

PLASTICINE AS AN EDUCATIONAL TOOL FOR CHILDRENS' FINE MOTOR SKILL DEVELOPMENT: A CASE STUDY

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ABSTRAK

Motorik halus merupakan aspek dasar yang harus dilatih sejak dini untuk menunjang kemandirian dan kesiapan sekolah anak. Penelitian ini bertujuan untuk mengetahui penggunaan media plastisin dalam mengembangkan kemampuan motorik halus anak usia 4-5 tahun, dan untuk mengetahui kendala dan solusi bagi guru dalam penggunaan media plastisin untuk mengembangkan keterampilan motorik halus anak usia 4-5 tahun di Kober Al-Ikhlas Panawangan Ciamis. Penelitian ini menggunakan metode kualitatif dengan pendekatan studi kasus, di mana data dikumpulkan melalui observasi dan wawancara mendalam dengan guru dan orang tua. Hasil penelitian menunjukkan bahwa menggunakan plastisin melalui pendekatan play-and-learn, mulai dari demonstrasi hingga eksplorasi diri, sangat efektif dalam meningkatkan akurasi, kekuatan otot jari, dan koordinasi mata-tangan. Pada saat yang sama, tantangan utama yang dihadapi adalah keterbatasan waktu dan keterampilan motorik dasar yang bervariasi di antara anak-anak, yang keduanya berkontribusi pada kelelahan fisik. Kemudian, kendala ini diatasi melalui pendampingan individual dari guru dan keterlibatan aktif orang tua dalam melanjutkan stimulasi di rumah tanpa tekanan.

Kata Kunci: Anak Usia 4-5 Tahun; PAUD; Motorik Halus; Plastisin

ABSTRACT

Fine motor skill is a fundamental aspect that must be trained from an early age to support children's independence and school readiness. This study aims to determine the use of plasticine media in developing the children's fine motor skills aged 4–5 years, and to find out the obstacles and solutions for teachers in the use of plasticine media to develop the children's fine motor skills aged 4–5 years in Kober Al-Ikhlas Panawangan Ciamis. This study uses a qualitative method under a case study approach, at which the data collected through observation and in-depth interviews with teachers and parents. The results showed that using plasticine through a play-and-learn approach, from demonstration to self-exploration, was very effective in improving accuracy, finger muscle strength, and eye-hand coordination. At the same time, the primary challenges faced were time limitations and the varying baseline motor skills among the children, both of which contributed to physical exhaustion. Then, this obstacle is addressed through individualized assistance from teachers and the parents' active involvement in continuing stimulation at home without pressure.

Keywords: Children Aged 4-5 Years; Early Childhood Education; Fine Motor; Plasticine

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I. INTRODUCTION

One aspect of child development that must be developed as a preparation for children's life in the future is motor development, which is divided into two: gross motor

and fine motor. Fine motor development is the ability of children to coordinate small muscles, especially the fingers, in combination with eye coordination to perform activities that require preparation and movement control (Hidayat & Nurlatifah, 2023; Zhou & Tolmie, 2024). This ability plays an important role in supporting independence, school readiness, and children's cognitive and emotional development (Kamaruddin et al., 2023). In children aged 4–5 years old, fine motor development comprises 4 indicators. Those indicators include (1) eye and hand coordination, which includes sub-indicators: (a) putting together puzzles and (b) meronce. (2) control of the smooth muscles, which includes sub-indicators: (a) pinching, (b) poking, (c) stroking, (d) twisting, (e) spinning, and (f) squeezing. (3) the ability to manipulate objects, which includes sub-indicators: (a) playing with plasticine, (b) playing with Lego, and (c) playing with similar soft materials. (4) the ability to use stationery, which includes sub-indicators: (a) being able to hold school supplies, (b) being able to pick up school supplies, and (c) being able to use school supplies properly (Peraturan Menteri Pendidikan dan Kebudayaan Nomor 137 Tahun 2014 tentang Standar Nasional Pendidikan Anak Usia Dini).

However, based on observations at Kober Al-Ikhlas Panawangan Ciamis, the researchers found various problems in the fine motor development of children aged 4–5 years who have not developed optimally. These problems include children's limited ability to use stationery, such as pencils and crayons; difficulty using scissors; and difficulty inserting small objects, such as buttons and zippers. In addition, many children still have difficulty with writing, drawing, and coloring activities. Children also seem stiff when moving their fingers, easily tire, and get bored quickly when participating in activities that require fine motor skills, so many tasks are not completed optimally. These various obstacles were also found in research conducted by Hadiati & Lian (2025); Rohmah & Gading (2021), which showed that teachers experience obstacles in developing children's fine motor skills, especially in eye-hand coordination, finger muscle strength, and children's perseverance in completing activities. Specific obstacles include difficulty getting children used to pinching, clenching, and squeezing movements, as well as a lack of harmony between eye and hand movements. In addition, teachers face challenges getting children to repeat fine-motor activities because children tended to complain about being tiredness and boredom.

The aforementioned obstacles can be minimized by applying play methods in early childhood learning activities. One form of play that can stimulate children's fine motor development is plasticine play. Plasticine is a soft educational play medium that is easy to form and safe for children to use, in line with the characteristics and developmental needs of children aged 4–5 years old. Through plasticine play activities, children can perform movements such as squeezing, pressing, rolling, and shaping, which directly train the strength and coordination of the small muscles of the fingers (Hadiati & Lian, 2025; Rohmah & Gading, 2021). In addition, playing with plasticine provides a fun learning experience, increases concentration and creativity, and trains children's patience and perseverance in completing tasks. Plasticine games emphasize manipulative activities that involve the child's motor, cognitive, and emotional functions in an integrated manner. The aforementioned statement is in line with the results of research conducted by Yi et al., (2026), which states that through plasticine play, children's fine motor skills can develop well, in addition to providing a sense of pleasure because playing is an activity that children like and is the right way to invite children to learn in a fun way.

Several previous studies support this research. The first previous research was conducted by Nicoli (2016). This study uses a clinical psychoanalytic approach. The results of the study found that the use of plasticine as a flexible medium helps adolescents who have experienced trauma to develop the ability to interpret their own experiences as well as represent internal emotions that were previously inexpressible. Furthermore, the second previous study was conducted by Chaidemenaki (2021). This study used a case vignette method based on art-therapy-based psychotherapy. The study found that plasticine interventions helped build mutually trusting psychotherapeutic relationships and allowed patients to regulate challenging behaviors. Finally, the last previous study conducted by Rohmah & Gading (2021). The research uses the Classroom Action Research method, which is carried out in two cycles. The study found that plasticine play activities can significantly develop the fine motor skills of kindergarten group A.

Based on the aforementioned three previous studies, a striking contextual and methodological gap emerges. Previous studies have focused solely on isolated clinical therapy settings for adolescents and older people, or on achieving a quantitative percentage of fine motor ability within a closed classroom setting. These studies isolated interventions focused solely on the relationship between subjects and therapists and teachers, thereby ignoring the broader continuum of motor stimulation outside the institution. Meanwhile, this study focuses on children aged 4–5 years, using an analytical approach to the use of plasticine media in learning activities. In addition, the novelty of this research lies in the disclosure of the Tripartite Collaborative Ecosystem (Teachers, Children, and Parents) in stimulating fine motor skills. The successful use of plasticine media in Kober Al-Ikhlâs demonstrates that improving the fine motor skills of children aged 4–5 years is not sufficient to rely solely on school interventions that are limited in duration. The determinant of true success lies in the pedagogical synergy between specific teacher mentoring at school and the provision of space for non-coercive self-exploration by students' parents at home.

Based on the background that has been described, the formulation of the problem in this study is: (1) How is the use of plasticine media in developing the children's fine motor skills aged 4–5 years in Kober Al-Ikhlâs Panawangan Ciamis?; (2) What are the obstacles and solutions for teachers in the use of plasticine media to develop the children's fine motor skills aged 4–5 years in Kober Al-Ikhlâs Panawangan Ciamis? In line with the formulation of the problem, the objectives of this study are: (1) to determine the use of plasticine media in developing the children's fine motor skills aged 4–5 years in Kober Al-Ikhlâs Panawangan Ciamis; (2) to find out the obstacles and solutions for teachers in the use of plasticine media to develop the children's fine motor skills aged 4–5 years in Kober Al-Ikhlâs Panawangan Ciamis.

II. LITERATURE REVIEW

In this literature review, the researchers discuss 2 sub-discussions related to the research focus. The two sub-discussions include: the definition of plasticine media, and the development of fine motor skills in early childhood. The two sub-discussions are systematically described as follows.

Defining Plasticine

The first sub-discussion discusses the meaning of plasticine as defined by several experts. Rohmah & Gading (2021) explained that plasticine is a soft play medium that can be easily formed through pressing, rolling, massaging, and stringing activities, making it very effective in training eye-hand coordination and fine motor skills in early childhood. Using plasticine, children can develop finger muscle strength, precision, and

creativity simultaneously in a fun learning environment. Furthermore, [Hasibuan & Sitorus \(2023\)](#) posit that plasticine or playdough is a manipulative medium that provides direct sensorimotor experiences for children through the exploration of form and texture. Plasticine plays activities allow children to perform repetitive fine-motor movements that improve finger control, hand flexibility, and fine-motor coordination, skills necessary for writing readiness and early academic activities. As [Kamaruddin et al., \(2023\)](#) stated, plasticine is an educational play tool that is flexible and can be modified according to the child's imagination, thus supporting fine motor development, concentration, and problem-solving skills. Plasticine is seen as an effective learning medium because it combines elements of play, creativity, and stimulation.

Based on the aforementioned opinions, it can be elaborated that plasticine is a learning medium that is flexible, manipulative, and oriented towards children's motor activities. Plasticine not only serves as a play tool but also stimulates fine motor development through pressing, rolling, shaping, and stringing activities that require intensive eye-hand coordination. The use of plasticine encourages children to optimize the strength of their finger muscles, improve accuracy, and gradually practice fine-motor control in a fun learning environment. Pedagogically, plastics position teachers as facilitators who design exploratory activities, while children play an active role as learning actors, building motor skills and creativity through direct experience. Thus, the use of plasticine as a learning medium has educational characteristics that emphasize sensorimotor involvement, movement repetition, and creative freedom in early childhood ([Hasibuan & Sitorus, 2023](#); [Kamaruddin et al., 2023](#); [Rohmah & Gading, 2021](#)).

In the context of current research, plasticine is seen as a strategic learning medium because it aligns with the developmental characteristics of children aged 5–6 years, who still need direct, experiential play. Initial observations indicate that some children still experience limitations in finger movement coordination, hand muscle strength, and accuracy in performing fine motor activities. This condition requires directed, sustained, and packaged motor stimulation through fun activities. Therefore, plasticine was chosen as a learning medium because it allows children to be actively involved through pressing, rolling, shaping, and assembling activities, according to their imagination. These activities provide children with opportunities to practice fine motor skills while naturally fostering creativity and concentration. Indicators of fine motor ability observed in this study include: (1) the child's ability to grasp and manipulate plasticine, (2) form simple objects, and (3) coordinate hand and eye movements during the play process.

Based on the elaboration above, it can be concluded that plasticine is a flexible, easy-to-shape learning medium that encourages children to actively participate in activities such as pressing, rolling, and shaping according to their imagination. In this study, the use of plasticine was considered effective in stimulating children's fine motor development aged 4-5 years.

Fine Motor Development in Children Aged 4-5 years

The second sub-discussion describes the meaning of fine motor development in early childhood, as defined by experts. According to [Hadiati & Lian \(2025\)](#), fine motor is a child's ability to coordinate the movements of small muscles, especially fingers and wrists, which is integrated with eye coordination to perform activities that require precision and movement control. Fine motor development includes simple grasping, pinching, squeezing, scissors, drawing, and writing. Furthermore, [Putri & Hamidah \(2025\)](#) states that fine motor development is closely related to neural maturity and repetitive exercise, and that children who are often stimulated through manipulative

activities will have better movement control and more mature coordination. Józsa et al., (2023) explained that the age of 4–5 years is an important stage of fine motor development, where children begin to be able to perform more coordinated, precise, and directed hand movements in daily activities such as drawing simple shapes, arranging small objects, and forming objects.

Based on the three expert opinions, it can be concluded that early childhood fine motor development is a fundamental part of physical-motor development, involving small-muscle coordination, neural maturity, and integration between hand movements and vision. Fine motor development is not only about the technical ability to use the hands, but also about concentration, perseverance, and children's readiness to participate in learning activities at the next level. In particular, fine motor development in children aged 4–5 years reflects the child's readiness to perform more complex manipulative activities, such as shaping, cutting, drawing, and early writing (Hadiati & Lian, 2025; Józsa et al., 2023; Putri & Hamidah, 2025).

In the context of the current research, fine motor development is the main focus, as initial observations at Kober Al-Ikhlâs Panawangan Ciamis indicate that some children aged 4–5 years still have difficulty coordinating finger movements, using stationery, and completing manipulative activities optimally. This condition shows the need for more targeted fine-motor stimulation through play activities that involve active hand movements. Therefore, plasticine media was chosen as a relevant learning tool because it provides children with the opportunity to perform various fine motor movements directly and repeatedly. Indicators of fine motor development measured in this study include the ability to pinch, squeeze, roll, press, form objects, and coordinate eyes and hands in completing the work.

From the results of the above elaboration, it can be concluded that fine motor development in early childhood is the ability to coordinate the muscles of the small hands in a directed and controlled manner. At ages 4–5 years, this ability develops rapidly and requires appropriate stimulation. The use of plasticine media in learning at Kober Al-Ikhlâs Panawangan Ciamis has proven relevant because, through squeezing, rolling, and shaping activities, children can practice eye-hand coordination, finger strength, and patience.

III. METHOD

Research Type and Approach

This study uses a qualitative case study approach. The case study approach was chosen because this study focuses on an in-depth examination of one specific case: the use of plasticine media as a learning medium to improve the fine motor skills of children aged 4–5 years at Kober Al-Ikhlâs Panawangan Ciamis. This approach allows the researchers to comprehensively understand the learning process, the role of teachers, children's responses, and the obstacles and solutions that arise when using plasticine media in learning activities (Yin, 2018). Thus, the case study approach is used to delve into the data in depth and in context, reflecting real conditions in the field (Creswell & Poth, 2018).

Research Time and Place

This research was conducted for six days, on November 03 - 08, 2025. The research was conducted at Kober Al-Ikhlâs Panawangan, Ciamis, Ciamis Regency, West Java Province.

Research Subject

The subjects of this study were all children aged 4-5 years at Kober Al-Ikhlâs Panawangan, Ciamis, totaling 15, which consist of 8 boys, and 7 girls. In addition, this study also involved 2 classroom teachers and 15 parents of students as supporting informants. Thus, the total number of subjects in this study is 32 people.

Prosedur

In this study, the researchers acted as non-participant observers, focusing on learning activities using plasticine media. The researchers were not directly involved in the plasticine-making activity, but made careful, in-depth observations during the learning process at Kober Al-Ikhlâs. This observation aims to determine the use of plasticine media in improving the fine motor skills of children aged 4-5 years in Kober Al-Ikhlâs Panawangan Ciamis. Therefore, the researchers observed in detail how teachers carried out the steps for using plasticine media, how children aged 4–5 years responded to the media (from holding to squeezing to shaping), and how their fine motor development was demonstrated during the activity. The whole activities and interactions that occur during the observation process are recorded in detail in the field note. In addition to making observations, the researchers conducted semi-structured in-depth interviews with 2 classroom teachers and 15 parents of students to strengthen the data. This interview aims to explore obstacles and solutions for teachers in using plasticine media to improve the fine motor skills of children aged 4-5 years at Kober Al-Ikhlâs Panawangan Ciamis.

Data, Instruments, and Data Collection Techniques

The data for this study are qualitative, describing the process, implementation, and development of children's fine motor skills while learning with plasticine media. Meanwhile, the instruments used in this study consisted of an observation sheet and an in-depth interviews sheet. An observation sheet was used to document observations on the use of plasticine media to improve the fine motor skills of children aged 4–5 years at Kober Al-Ikhlâs Panawangan, Ciamis. The interview sheets were used to gather information on obstacles and solutions for teachers and parents regarding the use of plasticine media to improve the fine motor skills of children aged 4-5 years at Kober Al-Ikhlâs Panawangan Ciamis. Furthermore, examples of the observation sheet and interview sheets are presented in Tables 1, 2, and 3.

Table 1: The Observation Sheet

No.	Date	Time	Observation Results
1.			
2.			

Source: (Devlin, 2026)

Table 2: Teachers' Interview Sheet

No.	Informant	Questions	Answers
1.			
2.			

Source: (Jalongo, 2013)

Table 3: The Parents' Interview Sheet

No.	Informant	Questions	Answers
1.			
2.			

Source: (Jalongo, 2013)

Data Analysis Techniques

Furthermore, the data from observations and interviews were analyzed qualitatively using triangulation techniques, based on the model by Miles et al., (2014). This analysis model was chosen because it allows the researchers to conduct continuous data analysis from data collection through the drawing of conclusions. The stages of data analysis include: (1) Data Collection, which is the process of collecting data through observation of children's activities when using plasticine as a learning medium to train fine motor skills, field recording related to squeezing, forming, and printing plasticine activities, as well as the results of interviews with teachers and related parties; (2) Data Reduction and Data Presentation, which is the activity of summarizing, sorting, and grouping data that is relevant to the research focus on improving fine motor skills of children aged 4-5 years, then presenting it in the form of a systematic descriptive description; and (3) Drawing of Conclusions, which is the process of interpreting data and formulating conclusions about the use of plasticine as a learning medium in improving children's fine motor skills in Kober Al-Ikhlas Panawangan Ciamis (Miles et al., 2014).

IV. RESULTS AND DISCUSSION**Results**

In this section, the researchers describe the results of the research, obtained through observation and interviews, on the use of plasticine media to improve children's fine motor skills. The results of the observation were written in the observation sheet, and the results of the interviews were written in the interview sheets, which are presented as follows.

a. observation**Table 1: The Observation Sheet**

No.	Date	Time	Observation Results
1.	03 November 2025	08.00-09.30	The teacher introduced the plasticine media and demonstrated how to squeeze and roll plasticine. 9 of 15 children are still hesitant to hold plasticine, but they are willing to try pressing and squeezing with teacher support.
2.	04 November 2025	08.00-09.30	Children look more enthusiastic when allowed to explore freely. 8 of 15 children can roll plasticine into balls and worms, although their finger strength is uneven and they still need assistance from teachers.
3.	05 November 2025	08.00-09.30	The child begins to show improved eye-hand coordination. 11 of 15 children can squeeze and form plasticine without direct teacher help,

			although some still have difficulty maintaining their shape.
4.	06 November 2025	08.00-09.30	Children begin to look more skilled at manipulating plasticine. Finger movements are more flexible when rolling and pressing. 13 of 15 children can create shapes from their imagination and combine several parts of plasticine into one whole shape.
5.	07 November 2025	08.00-09.30	All children show significant fine motor development. Children can manipulate plasticine smoothly, their eye-hand coordination is more optimal, and they complete activities with confidence.

Source: (Data processed on 03-07 November 2025)

Based on observations over five days, the use of plasticine media showed a gradual improvement in fine motor skills in children aged 4-5 years. At the beginning of the activity, most children are still hesitant and need teacher support. Still, in the following days, children begin to be able to squeeze, roll and form plasticine independently. On the last day, the whole children showed excellent development in eye-hand coordination, finger flexibility, and confidence when completing work. These results show that plasticine media is effective in developing the children's fine motor skills.

Based on the observations above, it can be concluded that the use of plasticine media has a positive impact on the development of fine motor skills in children aged 4–5 years. The positive impact can be seen gradually, from children who are initially hesitant and need help. In addition, there is an improvement in eye-hand coordination, finger flexibility, and precision in producing shapes. At the end of the activity, most children show better confidence in completing tasks.

In this section, the researchers describe the results of interviews with teachers and parents on the use of plasticine media to develop children's fine motor skills aged 4-5 years. The data from interview were collected through learning activities completed. The results of the interviews are written in the interview sheets as follows.

b. Interview

Table 2: Teachers' Interview Sheet

No.	Informant	Questions	Answers
1.	Teacher 1	How is the implementation of plasticine media in learning at Kober Al-Ikhlas Panawangan Ciamis?	Plasticine media are used through play-while-learning activities integrated into learning. The teacher prepares plasticine and demonstrates how to squeeze, roll, and form plasticine. Then, children are allowed to be creative in making simple shapes, following the teacher's direction and their imagination. This game is carried out in a planned and gradual manner.

- | | | | |
|----|-----------|--|--|
| 2. | Teacher 1 | Does playing with plasticine help to develop children's fine motor skills? Explain. | Based on our observations, plasticine play activities are very helpful in developing children's fine motor skills. Children become more skilled at using their fingers to squeeze, roll, and shape plasticine. In addition, children show improved eye-hand coordination during activities. |
| 3. | Teacher 1 | Which part of the plasticine playing activity has the most develop on children's fine motor development? | The most influential part is when the child performs squeezing, rolling, and forming plasticine activities independently. At this stage, children actively train finger and hand strength and precision, which gradually develops their fine motor skills. |
| 4. | Teacher 1 | What are the obstacles that arise during the implementation of learning using plasticine media? | The obstacle is the difference in fine motor skills among the children. 8 of 15 children still have difficulty controlling finger movements and easily feel tired during activities. In addition, the limited learning time is a challenge for teachers in providing equal assistance to all children. |
| 5. | Teacher 1 | What efforts do teachers make to support children's fine motor development through plasticine media? | Teachers provide examples, individual assistance, and motivation to children during the activity. We also communicate with parents to support them by providing similar activities at home, so that children become more confident. |
| 6. | Teacher 2 | How is the implementation of plasticine media in learning at Kober Al-Ikhlash Panawangan Ciamis? | This activity is integrated through a play-while-learning approach. We, as teachers, are responsible for preparing plasticine and directly demonstrating the stages of squeezing, rolling, and printing shapes. After that, our children are free to create in a planned, gradual manner, following their own imagination. |
| 7. | Teacher 2 | Does playing with plasticine help to develop children's | Very helpful. We observed that children in the classroom became much more skilled in using their fingers. Their ability to squeeze and |

		fine motor skills? Explain.	roll plasticine is well developed, which aligns with coordination between hand movements and eye focus.
8.	Teacher 2	Which part of the plasticine playing activity has the most develop on children's fine motor development?	The greatest influence occurs when the child begins to perform squeezing, rolling, and forming plasticine independently, with little direction. This moment has been proven to significantly develop finger muscle strength, hand endurance, and precision.
9.	Teacher 2	What are the obstacles that arise during the implementation of learning using plasticine media?	The main obstacle is the range of children's fine motor abilities. We noted that about 8 out of 15 children had quite a difficulty controlling their finger movements and complained of getting tired easily when squeezing. Another challenge is the limited learning time to provide full assistance to the children who are still left behind.
10.	Teacher 2	What efforts do teachers make to support children's fine motor development through plasticine media?	At school, teachers provide personal assistance, direct examples, and motivation to help children stay enthusiastic. On the other hand, we ask parents for providing independent plasticine play activities at home to strengthen the skills that have been trained at school.

Source: (Data taken 07 November 2025)

Based on interviews with the two teachers, it can be concluded that plasticine media is used through a planned approach to play-based learning, where the teacher demonstrates the initial stages and then lets the children create. This activity is very effective in improving children's fine motor skills, especially by making the fingers more flexible, strengthening muscles, and improving eye-hand coordination. Furthermore, the stage with the greatest impact on children's development is when they explore plasticine independently through movements of squeezing, rolling, and shaping, as these activities build the precision and endurance of the hand muscles. The main challenges faced by teachers are limited learning time and the disparity in fine motor skills among students. It was recorded that 8 out of 15 children still had difficulty controlling finger movements and quickly complained of tiredness when doing plasticine pressing activities. To overcome these obstacles, teachers provide intensive individual assistance and motivate children at school. In addition, another solution chosen is to involve parents in providing

plasticine independently at home, without pressure, to strengthen the skills learned at school.

The Parents Interview Sheet

No.	Informant	Questions	Answers
1.	Parent 1		Yes, based on our observations as parents, playing with plasticine is very helpful. Children become more skillful at using their fingers, especially for squeezing, rolling, and forming plasticine at home.
2.	Parent 2		Very helpful. We saw that our child showed improved eye-hand coordination during the activity, and that his fingers were more flexible when manipulating small objects.
3.	Parent 3	Does playing with plasticine help to develop children's fine motor skills? Explain.	Helpful. My son, who was initially stiff, is now more skillful at using his fingers to press and shape plasticine according to his imagination.
4.	Parent 4		Based on my observations at home, this plasticine play activity has made my child's fingers more skillful and has noticeably developed his fine motor skills.
5.	Parent 5		Sure, my son showed significant improvement in his eye-hand coordination, and he was more energetic when squeezing plasticine.
6.	Parent 6		In my observation, the most influential part is when the child independently squeezes, rolls, and forms plasticine, as this really strengthens his fingers.
7.	Parent 7	Which part of the plasticine playing activity has the most impact on children's fine motor development?	The part when he actively exercises his hand strength and carefulness when he tries to roll and put the plastic shapes together independently.

8 & 9.	Parent 8 & 9		The greatest influence is seen when my child independently squeezes and forms plasticine. Therefore, with unawareness he fully trains his accuracy and strength of his hands.
10.	Parent 10		When she is engrossed in squeezing, rolling, and forming plasticine, my child actively exercises her finger strength and accuracy.
11.	Parent 11		We strongly support school activities by providing similar activities at home, such as plastic toys, so their fingers get more used to them.
12.	Parent 12		We give my child the opportunity to play with plasticine independently at home without being forced, so that she can explore her skills with pleasure.
13.	Parent 13	What efforts do parents make to support children's fine motor development through plasticine media?	Our efforts are to support my child by providing similar facilities at home and by accompanying her when she tries to make shapes, so that my child is more confident.
14 & 15	Parent 14 & 15		We allow the child to play plasticine independently every afternoon. This effort helps her to develop her fine motor skills without feeling bored.

Source: (Data taken 08 November 2025)

Based on interviews with 15 parents of students, it can be concluded, the whole parents agree that playing with plasticine has given a real impact on developing the children's fine motor skills at home. The playing activities such as squeezing, rolling, twisting, and forming the plasticine directly trains the level of carefulness and the strength of the children's finger muscles. To support the program at the school, parents make proactive efforts by facilitating and providing plasticine media at home. Parents provide space and opportunities for children to explore plasticine independently and without being forced in their free time (such as every afternoon), while providing mentoring that makes children feel happy and more confident in their skills. Overall, this interview confirms that the success of using plasticine media is inseparable from the continuity of stimulation at home to develop the children's fine motor skills.

The development of fine motor skills in early childhood can be comprehensively understood through the integration of three main theoretical views, namely biological maturity, cognitive construction, and sociocultural interaction. Based on Arnold Gesell's Maturation Theory, this skill is triggered by the central nervous system's proximodistal development, requiring the child to master arm muscles before controlling the small muscles in his fingers (An & Libertus, 2025; Craus, 2025; Saracho, 2023). Furthermore, Jean Piaget, through the Theory of Cognitive Development, asserts that these precise finger movements are not merely mechanical reflexes but are driven by children's cognitive intentions as they explore and manipulate objects around them (Andersen & Kiverstein, 2024; Rueda, 2024; Yi et al., 2026). The process of physical and cognitive exploration is then optimized by the role of the social environment as described in Lev Vygotsky's Sociocultural Theory. Vygotsky emphasizes that fine motor mastery in the use of cultural tools, such as scissors or stationery, requires scaffolding or gradual guidance from adults within the range of the child's Zone of Proximal Development (ZPD). Thus, the mastery of fine motor skills results from a complete synthesis of the nature of biological neural readiness, the impulse toward independent cognitive exploration, and directed social stimulation (Done & Bamsey, 2026; Rigopouli et al., 2025; Traina, 2025).

Discussion

In this part of the discussion, the researchers present answers to two proposed research questions. In addition, the researchers need to discuss the gap of the results, the present research's novelty, and its practical impact on early childhood education.

How is the use of plasticine media in developing the children's fine motor skills aged 4–5 years in Kober Al-Ikhlâs Panawangan Ciamis?

Based on the results of observation and interviews, the use of plasticine media for children aged 4-5 years at Kober Al-Ikhlâs was implemented through a planned play-while-learning approach. This process begins with a direct demonstration by the teacher, followed by giving children freedom to explore and create. The use of plasticine has been shown to have a gradual, very effective impact. The children who are initially hesitant and highly dependent on the teacher's help (on the first day) develop the ability to squeeze, roll, and form objects independently (on the fifth day).

These skills development are in line with Arnold Gesell's Theory of Maturity, which deals with plasticine manipulation stimulates the child's proximodistal nervous system to control the small muscles of the fingers. Furthermore, when the children independently form plasticine according to their imagination, this phenomenon is in harmony with Jean Piaget's Theory of Cognitive Development, which deals with cognitive intentions to support the precise movements of the fingers as the child explores. This stage of self-exploration was found to have the greatest impact on children's accuracy, finger muscle strength, and eye-hand coordination (An & Libertus, 2025; Craus, 2025; Saracho, 2023).

What are the obstacles and solutions for teachers in the use of plasticine media to develop the children's fine motor skills aged 4–5 years in Kober Al-Ikhlâs Panawangan Ciamis?

In the implementation process, teachers face obstacles in the form of limited learning time and differences in basic of fine motor skills among the children. The data showed that 8 of 15 children demonstrated poor finger coordination and get tired quickly when squeezing plasticine.

As a solution, the teachers provide intensive individual assistance to motivate children at school. This mentoring approach is a tangible application of scaffolding in the Zone of Proximal Development (ZPD) as the theory proposed by Lev Vygotsky, in which adult guidance is crucial for mastering the children's cultural and motor skills. In addition, the teachers ask the parents for involving the activities through providing a plastic play container independently at home, without being forced. The results of the interviews assert that the continuity of stimulation at home by parents has succeeded in making children's fingers more flexible, the squeeze power increases, and the children feel more confident (Andersen & Kiverstein, 2024; Done & Bamsey, 2026; Rigopouli et al., 2025; Rueda, 2024; Traina, 2025; Yi et al., 2026).

Furthermore, this study aims to fill the methodological and contextual gaps in the three previous studies that examine the use of plasticine to develop children's fine motor skills in the context of early childhood education. The first previous study was conducted by Nicoli (2016), uses a clinical psychoanalytic approach. Then, the second previous study carried out by Chaidemenaki (2021), uses a case vignette method grounded in art-therapy-based psychotherapy. Finally, the last previous study held by Rohmah & Gading (2021), uses the Classroom Action Research, which is carried out in two cycles. The present study fills the gap by focusing on the analysis of children aged 4-5 years using a qualitative case study approach, which is not only oriented towards evaluating the final results, but also in-depth investigating how teachers facilitate the use of plasticine, real obstacles faced in the classroom, and comprehensive solutions implemented by teachers at Kober Al-Ikhlas Panawangan Ciamis.

Afterwards, the novelty of the present study is positioned on the disclosure of the Tripartite Collaborative Ecosystem (Teachers, Children, and Parents) to stimulate fine motor skills. The successful use of plasticine media in Kober Al-Ikhlas demonstrates that developing the children's fine motor skills aged 4-5 years is not sufficient to rely only on school interventions that is time-limited. The determinant of true success refers on the pedagogical synergy between teachers' mentoring at school and parental facilitation of autonomous, pressure-free exploration within the home environment.

Furthermore, this study has a real impact, providing a strategic framework for teachers at early childhood education. This study shows that strengthless fine motor skills (stiff, tired fingers) can be developed with low-cost and soft media such as plasticine. More than that, this study provides real guidance for early childhood education institutions to overcome the gap in physical-motor skills among students. In addition, schools must transform from a school-centred learning model to active partnerships learning model, which is implemented with parents and caretakers to ensure educational continuity at home.

V. CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the research and discussion, it can be concluded that the planned use of plasticine media through a play-while-learning approach, from teacher demonstrations to self-exploration, is effective in developing the children's fine motor skills aged 4-5 years at Kober Al-Ikhlas Panawangan, Ciamis. This self-exploration activity significantly encouraged accuracy, finger muscle strength, and eye-hand coordination. Although in its implementation, there are obstacles in the form of limited learning time and differences in the level of children's initial motor skills that make some children tired quickly, these obstacles can be solved comprehensively through the equipment of intensive individual assistance by teachers at school and the active involvement of parents in providing an independent plastic play space at home without being forced.

Suggestions

In line with this conclusion, it is recommended that teachers continue to optimize the sustainable use of plasticine by providing a variety of activities that stimulate the children's motor skills and by maintaining individual guidance, so that every child in the classroom is equally facilitated. For parents, it is highly recommended to establish an active partnership with the school and continue stimulation at home by providing plasticine play facilities to create effective continuity of care. Meanwhile, for future researchers, it is hoped that they can expand the scope of this research, for example, by examining the effectiveness of plasticine on the other aspects of development (such as cognitive or social-emotional development), as well as by applying different research methods and designs in other early childhood education institutions to enrich the literature on early childhood education studies.

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