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IMPROVING FINE MOTOR SKILLS OF 4–5 YEAR OLD CHILDREN THROUGH BOTTLE CAP MEDIA

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Abstract

Fine motor development is one of the important aspects of early childhood education because it is directly related to a child's readiness to engage in subsequent learning, particularly skills such as writing, drawing, and other manipulative activities. However, in reality, many children aged 4–5 years still demonstrate fine motor skills that have not developed optimally. This study aims to improve the fine motor skills of children aged 4–5 years through the use of bottle cap media at PAUD Az-Zahra Rengas, South Tangerang City. The study employed a Classroom Action Research (CAR) method using the Kemmis and McTaggart model, implemented in two cycles. The research subjects consisted of 17 children, including 8 boys and 9 girls. Data collection techniques were carried out through observation, documentation, and field notes. Data analysis was conducted using descriptive qualitative and quantitative methods. The results showed a significant improvement in the children's fine motor skills, from the pre-cycle stage at 45.9%, increasing to 70.8% in Cycle I, and reaching 99.9% in Cycle II. Thus, bottle cap media proved to be an effective, simple, inexpensive, and innovative learning tool for enhancing the fine motor skills of early childhood.

Keywords: Fine Motor Skills, Bottle Cap Media, Early Childhood, Classroom Action Research

Abstrak

Perkembangan motorik halus merupakan salah satu aspek penting dalam pendidikan anak usia dini karena berkaitan langsung dengan kesiapan anak dalam mengikuti pembelajaran selanjutnya, khususnya keterampilan menulis, menggambar, dan aktivitas manipulatif lainnya. Namun pada kenyataannya, masih banyak anak usia 4–5 tahun yang menunjukkan kemampuan motorik halus yang belum berkembang secara optimal. Penelitian ini bertujuan untuk meningkatkan kemampuan motorik halus anak usia 4–5 tahun melalui penggunaan media tutup botol di PAUD Az-Zahra Rengas Kota Tangerang Selatan. Penelitian ini menggunakan metode Penelitian Tindakan Kelas (PTK) dengan model Kemmis dan McTaggart yang dilaksanakan dalam dua siklus. Subjek penelitian berjumlah 17 anak yang terdiri atas 8 anak laki-laki dan 9 anak perempuan. Teknik pengumpulan data dilakukan melalui observasi, dokumentasi, dan catatan lapangan. Analisis data dilakukan secara deskriptif kualitatif dan kuantitatif. Hasil penelitian menunjukkan adanya peningkatan kemampuan motorik halus anak secara signifikan, dari tahap pra-siklus sebesar 45,9%, meningkat menjadi 70,8% pada siklus I, dan mencapai 99,9% pada siklus II. Dengan demikian, media tutup botol terbukti efektif sebagai media pembelajaran sederhana, murah, dan inovatif dalam meningkatkan kemampuan motorik halus anak usia dini.

Kata kunci: Motorik Halus, Media Tutup Botol, Anak Usia Dini, Penelitian Tindakan Kelas

INTRODUCTION

Early childhood refers to children aged 0–6 years, commonly known as the golden age, a crucial stage in which physical, cognitive, and psychosocial development occurs rapidly (Sujiono, 2013). At this stage, the child's brain develops rapidly, and the stimulation provided can have lasting effects on future development. Therefore, early childhood education serves a strategic role as the initial foundation for developing quality human resources (Suyadi, 2018).

Early childhood education aims to provide educational stimulation that is appropriate to children's developmental stages in order to optimize the development of all aspects of growth. These developmental aspects include religious and moral values, physical-motor skills, cognitive abilities, language, social-emotional development, and art (Sujiono, 2013). These six developmental aspects are interrelated and cannot be separated from one another.

Physical–motor development is one of the most important aspects of early childhood education because it is directly related to children's ability to perform daily activities and their readiness to participate in learning at higher levels of education (Montolalu et al., 2017). Motor development is divided into two categories, namely gross motor skills and fine motor skills. Gross motor skills are associated with the movement of large muscles such as walking, running, and jumping, while fine motor skills involve the coordination of small muscles that require precision as well as hand–eye coordination.

Fine motor skills play a crucial role in supporting children's learning readiness, particularly in early academic activities such as writing, drawing, cutting, and pasting. Children aged 4–5 years are at a developmental stage in which fine motor abilities begin to develop significantly (Suyadi, 2018). However, in practice, not all children are able to achieve these developmental milestones according to their age.

The results of preliminary observations conducted at PAUD Az-Zahra Rengas, South Tangerang City, indicated that the fine motor skills of children aged 4–5 years had not yet developed optimally. Several children experienced difficulties in holding a pencil with the correct grip, showed limited skills in arranging small objects, and were unable to complete tasks that required effective hand–eye coordination. These conditions indicate the need for instructional innovation through the use of appropriate learning media (Arikunto, 2019).

One of the factors influencing the development of children's fine motor skills is the learning strategies and media used by teachers. Concrete and engaging learning media can increase children's learning motivation and facilitate their understanding of concepts (Sujiono, 2013). Bottle caps are one type of concrete learning media that can be utilized to develop children's fine motor abilities.

The use of bottle cap media provides opportunities for children to engage in various manipulative activities such as arranging, classifying, and matching objects. These activities directly train hand–eye coordination, finger strength, and accuracy (Montolalu et al., 2017). In addition, bottle cap media support environmentally based learning by utilizing recycled and environmentally friendly materials.

Based on the explanation above, it can be concluded that the use of appropriate learning media is essential to improve fine motor skills in early childhood. Therefore, this study focuses on improving the fine motor skills of children aged 4–5 years through the use of bottle cap media at PAUD Az-Zahra Rengas, South Tangerang City.

METHODS

This study employed a Classroom Action Research (CAR) method using the Kemmis and McTaggart model. Classroom action research is a form of reflective research conducted by teachers in the classroom with the aim of improving and enhancing the quality of the learning process continuously. The Kemmis and McTaggart model consists of four main stages: planning, acting, observing, and reflecting, which are carried out cyclically over several iterations.

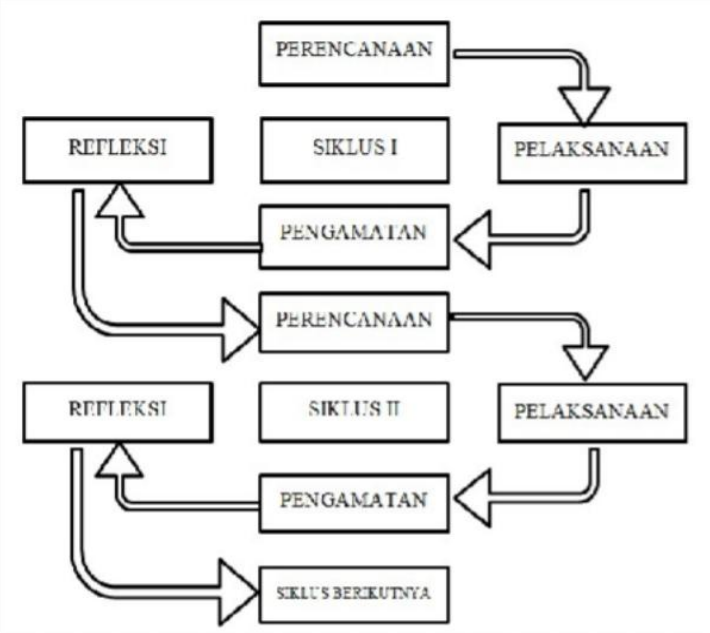

Figure 1

Classroom Action Research Using the Spiral Model of Kemmis and Taggart

This study was conducted at PAUD Az-Zahra Rengas, South Tangerang City, during the even semester of the 2024/2025 academic year. The research subjects were

17 children aged 4–5 years, consisting of 8 boys and 9 girls. The selection of research subjects was based on the results of an initial observation indicating that the children's fine motor skills needed improvement.

The focus of this study was on children's fine motor skills through the use of bottle cap media. The research was conducted in two cycles, with each cycle comprising two meetings. Each cycle included the stages of planning, action implementation, observation, and reflection.

In the planning stage, the researcher prepared a Daily Learning Implementation Plan (RPPH) tailored to the learning theme, prepared modified bottle cap media, and developed observation instruments to assess the children's fine motor skills. The observation instruments were designed based on indicators of fine motor skills for children aged 4–5 years, which include the ability to grasp, arrange, classify, and manipulate small objects with hand–eye coordination.

The action implementation stage involved conducting learning activities according to the prepared RPPH. The teacher utilized bottle cap media in various learning activities, such as sorting bottle caps by color and size, arranging patterns, and matching bottle caps with pictures. The learning activities were designed in a playful setting to ensure that children felt comfortable and enthusiastic in participating.

The observation stage was conducted to monitor the learning process and the development of children's fine motor skills during the activities. Observations were carried out using prepared observation sheets, accompanied by field notes to record the children's behavior and responses during the learning activities.

The reflection stage was conducted to evaluate the results of each cycle's actions. The outcomes of the reflection were used as a basis for planning improvements in the subsequent cycle. The data obtained were analyzed descriptively, both qualitatively and quantitatively, by calculating the percentage of mastery in children's fine motor skills for each cycle.

RASULT AND DISCUSSION

The results of the study indicate an improvement in the fine motor skills of children aged 4–5 years following the implementation of bottle cap media in learning activities. At the pre-cycle stage, the children's fine motor skills were still relatively low. They experienced difficulties performing activities that required hand-eye coordination, such as arranging and moving small objects. The percentage of achievement for fine motor skill indicators at the pre-cycle stage was 45.9%.

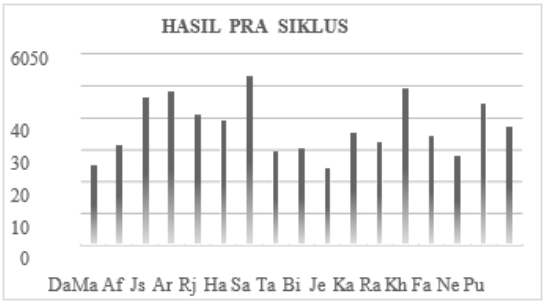

Figure 2. Pre-Cycle Data

In Cycle I, after implementing the learning activities using bottle caps as media through sorting and arranging them according to color and size, the children's fine motor skills showed improvement. The children began to demonstrate interest in the media used and were more active in participating in the learning activities. The percentage of achievement for fine motor skill indicators in Cycle I increased to 70.8%. However, some children still required teacher guidance to complete the activities.

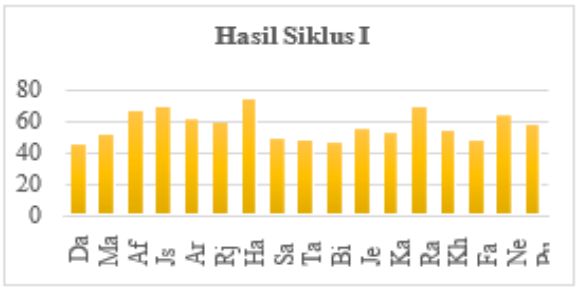

Figure 3. Cycle I Data

In Cycle II, the researcher implemented improvements in learning based on the reflections from Cycle I, including adding activity variations such as arranging patterns and matching bottle caps with pictures. As a result, the children's fine motor skills increased significantly, with an achievement percentage of indicators reaching 99.9%. Nearly all children were able to perform the activities independently and demonstrated excellent fine motor development.

Figure 4. Cycle II Data

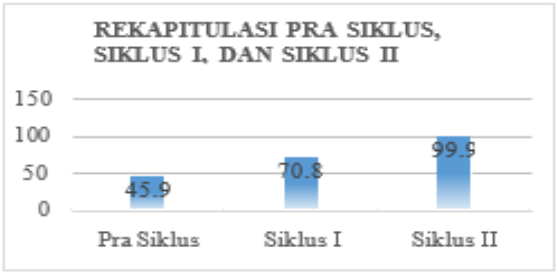

Figure 5

Recapitulation of the Pre-Cycle, Cycle I, and Cycle II Phases

The results of the study indicate that the use of bottle cap media has a significant effect on improving the fine motor skills of children aged 4–5 years. This improvement was observed progressively in each cycle of the implemented actions. These findings confirm that appropriate stimulation through concrete media can optimize the development of fine motor skills in early childhood (Sujiono, 2013).

In the pre-cycle stage, children's fine motor skills were still categorized as low. They tended to be passive, lacked confidence, and were not yet able to coordinate hand-eye movements effectively. This condition aligns with Suyadi's (2018) assertion that limited variations in media and teaching methods may result in suboptimal development of children's fine motor skills.

Figure 6. Introduction to Bottle Cap Media

The improvements observed in Cycle I indicate that the bottle cap media was effective in enhancing children's learning interest and active participation. Children appeared more enthusiastic because the media was colorful, easy to grasp, and could be manipulated directly. This finding aligns with Wiyani (2020), who stated that

concrete media based on educational games can significantly improve fine motor skills in early childhood.

Figure 7. Implementation of Bottle Cap Media in Cycle I

In Cycle II, the improvement in children's fine motor skills reached a very good category. The children were able to independently perform activities such as arranging, matching, and creating patterns without teacher assistance. This improvement indicates that variations in activities and reinforcement of learning strategies have a positive impact on children's learning outcomes. These findings are consistent with the study by Rahmawati and Kurnia (2019), which stated that the use of manipulative media can enhance eye–hand coordination in early childhood.

Figure 8. Implementation of Bottle Cap Media in Cycle II

In addition to enhancing fine motor skills, the use of bottle cap media also impacts other developmental aspects, such as concentration, patience,

perseverance, and children's independence. Children learn to complete tasks gradually, follow game rules, and take responsibility for the activities they engage in. According to Nurhayati et al. (2021), activity-based learning does not only develop motor aspects but also contributes positively to the socio-emotional development of early childhood.

From a pedagogical perspective, bottle cap media supports a learning-through-play approach, which is a key characteristic of early childhood education. Children gain meaningful learning experiences through direct activities rather than merely receiving verbal instructions from teachers. This approach aligns with early childhood education principles that emphasize active participation, creativity, and holistic engagement in the learning process (Sujiono, 2013).

Bottle cap media also offers advantages as a learning tool that is economical, easily accessible, and environmentally friendly. Utilizing recycled materials as learning media supports the concept of sustainable education and instills environmental awareness from an early age. This aligns with the findings of Sari and Putra (2022), who stated that the use of recycled materials as learning media can enhance teacher creativity while providing contextual learning experiences for children.

The implications of these findings for early childhood teachers highlight the importance of creativity and innovation in selecting and developing learning media. Teachers do not need to rely on expensive manufactured materials but can effectively utilize simple materials available in the surrounding environment. Furthermore, teachers need to continuously reflect on the learning process to adjust teaching strategies according to the needs and characteristics of children.

Based on the research results, theoretical review, and previous studies, it can be affirmed that bottle cap media is an effective, efficient, and innovative learning tool for improving fine motor skills in early childhood. These findings reinforce existing theories and previous research while providing practical contributions to teaching practices in early childhood education institutions.

CONCLUSION

Based on the results of the classroom action research conducted at PAUD Az-Zahra Rengas, South Tangerang City, it can be concluded that the planned and continuous use of bottle cap media is proven to be effective in improving the fine motor skills of children aged 4–5 years. This improvement was observed gradually from the pre-cycle stage, through Cycle I, to Cycle II, with the final achievement categorized as very good.

Children's fine motor skills, including hand-eye coordination, accuracy, finger strength, and manipulative abilities, showed significant development after the implementation of bottle cap media in learning activities. Children became more

active, independent, and confident in completing various tasks assigned by the teacher. This indicates that concrete learning media are highly suitable for early childhood education, as they provide meaningful and tangible learning experiences (Sujiono, 2013).

In addition to positively impacting fine motor development, the use of bottle cap media also contributes to other aspects of development, such as increased concentration, patience, and the ability to follow rules. Children learned to complete tasks step by step and take responsibility for the activities they carried out. These findings are in line with Suyadi (2018), who states that play-based learning can develop various aspects of child development in an integrated manner.

The practical implication of this research is that early childhood educators can utilize bottle cap media as an alternative learning tool that is creative, innovative, and economical. Teachers do not always need to rely on expensive learning materials but can optimize simple materials available in their surroundings. Moreover, the use of bottle cap media can encourage teachers to be more creative in designing varied and enjoyable learning activities for children.

For early childhood education institutions, the findings of this study can serve as a reference in developing learning programs, particularly in efforts to improve the quality of learning in the physical-motor domain. Schools can support teachers by providing facilities and policies that promote the use of safe and environmentally friendly recycled learning materials.

This study has certain limitations, including a limited number of research subjects and the research scope being confined to a single PAUD institution. Therefore, it is recommended that future researchers conduct similar studies with a larger sample and broader settings, as well as combine bottle cap media with other learning media to obtain more comprehensive results.

In conclusion, the use of bottle cap media is an effective learning strategy for enhancing the fine motor skills of early childhood learners. This research is expected to contribute positively to the development of early childhood education practices and serve as a reference for future studies in the field of early childhood education.

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