and easy to use by early childhood to explore various types of knowledge and skills according to the child's development period. This study aims to analyze the use of clay media to improve color knowledge and science knowledge in early childhood. The research method is qualitative descriptive research with literature study analysis techniques. The findings show that the use of clay media can improve color knowledge in early childhood. From clay media play activities, early childhood is able to point to the colors mentioned, mention various types of colors, and construct new colors so that it shows increased color knowledge. Clay media can also improve science knowledge in early childhood with activities to form clay media into plant structures or types of animals. Teachers can provide simple explanations related to living things so that children can understand the material in a fun way. This activity can stimulate children's understanding of living things as part of biology and science learning. Basically, early childhood needs sensorimotor stimulation and direct experience to be able to develop cognitive knowledge and skills. Thus, it is hoped that teachers can utilize the learning method of playing with clay media to support the knowledge and skills of early childhood that are appropriate to their development period.

Keywords: Early Childhood, Clay Media, Science Knowledge, Color Knowledge.

1. INTRODUCTION

Early childhood based on Article 28 of the National Education System Law No.20 of 2003 paragraph 1 is a child who is in the age range of 0-6 years which is the golden age or golden period of child development. At the early age stage, children have intelligence and mentality that is still developing. Piaget developed a method used by children in understanding the world into four main periods where all of them correlate with each other and continue to improve as age increases. (Lestari et al. 2023: 40). Piaget's theory contributes greatly to improving understanding of children's cognitive development and designing an optimal learning process that is relevant to the stages of children's mental development. Piaget states that children do not receive information passively, but have an active role in building knowledge by interacting with the environment and direct experience. Teachers must deliver material in a language that is suitable for children's way of thinking, support children to interact with the surrounding environment, and provide opportunities for children to learn according to their developmental stage. (Yuwana and Indarti 2023: 47).

Based on Piaget's theory, early childhood is in the sensorimotor and preoperational periods where children's cognitive development develops through self-interaction with the surrounding environment. Children need exploration-based learning as an effective approach for children to understand basic concepts such as color knowledge and science knowledge. Early childhood has a high curiosity and likes the concept of active learning based on play so that they get direct experience from the surrounding environment. (Rohayati & Budiarti, 2019). Clay media is one of the media that can stimulate children's exploration and sensorimotor skills. This makes clay an alternative media

in the learning process. (Inayah & Izmi, 2023).. Clay media in Indonesian means clay or clay. (Halim, 2021). Clay media has the advantage of being easy to shape, safe to use for children, and can stimulate children's sensory so as to facilitate children's learning process. Through the use of clay media, children can explore directly by mixing various colors, forming their own objects, and exploring basic science concepts creatively.

There are a number of previous studies that utilize clay media as a learning medium for early childhood. Research Kalsum et al. (2021) examines the effect of using clay media for constructive play which is proven to be able to improve the fine motor skills of children aged 5-6 years. Research Sholicha & Hasibuan (2022) and Fauziyyah et al. (2024) revealed that the use of flour clay media is able to improve children's fine motor skills, as well as paper clay media that supports early childhood motoric development. (Khofifah et al., 2024). In the previous research, it only revealed the use of clay media but there was nothing that discussed its effect on increasing color knowledge and science in early childhood. Therefore, this research holds urgency to overcome the research gap and contribute in the form of research renewal by referring to the use of polymer clay media with its effect on color knowledge and science knowledge in early childhood.

The use of polymer clay media is considered to have the potential for children to stimulate cognitive development of color understanding in children through clay media games in the form of molded toy dough. This media is safe and easy to shape by children (Estuti et al., 2024). With colorful clay media, children can be introduced to basic knowledge related to one color to another. The use of clay media can also make children learn to mix colors to produce new colors that support children's creativity. In addition, children's science knowledge related to the properties of objects that are hard, flexible, or liquid can be learned by seeing changes in the shape of the clay media made through direct experience. Early childhood can also have fun learning to understand the various forms of living things on earth formed with clay media to enrich science knowledge. Children can be directed to form animals or plants so that teachers can focus children on studying living things as part of science learning.

Based on the background exposure and problems, this study aims to analyze the extent of the use of clay media to increase color knowledge and science knowledge in early childhood. Through this research, it is hoped that it can contribute to a more creative and effective early childhood teaching and learning strategy so as to support the development of a higher quality of early childhood education.

2. RESEARCH DESIGN AND METHOD

This research is a qualitative research with a descriptive approach. Descriptive research provides a description of the real conditions related to the object of research (Moleong, 2010). Qualitative research is research that aims to review phenomena on the subject that takes place during the research by doing it holistically and the description is done in words (Sugiyono, 2018). Primary data in literature study research that utilizes previous findings from scientific journals, articles, and research theses as data material for analysis. This research is carried out by preparing a research framework through the heuristic method, namely collecting the required sources and data which are relevant to the research theme. Data analysis uses library research or literature studies, namely activities that include searching, reading, and reviewing research reports with library sources in the form of theories that are relevant to the topics discussed in the study. In the literature study, the selection of journals was adjusted to the research topic by dwelling on the keywords "Clay Media" "Color Knowledge", "Science Knowledge" and "Early Childhood". The stages of data analysis begin with data collection, data reduction, data presentation, and verification or conclusion drawing.

3. RESULT AND DISCUSSION

Clay in Indonesian means clay. In this case, polymer clay media can be used as an alternative to children's play media besides using clay or clay. This type of clay media is more efficient because it is easy to find and provides ease and safety of use for children. Children, especially those who are still classified as early childhood, have characteristics that are happy with the game-based learning model. For this reason, this media can help children form various animal or plant characters so as to train children's creativity. Suhaenah & Komala (2024) stated that learning activities for 4-5 year old children in the classroom have a positive influence during learning activities. Children will show active participation because clay is very interesting for children.

The use of clay media as an alternative learning media can be used as a learning strategy in early childhood education, kindergarten or low-grade elementary school with students who have characteristics that like fun game-based learning. The use of polymer clay media in circulation today is presented with a variety of colors. These different colors can be introduced to children of this age so that they are able to distinguish one color from another to increase knowledge of colors. The use of clay media can be used as an alternative for PAUD education level. Handayani et al. (2024) stated that PAUD or Early Childhood Education is education for young children aged 0 to 6 years by providing various stimuli so as to support physical or spiritual growth and development for children to be ready to enter the next level. Color knowledge is the basic thing that must be understood by early childhood as sensory knowledge.

Color knowledge is the basic understanding and ability to recognize, differentiate, and understand the diversity of colors that exist. This knowledge includes the introduction of basic colors such as red, yellow, green, blue, white, black along with other more complex concepts such as mixing colors into new colors, gradation, as well as the relationship between one color and another. For early childhood, color knowledge has an important role for cognitive and sensory development. The process of introducing and learning colors to children can support children to have color knowledge, namely the ability to recognize and distinguish colors. Ratna & Watini (2022) state that if the child's ability to recognize colors is the child's ability to know colors through pointing, mentioning, and classifying colors with all color recognition activities in the teacher's learning. Knowledge of colors indicates the ability of students to identify various types of colors as a basis for recognizing the world around them. Color recognition can support fine motor skills such as playing with colored objects. Color mixing can also be a concept that is understood by children, for example, basic colors are mixed to produce new colors that increase understanding of color changes. The concept of color recognition can also be associated with certain objects such as blue to describe the sky, green to describe leaves, black for hair and others so as to enrich children's knowledge related to the surrounding environment.



Figure 1. Polymer Clay Media Color Difference

Figure 1. shows clay media made from polymer which has various colors, namely black, brown, purple, blue, orange, yellow, green, red, pink, cream, and white. These different colors will stimulate children's knowledge in distinguishing colors. This is also supported by Estuti et al. (2024) in their

research that the use of clay media can support children's interest and ability to recognize colors in the Smart class of BKB Cerdas Ceria in Wonosobo. Clay media can make children have high enthusiasm in learning to recognize children. The use of colorful clay media stimulates children to understand and recognize colors more easily. Children can also be stimulated to mix clay media with each other to form new colors so that children have a basic understanding of color formation. Suhaenah (2024) stated that the use of clay media makes children have the ability to recognize colors and can mix one color with another color in the dough to produce various other colors. In Hidayati et al. (2020) the activity of mixing colors by group A children of Elfhaluy Life Kindergarten Tenggaraong can improve the ability of early childhood in recognizing colors so that there is an increase in children's color knowledge.

Increased color knowledge in early childhood with play learning using clay media is shown from several studies conducted by Estuti et al. (2024). In their research, there are significant changes in early childhood related to knowledge of colors before using clay media and after using clay media. Before utilizing clay media in learning, children have not been able to point to the colors mentioned correctly and have not been able to mention the various colors correctly. However, after the use of clay media, early childhood has the ability to point to the color called by the teacher correctly and can mention the various colors available correctly. This shows that color knowledge in early childhood increases after children explore polymer clay media games with various colors. Children are more active and eager to find their own knowledge of colors so that they are more enthusiastic in learning and recognizing colors so as to support the increase in color knowledge.

The play model using clay media, in addition to being used to increase children's understanding of color, can also be directed to increase science knowledge in children. Science knowledge in early childhood can be a provision for early childhood to behave scientifically and have expertise in solving problems. Children are also able to have more sensitive senses so that they master the surrounding environment. Science knowledge competency can be improved with various exercises and teaching to children. In early childhood science knowledge, children can be taught habitats, characteristics of plants or animals, types of animals, how to breed and others (Hidayat & Nur, 2022).

Clay media playing activities can be done by squeezing, stirring, mixing, pressing and others so that children can imagine to form various works as a form of self-expression (Suhaenah & Komala, 2024). In this case, children can be directed to form living things such as animals or plants as works resulting from eye and hand coordination as well as children's creativity and imagination. Making animals or plants from clay media can help teachers to explain the concept of living things to early childhood in a fun way. The teacher can give a brief explanation that there are various animals in nature such as birds, caterpillars, cats, tigers, fish, and various other animals as part of living things. Sabilla (2022) stated that if the learning model is able to facilitate student creativity, it can encourage students to pour their imagination by forming names and animals as they wish.



Figure 2. Clay Media Works

In addition, teachers can also introduce plants such as the leaves, flowers, stems, roots, and other parts through the introduction of clay media formed according to the structure of the plant. Children

can be stimulated to create certain shapes using clay media according to their ideas. (Suhaenah & Komala, 2024). The concept of playing with clay media will greatly help early childhood in understanding the concept of science or natural science which is related to living things and the surrounding environment. This is supported by Sinulingga (2023) who stated that science teaching aids with clay materials were able to improve the understanding of fourth grade elementary students of SDN 064023 Medan Tuntungan in learning the material of plant parts and their functions. This clay media is able to improve student learning outcomes which indicates that the use of this alternative media is beneficial in learning biology. (Sinulingga & Rezeki, 2023). In fact, in research Setiawan (2023) the use of clay media is known to be a medium for introducing animals to blind children. From these findings, it is concluded that the use of clay media can improve science knowledge when applied in learning in early childhood education.

4. CONCLUSION

The use of clay media can be an alternative learning media for early childhood to explore and construct their own knowledge through direct experience. The concept of learning with this game-based clay media makes learning fun so that it attracts attention and increases student enthusiasm. From the findings, it is known that the use of clay media is able to increase color knowledge in early childhood because the polymery clay media available in various colors can make children recognize the difference between one color and another. The use of clay media is also able to increase science knowledge in early childhood. Playing clay media activities by forming clay media into animals or plants can increase children's understanding of the biology of living things so that it supports understanding of science. The suggestions in this study are aimed at teachers to make clay media as a recommendation for learning media that can be applied to support color knowledge and science knowledge in children of this age. Teachers can design effective learning strategies for students. The limitation in this study is that Classroom Action Research has not been conducted to measure the success of the implementation of learning with clay media in various cycles so that valid data has not been obtained regarding the measurable increase in color knowledge and science knowledge of early childhood. For this reason, further research is expected to analyze the improvement of these two types of knowledge through classroom action research (PTK).

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