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IMPROVING STUDENTS' FINE MOTOR SKILLS THROUGH COW MILKING SIMULATION TRAINING AT BAUZAN JAYA PAUD

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Abstract

Limited fine motor skills represent a significant challenge for students at Bauzan Jaya Early Childhood Education (PAUD), where the daily learning process does not optimally facilitate the development of these essential skills. This problem is rooted in the lack of variety in interesting and relevant learning methods and media, resulting in suboptimal stimulation of students' fine motor skills. The main objective of this community service activity is to improve students' fine motor skills through the implementation of a cow milking simulation training method. The implementation method of this activity is carried out through three main stages: (1) observation and needs analysis to identify students' initial level of fine motor skills and the availability of resources; (2) designing and creating safe and attractive cow milking simulation media; and (3) implementing practical training in cow milking simulations involving squeezing, pinching, and pressing activities. The results demonstrate a significant increase in students' fine motor skills, particularly in aspects of eye-hand coordination, finger strength, and dexterity in grasping and releasing objects. The activity also yielded the diversification of innovative, effective, and enjoyable learning methods, which directly contribute to increasing students' readiness to enter the next level of education. This activity successfully provided an easily adaptable and sustainable alternative learning medium for Bauzan Jaya PAUD teachers to use.

Keywords: *Fine Motor Skills; Training; Students*

A. Introduction

Early childhood education (PAUD) is a fundamental form of educational implementation that focuses on laying the groundwork for six core aspects of development: religious and moral values, physical-motor skills, cognitive abilities, language, social-emotional development, and the arts. This development is tailored to the unique characteristics and stages of each age group, as stipulated in the Ministry of Education and Culture Regulation (Permendikbud) No. 137 of 2014 concerning the National Standards of PAUD. PAUD can be delivered through formal, non-formal, and informal channels. Each form has its own distinct characteristics; formal PAUD includes Kindergartens (TK), Raudhatul Athfal (RA), or similar institutions. Non-formal PAUD is organized by the community based on local needs, specifically for children who, due to various limitations, are not served by formal education (Munafiah, N., & Lukman 2023).

Childhood is a fundamental phase for individual development because it offers a significant opportunity to shape and develop a person's character. When adults provide a nurturing environment

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designed to align with each child's potential and innate tendencies, development occurs naturally and effectively. During this "golden age," children require substantial stimulation, particularly from parents and educators in school. Various basic abilities must be developed, including language, social-emotional, cognitive, physical-motor, and artistic skills. Motor skills are divided into gross and fine motor skills (Ningsih, D. Y., & Watini, S. 2022). During this period, developing skills related to a child's fine motor coordination is crucial. As noted by Ismail 2006, as cited in Anggraini et al., (2023), training fine motor skills serves to refine the precision of finger use in daily life.

One factor influencing child development is the school environment, which serves as a place to seek knowledge, learn socialization, build cooperation, and foster creativity (Vygotsky, L. S. 1978). In the process of developing student creativity, educators must innovate to cultivate a conducive and engaging classroom atmosphere where students are free to explore their interests and express their ideas. Student creativity can be stimulated by providing various facilities such as props, media, and various learning resources that accelerate developmental outcomes. One such learning method is through cow milking simulation training. In this activity, students are guided through a simulation aimed at training their fine motor abilities, as it involves specific movements performed by small muscles. Consequently, regular fine motor training contributes to the enhancement of children's creativity. However, every child has a different level of maturity in mastering these abilities (Hindayati et al., 2024).

Educational teaching aids (APE) derived from the surrounding environment encourage early childhood learning motivation. When using aids made from plastic bottles, leaves, and seeds, children become more enthusiastic, happy, and actively involved in the learning process. Teachers have observed a difference in students' learning motivation when using educational tools that utilize the surrounding environment. The implementation of such tools has become an innovation for teachers in classroom activities. Through play, all of a child's senses are actively engaged. Information captured by the senses is transmitted to the brain, stimulating neural activity and promoting cognitive development. Therefore, play activities need to be facilitated by parents or educators to support children in becoming active and creative. Educational tools utilizing the environment use natural materials to help students grasp lessons more easily. These tools offer many benefits in terms of learning activity, motivation, and familiarization with the student's surroundings.

Learning media are not only used in primary, secondary, and higher education but are also applicable in early childhood contexts. The role of learning media in PAUD is increasingly important, considering that children at this age are primarily in the pre-operational stage of cognitive development. Therefore, the media used must allow children to learn through concrete experiences. This principle signifies the need for media as a tool to convey educational messages, providing early stimulation for the child (Yulianti et al., 2025).

Cow milking simulation is a socio-imaginative activity that allows children to practise fine motor skills within a highly motivating, play-based context. Previous research has indicated that in-depth analysis of a child's interaction with media provides richer insights than mere outcome measurement. According to Pantiwati (2016), artificial media (imitation objects) are learning tools designed as duplicates-either 2D or 3D-that resemble original objects. The cow model media aims to provide students with a meaningful learning experience. Using such media facilitates the transition from abstract concepts to more concrete understanding.

Therefore, the focus of this Community Service (PKM) is to qualitatively explore how cow milking simulation media facilitates the improvement of students' fine motor skills, how their intrinsic motivation changes, and the responses and experiences of teachers in implementing this new method. This activity ensures that the results of this service are not just numerical data but a deep, context-

rich narrative description of the transformative process occurring at Bauzan Jaya PAUD. Based on the analysis of problems at Bauzan Jaya PAUD, the urgency for contextual intervention, and support from experience-based theoretical frameworks, the objective of this community service is to critically examine and describe the process of improving students' fine motor skills through the implementation and in-depth analysis of cow milking simulation training as an innovative learning medium.

B. Method

This community service activity was conducted at Bauzan Jaya PAUD, Indramayu. Bauzan Jaya PAUD is an early childhood education institution that serves as the primary provider of preschool services for children in the village. The students are divided into two age groups: Group B (ages 5–6) and Group A (ages 4-5). The fine motor skill issues targeted in this intervention were most prominent in the 4-5 year age group. Fine motor development consists of body movements involving the fingers and requires precision, persistence, and good coordination between the eyes and small muscles, making it a vital component in daily life (Susanti et al., 2025).

The method for this community service adopts the Participatory Action Research (PAR) approach. PAR involves conducting research to define a problem and then translating findings into action as a solution to that problem. Participatory Action Research is "research by, with, and for people" rather than "research on people." It is participatory in the sense that it creates a necessary condition where people play a key role, possess relevant information about the social system (community) under study, and participate in the design and implementation of action plans based on research findings. PAR emphasizes synergistic collaboration between the service team and the community throughout all program stages. The cycle begins with identifying needs through field observations and in-depth surveys, in accordance with the qualitative methodological framework (Jannah et al., 2025).

Through PAR, the teachers at Bauzan Jaya PAUD were not merely passive recipients of benefits but active subjects participating in every stage-from problem identification and simulation media design to training implementation and evaluation. This ensured that the resulting media and methods were aligned with the practical needs of teachers in the field and increased their sense of ownership over the implemented innovation.

The primary types of activities carried out were Intensive Training and Mentoring. The Participatory Practice served as the core session, where students were directly involved in the cow milking simulation. This activity was designed as an engaging role-play exercise that simultaneously trained grip strength, eye-hand coordination, and finger dexterity through squeezing movements.

C. Results and Discussion

1. Results

The community service activity was carried out by students of the STAI Darussalam Kunir during their Community Service Program (KKN) in Mangunjaya Village, Anjatan District, Indramayu Regency, from July 22 to August 30, 2025. One of the principal programs implemented was training on the production and use of Educational Teaching Aids (APE) for cow milking simulations, held at Bauzan Jaya PAUD to stimulate early childhood cognitive and motor development. Using the Participatory Action Research (PAR) approach, the project emphasized intensive collaboration between the implementation team and the teachers at Bauzan Jaya PAUD. The process began with

teacher training sessions where educators did not merely receive theoretical material on the urgency of fine motor skills but were also actively involved in assembling and practising with the cow milking simulation media. Teacher engagement was remarkably high, characterized by their enthusiasm in providing suggestions for media modification to ensure it was safe and ergonomic for early childhood hands.

Student involvement (training participants) in the cow milking simulation sessions was qualitatively recorded as very high. Field observation data and narrative notes indicated that the simulation media, designed to resemble a cow's udder using rubber gloves, successfully captured the students' attention. Qualitative data analysis from structured observations and post-intervention interviews revealed profound qualitative changes in students' fine motor skills, particularly in two main aspects: increased finger muscle strength and dexterity. The repeated squeezing and pressing movements on the simulation media effectively trained the students' intrinsic hand muscles. Teachers reported visible changes when students returned to writing and drawing activities. The simulation activity required visual concentration to direct hand pressure toward the 'udder' and observe the resulting water flow, which enhanced the students' coordination abilities. Increased endurance was also a key finding.

The results of this activity indicate that the Cow Milking Simulation is not only an attractive medium but also a pedagogically effective fine motor intervention tool. This effectiveness can be explained through the concepts of Functional and Contextual Learning. The milking activity inherently requires functional movements, such as the cylindrical grip and pincer grip, which are essential prerequisites for the tripod grip (writing grip). Packaging this exercise within a role-play context (a farming scenario) therefore makes the application of effective learning strategies particularly important. One strategy considered highly relevant is scaffolding within the Zone of Proximal Development (ZPD). ZPD, developed by Vygotsky (1978, as cited in Kuncoro & Turahmat, 2025), refers to the distance between what a learner can achieve independently and what they can achieve with the guidance of teachers or peers, enabling children to reach higher skill levels through socially supported play.

Figure 1 & 2 explain the method of using the APE (Educational Teaching Aids) to students and teachers.

These findings are also consistent with Wulandari (2021, as cited in Nisa & Ulfah, 2025), who found that project-based play significantly increases children's engagement and expression of ideas. The strength of this simulation lies in its ability to mediate students' intrinsic motivation. In contrast to monotonous exercises, the simulation provides a clear objective (obtaining 'milk') and instant feedback (water coming out), which is considerably more rewarding for early childhood learners. This satisfaction encourages more intensive and high-quality repetition of the exercise.

2. Discussion

The implementation of this simulation provides a tangible and sustainable impact for Bauzan Jaya PAUD. The primary impact was the enhancement of teacher capacity in diversifying learning methods. Consequently, systematic and planned efforts are required to integrate games and activities based on *local genius* into the curricula of early childhood and elementary education (Wagiran. 2012). Various studies, such as those by Santrock (2013) and Ramadhani et al. (2025), indicate that a holistic educational approach based on *local genius* can yield significant positive effects. Therefore, fostering creative character in children is not merely a necessity but a mandate in order to prepare them to become resilient, innovative, and principled individuals in the future. This project creates a fine motor teaching model that can be independently replicated and further developed by teachers. Furthermore, this activity provides a highly relevant solution to the problems faced by the partner. This simulation medium is relatively inexpensive, easy to produce (using recycled materials), and contextually appropriate for the students' environment. It serves as a practical solution that overcomes the budget and resource constraints frequently experienced by PAUD institutions.

The execution of this activity ensured that the intervention remained bottom-up. The participatory reflection process revealed that this collaboration is highly valued by the partner. Teachers felt heard, and their ideas were accommodated. The primary challenge identified was classroom management at the beginning of the sessions due to the high level of student enthusiasm, which occasionally required more structured instructional adjustments. However, this challenge was successfully addressed through mentoring sessions, demonstrating that the transfer of knowledge to the teachers was effective (Ngindana et al., 2025). Overall, this activity demonstrates that fine motor skill enhancement in PAUD can be optimally achieved through contextual, participatory interventions based on functional play, making it a relevant model for application in similar communities.

D. Conclusion

The community service activity aimed at improving the fine motor skills of students at Bauzan Jaya PAUD through cow milking simulation training was successfully implemented, yielding significant achievements in both process quality and impact on the partner institution. The core achievement of this success is the qualitative improvement in students' fine motor abilities, specifically in finger muscle strength, dexterity, and eye-hand coordination, supported by a dramatic increase in students' intrinsic motivation and learning persistence.

This achievement was measured through in-depth observation and interviews, showing that the use of cow milking simulation media successfully shifted students' perceptions of fine motor tasks. Activities previously perceived as repetitive and tedious (such as gripping pencils or squeezing ordinary plasticine) were transformed into enjoyable, functional role-play experiences. Students demonstrated a much higher level of concentration (time on task) and a reduction in frustration when engaging in the squeezing, pinching, and pressing activities of the simulation media. Finger muscle strength, a crucial prerequisite for mastering the tripod grip in writing, was effectively stimulated due to the physical resistance of the simulation media that mimics the milking process. Thus, this activity has fundamentally addressed the mismatch between learning media and the affective and motor needs of students at Bauzan Jaya PAUD.

The benefits felt by the teachers and students at Bauzan Jaya PAUD are multidimensional and sustainable. First, the students received more effective and contextual fine motor stimulation, enhancing their readiness for primary education. Second, teachers experienced significant benefits

through the enhancement of their pedagogical capacity. Through this activity, teachers were expected not only to receive the media but also to internalise the philosophy of transforming local assets (the livestock theme) into innovative and affordable educational instruments. This fosters teacher independence and creativity in designing teaching media relevant to their surroundings. Educators now possess a model that can be replicated and further developed without dependence on expensive external resources. This success reaffirms that educational solutions in rural areas must be rooted in local assets and contexts.

The success of the methods and approaches used is a key factor in this achievement. Fine motor skills involve precise movements of the small muscles of the hands and fingers; ensuring that every stage of the activity-from planning to reflection-was conducted collaboratively guaranteed high relevance and acceptability (Roslianti et al., 2022). Teachers felt a sense of ownership over the intervention, which is key to program sustainability. Meanwhile, the use of cow milking simulation media is a concrete manifestation of a successful contextual approach. This medium was effective because it combined intensive motor exercise (through squeezing and pressing) with high intrinsic motivation (through role-play), aligning with the principles of play-based learning. The results show that when exercises are packaged as meaningful play, learning resistance decreases drastically while persistence increases. Therefore, this service activity proves that simple, contextual, and participatory pedagogical innovations can provide real and sustainable solutions for child development issues in the PAUD environment.

In conclusion, the entire series of community service activities successfully achieved the goal of improving the fine motor skills of Bauzan Jaya PAUD students. This success was supported by the adoption of a participatory approach, effective knowledge transfer to teachers, and the implementation of cow milking simulation media, which qualitatively proved capable of enhancing students' finger strength and persistence. This provides a positive and sustainable impact on the quality of early childhood education at the partner location. These achievements serve as empirical evidence that interventions carefully designed based on local needs and assets have a powerful leverage effect in improving the quality of learning.

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