

## Improving Children's Ability to Recognize Colors Through Educational Toys at Kemala Bhayangkari 01 Palu Kindergarten

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### ABSTRACT

The problem in this study was young children's low ability to recognize colors, evident in difficulty naming colors and sorting and grouping objects by color. The cause was the suboptimal use of instructional media. The study aimed to improve children's color recognition ability through the use of educational play tools at TK Kemala Bhayangkari 01 Palu. The research subjects were 15 kindergarten group A children (4 boys, 11 girls). This study used a classroom action research design with two cycles, each consisting of planning, implementation, observation, and reflection. Data were collected through observation, interviews, tasks, and documentation using observation sheets for teacher and student activities. The analysis showed that before the intervention, color recognition ability was low (categories BB, MB) with 6.67% in Very Good (BSB), 22.22% in Expected (BSH), 31.11% in Beginning (MB), and 40% in Not Yet Developed (BB). After cycles I and II, significant improvements were observed. In cycle I, BSB increased to 24.45%; BSH 35.55%;

MB 20%; BB 20%. In cycle II, BSB 46.66%; BSH 40%; MB 11.11%; BB 2.23%. Thus, the use of educational play tools was proven to improve children's color recognition ability.

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### **Introduction**

Kindergarten (KD) is a formal level of early childhood education whose goal is to help children reach their full potential (Depdiknas, 2004). In the context of fundamental visual learning, the KD curriculum places significant emphasis on children's cognitive, social, and physical development, including color recognition (Depdiknas, 2004). Learning in KD should ideally use a playful approach to allow children to acquire knowledge through direct experience. This need is particularly pressing in early childhood, a stage considered to be a "golden period" of child development (Hildayani et al., 2006; Hurlock, 1998; Yulia, 2007).

In this context, the use of interactive teaching materials is essential. As Eliyawati (2005) states, the judicious choice of teaching materials can promote children's interest in and understanding of abstract concepts such as color. Furthermore, Zaman et al. (2008) emphasized that learning in kindergarten is facilitated by interesting and relevant teaching materials. Previous research has shown that the use of playful tools, such as building blocks, can promote creativity and the development of children's cognitive abilities (Kurniasih, 2011).

A number of studies in early childhood education show that the use of educational play media is highly effective in improving children's ability to recognize colors. One study by Ruhayat and Widjayatri (2024)

examined the use of an educational toy called *Match Colors* for children aged 3–4 at Kartika Siliwangi Kindergarten. They found that the toy was both valid and effective in developing children’s cognitive abilities, particularly color and shape recognition, because children could learn through hands-on manipulation of the materials.

In another study, the use of colored block group media also produced positive outcomes. Hidayana, Manajemen, and Kiromi (2023) reported that after children engaged with grouped color blocks, their color recognition ability improved significantly, along with additional benefits for fine motor skills and social interaction.

Furthermore, Kartiani (2021) applied *colorful plastic balls* as a learning medium in Hadi Sakti Kindergarten to enhance color recognition. Using a classroom action research (CAR) design, the findings showed that teacher activity increased from 71% to 92% by the second cycle, and children demonstrated stronger color-recognition abilities through play using the colored balls.

Another study by Sudarwati (2022) explored the use of everyday environmental objects as learning media for color recognition. At Tunas Rimba 1 Kindergarten in Samarinda, through three action research cycles, children’s color-recognition skills improved from the low category (pre-cycle) to adequate and eventually to good, indicating that integrating familiar, real-world objects effectively strengthened children’s understanding of colors.

Finally, Estuti, Haryanto, and Faisal (2024) examined the use of

*clay* as a medium for teaching color recognition in BKB Cerdas Ceria. Their study showed a significant improvement in children's color-recognition ability after two intervention cycles. Children not only identified basic colors more accurately but also became more active and motivated through the tactile, flexible nature of clay as a learning tool.

In fact, playful activities have been shown to improve fine motor skills (Hussein et al., 2004; Direktorat Pembinaan TK dan SD, 2008). Therefore, the use of educational play tools could be a relevant strategy for promoting color recognition in children who have difficulties in this area. Within the framework of the kindergarten curriculum, this study aims to optimize the expected outcomes of color recognition learning for children in this age group. To this end, it proposes the use of specialized educational play tools.

## **Methods**

### **Methods**

In this study, a Classroom Action Research (CAR) methodological approach was implemented (Badrujaman and Hidayat, 2010; Ramadhan et al., 2013). Planning, implementation of actions, observation, and reflection were fundamental components of the CAR model. To ensure consistency in implementation, the intervention was carried out in two cycles, each consisting of two meetings.

Fifteen students from group A of the Kemala Bhayangkari 01 kindergarten in Palu were the subjects of the research (4 boys and 11 girls). To collect the data, a tool in the form of observation sheets of the

activities carried out by teachers and students was used. The information was acquired through teaching observations, interviews, assignments, and teaching documentation (Sudijono, 2012). To ensure that the assessment complied with PAUD standards, the results of the observations were analyzed descriptively and quantitatively using percentages for each category of development, in accordance with the Guidelines for Assessment in Nursery Schools (Mendiknas, 2010).

### Result and Discussions

The developmental categories of color recognition in children before and after the intervention (cycles I and II) are summarized in Table 1. Significant progress was recorded in all categories. At the end of cycle II, 46.66% of children were classified as very well developed (BSB), compared to only 6.67% before the intervention. Similarly, the proportion of children in the “Not yet developed” (BB) category fell rapidly from 40% (before the intervention) to only 2.22% (cycle II). The “Beginning to develop” (MB) category experienced a significant decline from 31.11% to 11.11%, while the “Developing as expected” (BSH) category increased from 22.22% to 40%. The results of the study suggest that children's color recognition abilities gradually improve when they use educational toys (APE).

**Table 1.** Recapitulation of the percentage results of the children's color recognition ability category

Category	Pre-Action (%)	Cycle I (%)	Cycle II (%)
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Developing Very Well	6.67	24.45	46.66
Developing as Expected	22.22	35.55	40
Starting to Grow	31.11	20	11.11
Not yet developed	40	20	2.22

The percentages in Table 1 indicate a significant improvement observed across each cycle. For example, the proportion of children exhibiting BSB (color vision deficiency) nearly doubled in Cycle II compared to Cycle I and quadrupled in Cycle II compared to before the intervention began. This suggests that educational play-based interventions are effective in enhancing children's color recognition abilities. Play-based active learning is considered effective in enhancing children's motivation to learn and participate, thereby strengthening the learning process. A context-based, enjoyable learning approach aligned with the early childhood education concept of "learning through play" makes the learning process more meaningful.

The conclusions of this study align with previous research findings. Numerous studies have demonstrated that play-based learning significantly enhances cognitive development in young children. For example, Bergen (2018) argued that play-based learning provides the most suitable environment for developing young children's cognitive and critical thinking skills. According to Rogers & Sawyers (1988), play-based learning enhances critical thinking, creativity, and problem-solving skills. These findings support the

hypothesis that children's color recognition abilities are best learned when they actively engage in play activities.

In this study, educational games (EGAs) played a particularly important role. Children showed a high level of interest in the animations and attractive graphics of EGAs, which helped to maintain their enthusiasm and improve their memorization of lessons. This result is consistent with research conducted by Nurteti et al. (2024), which showed that children are more engaged and more likely to memorize educational material when exposed to educational games featuring appealing animations. In addition, it has been observed that EGAs promote children's cognitive and fine motor development. The use of this educational technology has the potential to increase children's learning outcomes, maximizing their overall development and growth. Furthermore, the significant improvement in Cycle II in children's color recognition skills supports the use of EGAs as an effective teaching tool for children with intellectual and hearing disabilities.

However, the relevant literature also emphasizes that parents and teachers must monitor their children's use of technology. Although educational games are considered beneficial, according to Nurteti et al. (2024), adequate supervision by parents and teachers is essential to ensure development that both prevents dependency and promotes balanced development. These findings are consistent with research results that demonstrate a significant influence of teacher factors on learning success. To ensure maximum engagement from each child,

various techniques and encouragement from the teacher are required. ECE support for interactive learning processes is most effective when teachers receive adequate guidance.

Considering all the elements presented, the results of the study corroborate the importance of instructional play techniques in early childhood education. The improvement of color recognition skills in children is consistent with the objectives of the PAUD curriculum, which prioritizes cognitive development through play and exploration. The results obtained demonstrate a quantitative improvement, as well as a solid theoretical basis: contextual and interactive learning increases student engagement. In line with international research on game-based learning and cognitive development in early childhood, it has been shown that the methodical application of game-based play strategies in color learning increases children's motivation and learning outcomes.

### **Conclusion**

The results of the study conducted at Kemala Bhayangkari 01 kindergarten in Palu indicate that the use of educational games helped improve children's color recognition skills. At the end of the second cycle, there was a significant decrease in the proportion of children classified as "undeveloped," with a drop from 40% to 2.23%. At the same time, the "highly developed" category saw a notable increase, rising from 6.67% before the intervention to 46.66%. The research question was addressed, and it was found that color recognition learning outcomes could be improved through the effective use of educational games. The

above-mentioned study suggests that kindergarten teachers should introduce educational games into their teaching practices. This integration would make color recognition more appealing and effective for students. It is widely accepted that the play-based learning strategy has the potential to accelerate children's cognitive development, particularly in understanding color concepts.

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