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Mosaic Imaging Technique: A Game to Optimize Fine Motor Skills in Early Cildhood

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Abstract

Fine motor is a development that requires early childhood skills to control small and smooth muscles. Early childhood fine motor skills require coordination between hands and eyes, and will influence daily activities or activities at school. The problems encountered in early childhood are that their fine motor skills are still not developed and teachers in stimulating children are less innovative in carrying out the learning process, thus making children feel bored and fedup during teaching and learning activities. The aim of the research is that by mosac imaging technique, it can stimulate children's fine motor skills. The method used in this research is Classroom Action Research with a qualitative approach assisted by quantitative data processing. The indicator of success in research is called the minimum completeness 00criterion (MCC), namely 75%. The results of the research show that fine motor skills in early childhood can be improved through mosaic imaging technique activities. It is known that in initial conditions or cycle 1, the child's success indicator only reached 43.75%. Then in cycle II it increased to 87.50%, this increased significantly. It can be concluded that the mosaic imaging technique has succeeded in stimulating the fine motor skills of children in Mekar Jaya Aepodu Kindergarten, Laeya District, South Konawe Regency. Therefore, the results of the research can be used as a reference by early childhood education institutions to improve children's fine motor skills

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Abstrak

Motorik halus merupakan perkembangan yang memerlukan keterampilan anak usia dini dalam mengendalikan otot-otot kecil dan polos. Keterampilan motorik halus anak usia dini memerlukan koordinasi antara tangan dan mata, serta akan mempengaruhi aktivitas atau aktivitas sehari-hari di sekolah. Permasalahan yang ditemui pada anak usia dini adalah kemampuan motorik halusnya yang masih belum berkembang dan guru dalam menstimulasi anak kurang inovatif dalam melaksanakan proses pembelajaran sehingga membuat anak merasa bosan dan jenuh dalam kegiatan belajar mengajar. Tujuan dari penelitian ini adalah dengan teknik pencitraan mosaik dapat merangsang motorik halus anak. Metode yang digunakan dalam penelitian ini adalah Penelitian Tindakan Kelas dengan pendekatan kualitatif dibantu dengan pengolahan data kuantitatif. Indikator keberhasilan penelitian disebut dengan kriteria ketuntasan minimal (MCC) yaitu 75%. Hasil penelitian menunjukkan bahwa kemampuan motorik halus pada anak usia dini dapat ditingkatkan melalui kegiatan teknik pencitraan mosaik. Diketahui pada kondisi awal atau siklus 1 indikator keberhasilan anak hanya mencapai 43,75%. Kemudian pada siklus II meningkat menjadi 87,50%, hal ini meningkat secara signifikan. Dapat disimpulkan bahwa teknik pencitraan mosaik berhasil menstimulasi motorik halus anak di TK Mekar Jaya Aepodu Kecamatan Laeya Kabupaten Konawe Selatan. Oleh karena itu, hasil penelitian dapat dijadikan acuan oleh lembaga pendidikan anak usia dini untuk meningkatkan kemampuan motorik halus anak

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INTRODUCTION

Early childhood education is a very important period and should receive attention as early as possible. The age of 3-6 years is a crucial period or sensitive period for children, namely a period in which certain things need to be simulated and controlled so that they do not hinder the child's development. (Cisneros-Franco et al., 2020; Diane, 2023; Dunn et al., 2020). Providing stimulation is something that really encourages children to develop. If a child is properly stimulated, not only one development will develop, but different aspects of development will be properly stimulated (Ferguson, 2022; Lehrl et al., 2020; Rosen et al., 2020). Early childhood provides basic development in children, namely the development of physical, cognitive, language, social, emotional skills, self-concept, discipline, independence and others. The development that takes place in early childhood is related to change and growth (Araújo et al., 2021; Gätjens et al., 2022; Tinanoff et al., 2019). The shape and size of a person's body are clearly visible in the changes. Motor development is a simultaneous change in the control and ability to perform movements, which is obtained through the interaction between factors of maturity, play practice and experience throughout life (Cornejo et al., 2021; Smits-Engelsman & Verbecque, 2022; Sutapa & Suharjana, 2019). Every individual's motor development will continue to evolve throughout their life. By increasing motor development, it should be stimulated from an early age. At this time, children's growth and development undergoes a very important process if they are properly stimulated.

Motor development in early childhood is divided into two parts, namely gross motor skills and fine motor skills, which must be properly facilitated. Fine motor skills are the development and changes in motor movements, including small muscles coordinated with the eyes and hands. For young children, fine motor skills are very urgent and very useful in various activities of daily life (Ko et al., 2020; Levac et al., 2019; Licari et al., 2020). The development of children's fine motor skills can be in line with other aspects of development, such as cognitive and social-emotional (Nopiyanti et al., 2023; Rusmini & Samsu, 2023; Wantini et al., 2022). Fine motor activities are movement skills that involve small muscles coordinated with the eyes and hands in a balanced manner to create a skill. Fine motor skills differ from gross motor skills which require more effort, but involve only eye coordination and careful hand movements without requiring much effort (Atasavun Uysal & Düger, 2020; Wajdi et al., 2020)). Optimal fine motor development of children can show independent activities because their hands are already skilled in performing different activities (Junaedah et al., 2020; Papadakis, 2021). In order for children's fine motor skills to develop optimally, it is therefore necessary to stimulate them so that they are ready for the next level of education.

Fine motor skills are a form of coordination, dexterity and speed in the use of hands and fingers. Fine motor skills are movements that use small muscles or specific body parts, stimulated by learning and practice opportunities. This ability is very important for optimal development of the child (Aleksić Veljković et al., 2022; Sutapa & Suharjana, 2019; Telford et al., 2022). Fine motor or manipulative skills such as writing, drawing, cutting, throwing and catching a ball, and playing with objects or toys. The development of a child's fine motor skills, if properly stimulated, will create skills that the child is proud of (Hua & Wang, 2021; Matafwali & Mofu, 2023). Therefore, educators and parents should be able to see opportunities in children's golden years, including learning different types of activities using walking techniques or methods related to children's terminal motor skills. The better a child's fine motor skills are, the better he or she can perform daily activities and learning activities in the classroom (Bhatia et al., 2015).

When a child's fine motor skills have not yet developed, it will be difficult for the child to carry out activities to develop his fine motor skills

Fine motor skills relate to activities that use fine muscles such as drawing, cutting, sticking and so on. Skills that include the use of tools or media for learning activities, for example cutting, pasting, writing, drawing, etc (Boling et al., 2012; Sadaruddin et al., 2022). One of the activities that can be done to develop children's fine motor skills is by carrying out learning activities with mosaic activities. The technique for imaging mosaics for children is how to trace the pattern, namely holding a pencil, thickening the lines, and completing the pattern lines (Itczak, 2022; Maureen Glynn, 2017; Sodhi et al., 2022). Apart from that, mosaic drawing is the creation of two-dimensional or three-dimensional works of art that use materials or ingredients from pieces that are deliberately made by cutting them into pieces or already in the form of pieces and then arranging them by attaching them to a flat surface using glue (Itczak, 2022; Michelle, 2022; Whiteman, 2021).

Mosaic imaging techniques can also take the form of elements arranged and planned on a flat surface. Mosaic elements can be solid objects in the form of plates, cubes, pieces of paper (Lu et al., 2022; Then-Obłuska, 2021). Furthermore, Mosaic is a work of art made from elements arranged and attached with adhesive on a plane surface (Nicolson & Ferreira de Mattos, 2022; Rulmalia & Zulminiati, 2019; Zulfa, 2020). With mosaic activities, children can develop various aspects of development, one of which is the development of fine motor skills, apart from that, this mosaic activity can be fun and also has its own charm. The mosaic technique is very suitable for improving children's fine motor skills because it uses more coordination between the eyes and hands (Asya et al., 2020; Coyne et al., 2021; Polyzou et al., 2023; Rahimah, 2021). The technique that will be used is learning how to draw patterns, by holding a pencil and then bolding along the lines, completing the pattern

In fact, fine motor skills in early childhood, especially in Kindergarten especially some Group B children, Mekar Jaya Aepodu Kindergarten, Laeya District, South Konawe Regency, are still found in some children whose fine motor development is not yet visible. This research was carried out in April and May or the even semester of the 2022 - 2023 academic year. Based on the results of the researcher's observations, it is known that children's fine motor skills are not yet able to hold a pencil, scribble, thicken dotted lines, form patterns/drawings, and coordinate their eyes. To overcome this problem the author tried to apply mosaic imaging techniques to children. S the goal is that by drawing this mosaic technique, it can improve the development of children's fine motor skills and optimize the function of small muscles in early childhood. To overcome this problem the author tries to apply mosaic imaging techniques to children. Thus, the aim is that by drawing this mosaic technique, it can improve the development of children's fine motor skills and optimize the functions of small muscles in early childhood.

METHODS

Make sure that work can be repeated according to the details provided. It contains technical information of the study presented clearly. Therefore, readers can conduct research based on the techniques presented. Materials and equipment specifications are necessary. Approaches or procedures of study together with data analysis methods must be presented.

This research is action research, which is one of the teacher's efforts to dynamically desire a change towards a better educational practice carried out by the teacher (Arikunto,

2021). By taking actions in classroom learning through meaningful actions that are calculated to solve problems or improve situations for the better. Then carefully observe its implementation to measure the level of success in the research (Charmettant & Renou, 2021). herefore, this research uses an action approach carried out in the classroom in an atmosphere of learning activities and places teachers and students as research subjects (Abbas et al., 2021). The stages of implementing this research were carried out in 2 cycles, each cycle consisting of activities: planning, implementation, observance or observation and reflection. This action research design is shown in Figure 1

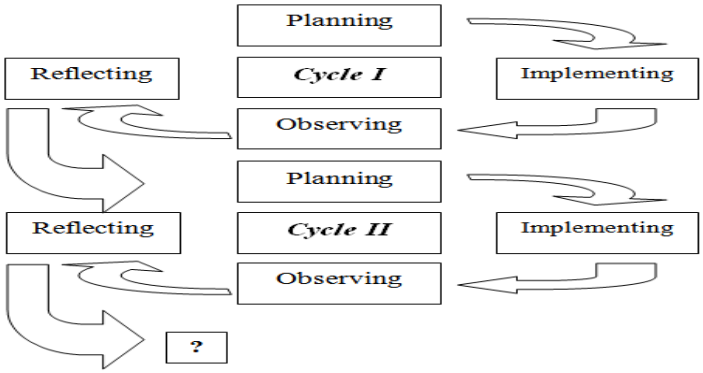

Figure 1. Action Research Design (Arikunto, 2021)

This research was conducted in Group B of Mekar Jaya Aepodu Kindergarten, Laeya District, South Konawe Regency in the odd semester 2021-2022, with a total of 16 children. In data analysis activities, researchers assess the total number of children's scores using assessment activities and data analysis formulation, the steps of which are: 1) Carry out an assessment using the star symbol assessment format (in which there are a number of indicators that are stimulated during the learning process. Indicators that are determined as a tool for assessing and analyzing data for all indicators; 2) The next activity is to calculate the number or frequency of each score: Very Well Developed (VwD), Developing According to Expectations (DaE), Starting to Develop (StD), and Not Yet Developed (NyD), which students successfully achieved in the assessment activity stage, with a weighting of 4,3,2,1; and 3) After assigning weights, an analysis is carried out to calculate the weights of all the total scores obtained by the child in the assessment activities to give a final score for each process of the child's activities. (Pahenra, Winarni, et al., 2021). Based on the reflection, plans (improvements), actions and observations and reflections are then drawn up, and so on. The number of cycles depends on the problem being solved (Choden & Kijkuakul, 2020).Provisions for obtaining scores (individually) with calculation results criteria based on the child's convention in table 1.

Table 1. Conditions for obtaining grades with calculation results criteria based on children's conventions

No	Criteria	Assessment indicators	Evaluation rubric
1	VwD (very well developed)	if the final count result is between 3.50-4.00	If children are able to play the mosaic imaging technique game without the help of a teacher and can help their friends well.
2	DaE (developing as expected)	if the final count result is between 2.50-3.49	If you are able to play the mosaic imaging technique game without the help of a teacher.

3	StD (starting to develop)	if the final count result is between 1.50-2.49	If the child is able to carry out mosaic imaging technique game activities but still needs the teacher's help.
4	NyD(Not yet developed)	If the final count result is between 0.01-1.49.	If the child is not yet able to carry out mosaic imaging technique game activities perfectly.

Calculation analysis for each child's individual score is carried out using the following formulation of the weighted percentage of the child's total score as follows:

$$Individual\ value\ percentage\ = \frac{(Value\ VwD\ (4) + Value\ DaE\ (3) + Value\ StD(2) + Value\ Ud(1)}{Number\ of\ indicators}$$

Furthermore, it is adjusted to the performance indicators used to determine classical performance success in each action cycle. In this research, the reference research uses a minimum completeness criterion (MCC) of 75%, with the following formulation:

$$Fractional\ Percentage\ Value\ = \frac{Number\ of\ children\ obtained\ Value\ VwD + DaE\ score}{Number\ of\ Students}\ X\ 100$$

Indicators for assessing children's fine motor skills using mosaic imaging technique games include:

Table 2. Child assessment indicators

Variable	Aspects of Children's Abilities	Indicator
Children's Fine Motor Skills with Mosaic Technique Games	1. Dexterity in finger flexion movements	1). Tear the paper using two fingers alternately by bending 2). Tear the paper using two fingers alternately according to the direction and neatly
	2. Gentle wrist movement dexterity	3). Take pieces of flannel paper and adhesive materials in the form of glue and a pattern with a picture 4). Take a piece of flannel paper and apply adhesive (glue to the pattern) according to the direction of the pattern picture 5). Apply adhesive (glue to the pattern) according to the direction of the pattern completely and neatly
	3. Dexterity in carrying out activities that demonstrate or coordinate between eyes and hands	6). Able to stick mosaic pieces without any pieces sticking outside the lines 7). Able to combine shapes in several image patterns. 8). attach mosaic pieces by combining more than 2 colors 9). Sticking mosaic pieces to the pictorial pattern with the color combinations provided and being able to combine them carefully and regularly and fulfilling the pattern and not going out of pattern, 10) eye and hand coordination in sticking the mosaic to the pictorial pattern

RESULT AND DISCUSSION

Result

The initial stages carried out in this research were carrying out initial observation activities, collaboration, and meetings with teachers and researchers. Based on the results of these observations and meetings, researchers and teachers reflected that various aspects of learning approaches and techniques had been applied to students, but the results had not been able to stimulate children's fine motor skills. This is because the learning carried out by teachers still uses the traditional model, and there has not been the development of a creative, innovative and adaptive learning approach strategy. Therefore, the research team together with the teacher tried to design a form of activity that was good and fun for children to improve children's fine motor skills. This activity is through a mosaic technique game. The next stage, researchers collaborate with teachers to prepare learning modules or Daily Learning Plans (DLP). The module contains: 1) time for carrying out

activities; 2) learning objectives; 3) method; 4) media; 5) learning resources used and determining the number of students who will be research subjects; and 6) compiling instruments for assessing students' abilities, observation guidelines and documentation during observation activities (researchers).

The research procedures were prepared and adjusted to the schedule that had been prepared, namely two cycles with the criteria of exceeding the minimum completeness criteria (MCC) of 75%. Each cycle consists of 2 meetings with the same material, namely: improving children's fine motor skills through mosaic imaging technique games. Furthermore, the findings regarding the implementation of learning in the observation class include a description of the results of implementing actions in cycle I and cycle II. As in table 2. is the planning and description of activities in each cycle. Researchers and teachers plan 2 meetings in each cycle. In each cycle, several things must be prepared by teachers and researchers, namely: modules, media for mosaic technique game activities, assessment instruments, teacher observation sheets and the learning process.

Table 3. Stages and description of each cycle

Planning	Implementation of Actions	Evaluation/Observation	Reflection
1. Making learning scenarios, 2. Make observation sheets for teachers and children, 3. Prepare teaching aids, 4. Prepare assessment tools, which can help in the students' learning process, so that the goal of developing students' fine motor skills can be achieved, according to the activity steps, as stated in the learning activity plan	1. Teachers provide apperception, motivation, 2. Researchers and teachers carried out learning activities for group B students in the classroom using mosaic technique activities that had been prepared previously 3. The learning carried out at this stage is directed at how to carry out the activities of sticking fingers and sticking mosaic technique clothes as directed by the teacher 4. The teacher and researchers motivate children to use the mosaic technique according to the child's imagination 5. The teacher observes the child's fine motor skills and then provides guidance where they are still needed. 6. At the end of the activity, the teacher rewarded the children by giving four stars so that the children were	1. Observations or observations of teacher activities are carried out to see the teacher's teaching ability in teaching using the mosaic technique to improve children's fine motor skills. 2. During the learning process, children's activities use observation sheets that have been prepared previously, in accordance with the learning activities listed in the teaching mode or Daily Learning Plan (RPH) that has been designed. 3. Researchers together with teachers carry out evaluation assessments and observations. The steps for the activity of sticking fingers and sticking clothes using the children's mosaic technique are arranged according to the material presented as previously planned. After the evaluation activity is carried out, all the children's scores	1. Reflection activities are carried out to improve cycle planning which is expected to provide improvements in the implementation of the next cycle. 2. The results of reflection activities are a picture of the learning process to look for the advantages and disadvantages of the activities that have been carried out. 3. In this activity, researchers and teachers held discussions regarding the implementation of the learning process that had been carried out so as to find obstacles that influenced the improvement of

	enthusiastic about completing the mosaic technique activity well	obtained at each meeting are collected and summarized in an assessment summary format.	children's fine motor skills.

Some documentation of children's and teachers' activities in learning through mosaic technique game can be seen in Figure 2

Figure 2. Children are tracing and making patterns, making sticking movements, coloring and presenting the results of their activities

Discussion

Previous research shows that various mosaic technique games can improve or stimulate children's fine motor skills (Lutkovskaya et al., 2021; Romauli, 2021; Sitepu & Janita, 2016). On the other hand, that fine motor skills, with the child's mosaic imaging technique developing very well with the steps taken, namely; cutting, pasting, holding a pencil and adjusting colors (Fauziddin & Mufarizuddin, 2018; Olena & Svitlana Konopliasta, 2023; Puspita, 2019; Rezieka et al., 2022; Ricky et al., 2023). As a teacher, you must be able to create active, innovative, effective and enjoyable learning. Through the mosaic imaging technique game, children's fine motor development improves and shows positive result (Azizah et al., 2022; Halilah & Suzanti, 2023). Meanwhile, through his observations, by improving children's fine motor skills through the mosaic imaging technique, by making mosaic paper with various colors, clarifying the stages or steps in tracing, cutting and pasting, and motivating children to be able to complete it themselves without asking for help from other people, either teachers or Friend (Diane, 2023). Meanwhile in (Nurhayati et al., 2023), to remind children to hold pencils, scissors and apply glue using their fingers properly and correctly

Success in improving fine motor skills through mosaic imaging techniques in early childhood cannot be separated from the teacher's role in developing and selecting appropriate and interesting forms and media materials for children to use in the process of learning activities in the classroom, thereby creating effective learning and a pleasant

learning atmosphere conducive to improving children's fine motor skills (Botsoglou et al., 2019; Liu et al., 2021; Rahimah, 2021). In line with the statement above, it can be concluded that effective learning to improve fine motor skills through the mosaic technique includes: (1) drawing mosaics with various color models, (2) clarifying the stages in tracing, cutting and pasting, using large sized paper and attaching each piece of the mosaic to the blackboard, (3) motivating children to be able to complete it themselves without asking for help from others, whether teachers or friends, and (4) reminding children to hold pencils, scissors and apply glue using their fingers properly and correctly.

However, in the learning process the teacher conditions learning in an encouraging atmosphere. Therefore, young children definitely like things that are interesting to children (Behnamnia et al., 2020). The most prominent characteristic of early childhood when playing is that they always feel bored. (Larivière-Bastien et al., 2022; Tam et al., 2021). (Steinhardt et al., 2021), in her research explained that one way to increase active involvement in these activities is to provide various fun activities such as singing and activities that involve solving children's problems.

Based on the researchers' analysis, the success of classroom actions in improving children's fine motor skills was caused by playing with the mosaic imaging technique. It is an activity carried out in the learning process, thereby creating dexterity and flexibility in children's finger movements. This is in line with research (Rezieka et al., 2022; Azizah et al., 2022; Halilah & Suzanti, 2023) that dexterity in gentle wrist movements, and dexterity in carrying out activities that demonstrate or coordinate the eyes and hands. Apart from that, children also need the development of small muscles, eye and hand coordination, the ability to use pencils, scissors, trace pictures and cut lines.

Based on the researchers' analysis, the success of classroom actions in improving children's fine motor skills was caused by playing the mosaic imaging technique. This is an activity carried out in the learning process, creating dexterity and flexibility in children's finger movements. Dexterity in gentle wrist movements, and Dexterity in performing activities that demonstrate or coordinate eye and hand. Apart from that, children need the development of small muscles, coordination between eyes and hands, the ability to use a pencil, scissors, trace pictures and cut lines.

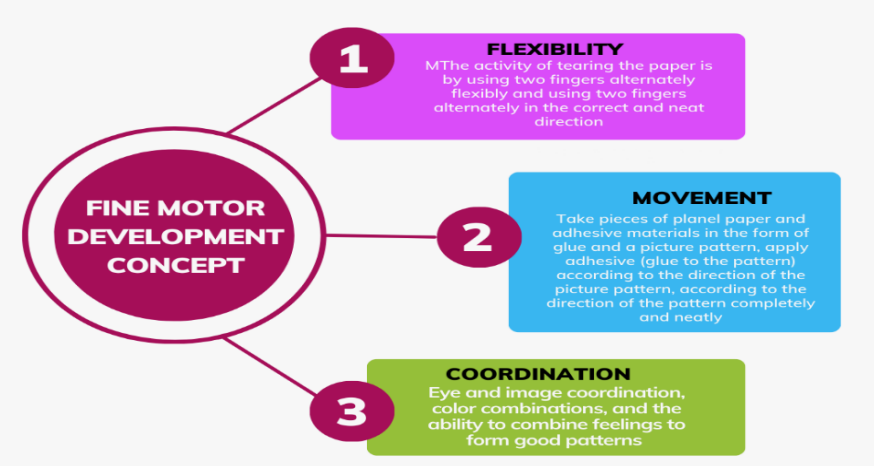

Figure 3. concept of fine motor development

Based on the belief in the concept of fine motor development above, it shows that the first learning activity that must be introduced to children in the learning process in class and outside the classroom is material that is threatened in the practical life

curriculum. Apart from building children's fine control, drawing games using the mosaic imaging technique for early childhood also function in regulating children's interactions and optimizing the development of children's skills for living independently (Rosalianisa et al., 2023). Through a game with physical movement, eye-hand coordination is trained (Sheikh & Kanase, 2020). Apart from that, in the learning process using the mosaic imaging technique, teachers should pay attention to the time so that it is set as far as possible so that children do not feel bored in carrying out the learning process using this mosaic technique. Thus, the teacher immediately looks for ways to get them excited again, sometimes with ice breaking games such as clapping, singing happily and other methods. Because the ability to concentrate in early childhood is still very limited and their attention is easily divided (Kim, 2020). However, in reality, children consider fine motor activities to be a very complicated and a bit boring lesson, because the nature of playing in one place and for a long time is still considered boring. Apart from that, the learning process which is still teacher-centered also contributes to a sense of boredom in children.

To meet the game indicators for early childhood, the urgency that must be considered is recognizing and adapting to the user's character. This needs to be emphasized because children are different from adults in various aspects, such as physical, social and cognitive development (Egan et al., 2021; Sudarmilah et al., 2017). Meanwhile, the mosaic imaging technique game takes into account the child's flexibility of movement and coordination. In line with the formulation of the Directorate of Early Childhood Education Development that the principles of learning for young children are: learning through play, oriented towards child development, oriented towards children's needs, child-centered, active learning, oriented towards developing character values.

CONCLUSION

The mosaic imaging technique game succeeded in improving the fine motor skills of young children in group B in Group B of the Mekar Jaya Aepodu Kindergarten, Laeya District, South Konawe Regency. The most dominant factor is because this game fulfills the principles of a game as a learning medium for children in early childhood. The concept of the game as a learning medium is: (1) drawing a mosaic with various color models, (2) clarifying the stages in tracing, cutting and pasting, by using large sized paper and sticking each piece of the mosaic on the blackboard, (3) providing motivation children to be able to complete it themselves without asking for help from other people, whether teachers or friends, and (4) remind children to hold pencils, scissors and apply glue using their fingers properly and correctly. Thus, this game can be used as an alternative solution in improving fine motor skills in young children. And also becomes a reference for other institutions to improve children's fine motor skills.

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