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IMPROVING THE PRE-KINDERGARTNERS' SCISSORS SKILLS USING CUTTING KIT

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Abstract:
Scissors skill refer to the ability to utilize scissors correctly. It includes cutting activities integrating basic lines such as straight, curve, zigzag, and wavy, and basic shapes such as square, rectangle, oval, circle, and triangle. Children at a young age should have the necessary skills to cut online boundaries. Hence, the manifestation of the pre-kindergartners' scissors skills led to this study, focusing on integrating the Cutting Kit Tool as an intervention. This study was conducted at the Mariano Marcos State University – Center for Inclusive Early Childhood Education (CIECE) during the A.Y. 2022-2023, with five (5) pre-kindergartners as the respondents of the study. This study aimed to improve the respondents' scissors skills using the cutting kit tool. A researcher-made cutting activities were utilized to gather data. These were tallied, treated, and analyzed using mean and t-test. It was found that the Cutting Kit is an effective intervention tool that contributes to the improvement of the scissors skills of the respondents. The longer the exposure of the respondents to the cutting kit tool, the higher the chance of improving their cutting skills and gripping skills. Thus, teachers should integrate this tool to improve the scissors skills of the pre-kindergartners.

Keywords: pre-kindergartners, scissors skills, cutting kit

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1. Introduction

Early childhood education (ECE) is the most critical factor in forming children's worldviews (Kateli, 2022). More so, the period from birth to age five (0-5) is among the most important in terms of development and learning. These years are crucial in many ways to their health, happiness, and overall course of their lives (All4kids, 2023). The study from the Newborn Reflexes (2022) states that children start to develop the necessary abilities and knowledge as they learn about their surroundings. Similarly, they start to seek out meaningful activities through mindful experiences and become very active with their absorbent mind. Notably, their growth and development happen from birth to four (0-4) months in which they would begin to build upon their moro and rooting reflexes. Moreover, Lsadmin (2018) reiterated that their development will start to peak during the age of five (5) years old where they would gain drastic changes such as in their physical and mental well-being.

As highlighted in the study of Rahimah (2021), ECE also facilitates children's abilities. To better nurture these abilities, early childhood care and development centers are mandated to provide various activities that support their growth and development. This is in line with the National Association for the Education of Young Children (NAEYC) ensuring all children to thrive and reach their full potential in attending early childhood care education. According to research, children who take part in high-quality preschool programs are more likely to enter school with the abilities they need to support them in continuing their education. Similarly, they learn how to make friends, develop independence, and learn to adapt new routines to help them feel secure and comfortable (Outcomes, 2024).

Moreover, ECE involves various domains of development, such as cognitive, social, affective and psychomotor, which are necessary in honing young minds (Syafril *et al.*, 2018). One of the domains that children need to develop is the psychomotor domain, which refers to the use of motor skills, coordination, and physical movement. Moreover, Borrego-Balsalobre *et al.* (2021) stated that an early development of skills in this domain helps children to control their body through balance and movement, which prepares them for the motor skills they need in their environment and daily life.

According to Jean Piaget's classification and structuring of child development, the psychomotor domain is most influenced between the ages of zero to two (0-2) years old because it is the stage where the child's motor and sensory skills come together. As a result, they start to comprehend their environment and form their first ideas and concepts, putting their cognitive abilities into practice (Carretero-Martinez & Romero-Naranjo, 2015). More so, the study of Essa & Burnham (2019) states that this age range is crucial for the development of their motor skills. As they learn to walk, they become more independent and curious about their surroundings, which can overwhelm them.

Similarly, Lorina (2015) believed that children at this age can manipulate objects on their own and become more independent. Through increased independence, they are prepared to do more and become more self-reliant. Despite the fact that education

continues throughout one's life, the International Children's Emergency Fund of the United Nations (UNICEF) argued that their levels of development differ at a young age. However, Tarmidi (2022) stated that they should be exposed to suitable activities and simulations to ensure that they can develop at their full potential. Thus, their development will be at the same level as their peers.

An understanding of children's movement skills learning is particularly important because engagement in motor activity is a prerequisite for development of the motor skills that are fundamental to functional tasks, school participation, and games and recreation in later years of life (Abernethy *et al.*, 2013). One of the categories of the motor skills that children must develop is the fine motor skills. These skills, according to Arbiol *et al.*, (2020), require the use of smaller muscle groups such as those in the fingers and hands. The same goes for picking up and grasping objects, coloring and drawing with pencils and crayons, and moving puzzle pieces.

Moreover, Grissmer *et al.* (2010) found out that some studies highlight the role of fine motor skills in children's cognitive and mathematical development. They are also examined in relation to reading and literacy development (Brookman *et al.*, 2013). Also, it increases independence in self-care tasks such as dressing, eating, brushing hair, and cleaning teeth; academic skills including handwriting, drawing, and using scissors; and participation in play and social activities. It can also help develop hand-eye coordination in young children (Kendra, 2016).

On the other hand, poor fine motor skills will affect their handwriting and self-esteem (Ratzon *et al.*, 2007). For some, they struggle and may become frustrated to use their hands in doing activities such as tying shoelaces. More so, the study of Morrow (2015) reiterates that children with identified motor coordination weakness have a high risk of experiencing anxiety and even depression associated with the perceived lack of competence in motor activities. Other negative behaviors might include sadness, as seen through crying, extreme anger and defiant behavior, and not feeling good about themselves. Similarly, Bates (2023) stated that without appropriate support, children can fall behind in their physical development.

Furthermore, children who are enrolled in a pre-kindergarten program are expected to at least have the necessary fine motor skills to meet the standards and developmental milestones reflected in the National Early Learning Curriculum (NELC) for children from zero to four (0-4) years old. To name a few, children at the age of four (4) years old should: (1) develop eye-hand coordination in tracing, drawing, coloring and cutting basic lines and shapes using age-appropriate materials such as pencils, crayons and a pair of scissors; (2) utilize writing, drawing, cutting materials with proper caution and care; and (3) demonstrate progress in fine motor skills and eye-hand coordination by drawing without tracing, coloring within line boundaries and cutting on-line boundaries (NELC, 2015).

In line with this, Sari & Aziz's (2019) findings revealed that most of the activities given for the pre-kindergartners are into using of fine motor skills like coloring, cutting, and pasting for the reason that these are the basic activities that they will have to learn

prior to their attendance in the pre-kindergarten program. Moreover, cutting with scissors, as suggested by Adriana (2020), is an essential milestone in early childhood education. It is a complex skill that takes time to develop, and it might be challenging for some children to coordinate the use of scissors without ample early childhood opportunities. More so, the study of Praminta & Christiana (2014) reiterated that utilizing such a tool can train them to practice cutting out patterns. On the other hand, Rizkyareza *et al.*, (2022) said that those who did not receive early exposure to cutting activities will have difficulty in manipulating scissors, but it can be resolved if they will be given suitable approaches and guides at a very young age like those who are enrolled in the pre-kindergarten program.

According to Son & Meisels (2006), understanding their fine motor skills and encouraging their development in the early years is likely to be a key factor in their readiness for future learning and academic success. In addition, current research shows that a high percentage of children are either delayed or at risk in their fine motor skills despite its evident significance in the early childhood setting. Thus, it is necessary to investigate and validate strategies for fostering the development of fine motor skills (Bello *et al.*, 2013). Marr *et al.* (2003) reiterated that it is already widely acknowledged that daily preschool activities should put an emphasis on developing their fine motor skills.

With these constructs, the researchers delved to improve the scissors skills of the pre-kindergartners at Mariano Marcos State University - Center for Inclusive Early Childhood Education (MMSU-CIECE) using Cutting Kit. Within the course of field study and assistantship, it was observed that some of the pre-kindergartners at the said center manifested poor scissors skills in cutting their worksheets.

2. Action Research Questions

The research study aimed to improve the pre-kindergartners' scissors skill using Cutting Kit. Specifically, this study sought to answer the following questions:

1) What is the level of the pre-kindergartners' scissors skills in terms of:
    a) lines; and
    b) shapes?
2) What is the level of the pre-kindergartners' scissors skills after the cutting kit were utilized in terms of:
    a) lines; and
    b) shapes
3) Is there a significant difference on the pre-kindergartners' level of scissors skills before and after the intervention was utilized?

3. Methods

3.1 Research Setting

The study was conducted at one of the Pre-kindergarten Laboratory Centers in the Province of Ilocos Norte, Philippines, that caters for children aged 3.10 to 4.11 (3 years and 10 months to 4 years and 11 months). This center, with its second-year operation, was chosen to be the locale of the study because this is where the researchers observed the poor scissors skills of the pre-kindergartners.

3.2 Research Design

This study utilized the descriptive-correlational research design. Descriptive because it described the level of the pre-kindergartners' scissors skills in lines and shapes before and after the integration of the Cutting Kit Tool as an intervention. Likewise, the correlational was employed to determine whether there is a significant relationship between and among the experimental and controlled variables.

3.3 Research Participants

The study was focused on the five (5) pre-kindergartners who were currently enrolled during the Academic Year 2022-2023. Purposive sampling, also called judgment sampling, was utilized. The researchers chose the respondents based on the level of scissors skills they possess and who will better be able to be assisted with this research study (Etikan *et al.*, 2016).

During their activity time, these identified participants manifested poor scissors skills in terms of cutting the worksheets and utilizing the scissors during the conduct of the pre-observation procedure with the use of a scoring rubric. We also sought the advice of the pre-kindergarteners to confirm whether these occurrences happen during their activity time in cutting and pasting worksheets.

3.4 Research Intervention

To improve the pre-kindergartners' scissors skills, the researchers utilized a cutting kit as an intervention. Since they dealt with the pre-kindergartners, the Cutting Kit comes with an envelope which contains a pair of round-ended scissors, paste, and research-made cutting worksheets for lines (straight, curve, zigzag, wavy) and shapes (square, rectangle, oval, circle, triangle). These research-made cutting worksheets were submitted and validated by the experts in the field.

The varieties of the images utilized in this intervention were more interesting and led the inquiry of children to try the cutting worksheets in a new way (Benbow, 2006). Moreover, it is found that varied cutting worksheets can enhance children's scissors skills, which contributes to the development of their fine motor skills. (Ohl *et al.*, 2013). This situation is different from the conventional cutting worksheets, which it uses repeated images and have no variety (Ratcliffe *et al.*, 2011).

3.5 Research Instrument

The researchers used a researcher-made scoring rubrics to determine the level of the pre-kindergartners' scissors skills in terms of their cutting skills and gripping skills from 4 (exemplary) to 1 (beginning).

Table 1: Rubric for Scissors Skills

Scissors Skills	Exemplary 4	Proficient 3	Developing 2	Beginning 1
Cutting Skills	The shapes/lines are perfectly cut. No parts are cut off.	The shapes/lines are well cut. One part is cut off.	The shapes/lines are fairly cut. Two parts are cut off. Needs assistance in cutting the shapes/lines.	The shapes/lines are poorly cut. Three or more parts are cut off. Needs desperate assistance in cutting the lines/shapes.
Gripping Skills	Holds scissors in correct position. Demonstrates proper finger positions without teacher's guidance.	Holds scissors in slanted position. Demonstrates proper finger positions but with limited teacher's guidance.	Needs assistance in holding the scissors. Demonstrates finger positions but with teacher's guidance.	Needs desperate assistance in holding the scissors. Struggles to demonstrate finger positions.

This researcher-made scoring rubric was used in the study and was validated by three experts in the field of Early Childhood Education. The result of the validation process revealed that the scoring rubrics is suited for its purpose with a mean score of 3.75, which was described as very much valid. Hence, the researcher-made scoring rubric is very much usable for the purpose of the undertakings. Likewise, the researchers incorporated suggestions by the experts, which further enhanced the research tool. During the pre-observation period, this scoring rubric was utilized to determine the level of the pre-kindergartners' scissors skills before and after the integration of the cutting kit tool as an intervention.

3.6 Data Collection Methods

A permission letter was submitted to the Chief of the MMSU-CIECE to conduct the study. Likewise, the pre-kindergarten adviser approved the validation of scissors skills scoring rubrics needed for the conduct of the cutting kit demonstration. A consent letter was also given to the parents of the pre-kindergartners allowing their child to participate in the said study. Similarly, the researchers prepared three (3) activity plans for activity time incorporating the cutting worksheets in terms of lines (straight, curved, zigzag, wavy) and shapes (square, rectangle, oval, circle, oval). Consequently, a pre-observation procedure on their scissors skills was conducted upon approval. The obtained scores in the pre-observation were recorded following the outputs of the pre-kindergartners.

The prepared activity plans for activity time were taught, incorporating the Cutting Kit intervention, which was demonstrated in a three-day (3) period. A post-observation procedure on their scissors skills was done for every classroom session.

With the assistance of our CBAR adviser, the obtained data from the rubrics were measured, treated, analyzed, and interpreted.

3.7 Ethical Considerations

The approval and permission of the Chief of the Center for Inclusive Early Childhood Education (CIECE) and the parents of the pre-kindergartners were secured through a formal communication letter signed by the researchers and the CBAR adviser after the issuance of the clearance and before the conduct of the study. It was further explained to the informants regarding their involvement in the study and causes of minimal or negligible matters. However, participation was highly encouraged. Hence, consent was asked from them as well.

Furthermore, all information that was gathered is kept confidential, secured, and shall be properly disposed of after a year following the basic rulings in conformity with the Data Privacy Act of 2012. The informants were informed that whatever data they provided was for research purposes only. However, the researcher must provide copies of the study to the MMSU-Graduate School Library for reference so that future researchers can have access to the results of the study.

Moreover, the respondents shall benefit from the study as it may improve their scissors skills using the cutting kit tool intervention. The informants shall not receive any incentive or monetary compensation in order to participate in this research study.

3.8 Data Analysis

Below are the statistical tools used in the study:

1) Mean was used to determine the scissors skills of the respondents before and after utilizing the Cutting Kit; and
2) A t-test was used to determine whether significant differences exist before and after utilizing the Cutting Kit in the scissors skills of the respondents.

4. Results and Discussion

This section presents, analyzes, and interprets the gathered data for the study related to evaluating the effectiveness of improving the pre-kindergartners' scissors skills using a cutting kit.

4.1 Level of Cutting and Gripping Skills Before the Integration of the Cutting Kit Tool

Table 2 highlights the pre-kindergartners' level of Cutting Skills prior to the integration of the Cutting Kit Tool. As gleaned on the table, the respondents' level of cutting skills along lines and shapes are found to have a beginning performance, with mean scores of 1.50 and 1.28, respectively.

They performed developing in terms of cutting straight lines with a mean score of 1.80. More so, they are found having a beginning performance along curve, zigzag, and wavy lines, with mean scores of 1.40, 1.60, and 1.20, respectively. Along shapes, the

respondents were found to have a beginning performance in cutting square, rectangle, oval, circle, and triangle shapes, with mean scores of 1.40, 1.20, 1.00, 1.20, and 1.60, respectively.

Table 2: Level of Cutting and Gripping Skills Before the Integration of the Cutting Kit Tool

Scissors Skills	**Cutting Skills ($\bar{x}$)**	**DI**	**Gripping Skills ($\bar{x}$)**	**DI**
A. Lines				
a. Straight	1.80	D	2.80	P
b. Curve	1.40	B	2.40	D
c. Zigzag	1.60	B	2.40	D
d. Wavy	1.20	B	2.40	D
Total Mean	**1.50**	**B**	**2.50**	**P**
B. Shapes				
a. Square	1.40	B	2.40	D
b. Rectangle	1.20	B	2.20	D
c. Oval	1.00	B	2.00	D
d. Circle	1.20	B	1.80	D
e. Triangle	1.60	B	2.00	D
Total Mean	**1.28**	**B**	**2.08**	**D**

Legend:

Range of Means	**Descriptive Interpretation**
3.25-4.00	Excellent
2.50-3.24	Proficient
1.75-2.49	Developing
1.00-1.74	Beginning

This means that the respondents can barely cut lines and shapes. The result implies that the respondents have little background knowledge in terms of cutting lines and shapes. This could be due to the fact that some of the respondents were poorly exposed in cutting activities involving curve, zigzag, and wavy lines, and different kinds of shapes like square, rectangle, oval, circle, and triangle.

Minke (2017) posited that there is more success in the child's cutting skills when their families are active and engaged in giving assignments to improve their child's fine motor skills. This method can improve the efficiency of the activities they do at school related to their fine motor skills development, such as arts and crafts and other activities (Sari *et al.*, 2015). With this, they are able to carry out activities independently and are motivated to be active, both in individual and in group activities

It can be said that there is an underlying problem experienced by the participants, which is similar to the findings of Rahimah (2021), who stated that children often have difficulties moving their fingers during cutting activities. Hence, their cutting skills need to be improved by an intervention that the study proposed through the use of the cutting kit tool. Widayati *et al.*, (2019) opined that children need good fine motor development to

help function their hands and fingers competently in cutting activity. Likewise, it is found that cutting skills and fine motor development are correlated.

On the other hand, the respondents' gripping skills in lines are proficient while developing along shapes, with mean scores of 2.50 and 2.08, respectively. This means that the respondents are good enough to hold the scissors. This also implies that they can hold scissors even without the assistance of an adult in cutting different lines and shapes, as reflected in the development of excellent gripping skills.

4.2 Level of Cutting and Gripping Skills Before the Integration of the Cutting Kit Tool

Table 3: Level of Cutting and Gripping Skills after the Integration of the Cutting Kit Tool

Scissors Skills	Cutting Skills ($\bar{x}$)	DI	Gripping Skills ($\bar{x}$)	DI
A. Lines				
a. Straight	2.40	D	3.20	P
b. Curve	2.00	D	2.80	P
c. Zigzag	2.00	D	2.80	P
d. Wavy	2.00	D	2.60	P
Total Mean	**2.10**	**D**	**2.85**	**P**
B. Shapes				
a. Square	1.60	B	2.80	P
b. Rectangle	1.80	D	2.60	P
c. Oval	2.00	D	2.08	D
d. Circle	1.60	B	2.80	P
e. Triangle	1.80	D	3.00	P
Total Mean	**1.76**	**D**	**2.80**	**P**

Legend:

Range of Means	Descriptive Interpretation
3.25-4.00	Excellent
2.50-3.24	Proficient
1.75-2.49	Developing
1.00-1.74	Beginning

Table 3 discloses the pre-kindergartners' level of cutting skills after the integration of the cutting kit tool. Based on the table, the respondents' cutting skills in lines and shapes are developing and proficient, with mean scores of 2.10 and 1.76, respectively.

After they were exposed to the intervention, they could proficiently cut straight lines while developing cutting curve, zigzag and wavy lines. On the other hand, their cutting skill performance improved in shapes along square, rectangle, oval, circle and triangle. This means that the use of the Cutting Kit Tool as an intervention material improved the cutting skills of the respondents. This also implies that the Cutting Kit Tool is a contributory factor that can enhance the cutting skills along the lines and shapes of the respondents.

Also, the respondents' gripping skills in lines and shapes are proficient, with mean scores of 2.85 and 2.00, respectively. They can proficiently hold the scissors in cutting along lines and shapes. This implies that the respondents improved their gripping skills in cutting shapes from developing to proficient performance. However, consider also the fact that the respondents already have a proficient performance in gripping skill even before they were exposed to the Cutting Kit Tool. Hence, their gripping skills in cutting along lines will remain the same.

The systematic review of evidence by Van der Fels *et al.*, (2014) led to a conclusion that fine motor skills interventions might support development in other developmental domains of children. Sugden and Chambers (2003) found that using an intervention at home or at school significantly improves the skills of children. Interestingly, although a single intervention was focused on a specific problem, the children's overall performance increases such as, but not limited to, their fine motor skills, eye-hand coordination and bilateral coordination.

4.3 Difference in the Level of Cutting Skills and Gripping Skills Before and After the Integration of the Cutting Kit Tool

Table 4: Significant Difference in the Level of Cutting Skills and Gripping Skills Before and After the Integration of the Cutting Kit Tool

Scissors Skills	Mean		Mean Difference	t-test	p-value
	Pretest	Posttest			
Cutting Skills	1.38	2.67	1.29	-10.787	0.000**
Gripping Skills	1.91	2.82	0.91	-12.090	0.000**
As a Whole	1.64	2.54	0.90	-16.595	0.000**

** - The difference is significant at 0.01 level.

Table 4 discloses the significant difference between the level of cutting skills and gripping skills before and after the integration of the cutting kit tool. It can be gleaned from the table that the pre-kindergartners exhibited improvement in their scissors skills after they were exposed to the said intervention. It was found that significant differences existed between the level of cutting skills and gripping skills of the pre-kindergartners. This is evident with the mean differences of 1.29 and 0.91, respectively, with a p-value of 0.000 significant at 0.01 level.

On the whole, a mean difference of 0.90 can be noted from the table, which explains a highly significant difference with a value of 0.0000, significant at 0.01 level. This only means that the cutting kit tool is effective and can increase the level of performance of the respondents along with their cutting and gripping skills. This implies that the more exposure the respondents have in utilizing the cutting kit tool as an intervention, the higher the tendency that they will perform better in their scissors skills.

The results of the study corroborate with the study of Verburgh *et al.*, (2014) which stated that children's fine motor development is influenced by how an intervention is implemented. Intervention that comes with guidance and practice from adults can

stimulate the development of children within their age. Guidance and examples which happen throughout intervention enables the right cutting action to follow by the children. Similarly, Erhardt & Sava (2008) state that Cutting Kit needs to have activities that emphasise the skill to be mastered. Moreover, implementing the cutting method may help increase the scissors skills of children along lines and shapes.

This also validates the study of Tarmidi & Bakar (2022), which concluded that the cutting kit tool improved the scissors skills of the pre-kindergartners as their respondents. Furthermore, it had an impact to their fine motor skill development and improved their hand-eye coordination.

Within the course of the study, it is manifested that the pre-kindergartners are more engaged in the research-made cutting activities. This contradicts their usual cutting activities, which are unobservable during the field study and assistantship.

4. Reflections

This research study was conducted to improve the pre-kindergartners' scissors skills using a cutting kit as an intervention tool. The researchers implemented pre-observations before the intervention was integrated and post-observations after the integration of the cutting kit tool to determine if there were significant differences in the scissors skills of the pre-kindergartners.

During the pre-observation, the pre-kindergartners' cutting skills along lines and shapes showed a beginning level. It implies that they have a little background in cutting the research-made worksheets. On the other hand, their scissors skills in terms of gripping skills along lines and shapes showed proficient and developing level respectively. It also shows that they have good fine motor skills in utilizing the scissors.

However, there were improvements after the integration of the cutting kit as an intervention tool. Their scissors skills in terms of cutting skills along lines and shapes showed significant changes. They can now cut along the lines and shapes with limited guidance. More so, their scissors skills in terms of gripping skills along lines and shapes showed proficient level. This means that their hand-eye coordination has significantly improved.

Based on the overall results of the study, it is reflected that the Cutting Kit tool is an effective intervention tool that contributes to the improvement of the scissors skills of the pre-kindergartners. The longer the exposure of the pre-kindergartners to the cutting kit tool, the higher the chance of improving their cutting skills and gripping skills.

5. Recommendations

Based on the discussion of results and the reflections provided in the study, the following recommendations were forwarded:

1) The pre-kindergarten advisers should utilize the Cutting Kit Tool as an intervention to improve the scissors skills of the pre-kindergartners in terms of their cutting skills and gripping skills.
2) Pre-service and practice teachers should utilize the Cutting Kit Tool as a support strategy to improve the scissors skills of the young children.
3) Parents are encouraged to provide cutting worksheets in terms of lines and shapes to improve the scissors skills of their children.
4) Future researchers should use this as a reference to explore the effects of the Cutting Kit tool for different age groups.

Conflict of Interest Statement

The authors declare that they have no financial or other conflicts of interest related to this research. This research was conducted within the context of a classroom setting, and no external funding or commercial interests were involved.

About the Author(s)

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Andrian A. Dela Cruz (PhD) was a former Assistant Professor at the Mariano Marcos State University (MMSU) where he handled major and allied subjects in the Early Childhood and Special Needs Education Department. As a researcher, he published his research articles focusing on children's behavior, personality traits, professional development and self-efficacy, pre-service teachers' career readiness, and inclusive education in international peer-reviewed, Scopus Index and ASEAN Citation Index journals.

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