IN-HAND MANIPULATION ACTIVITIES TOWARDS DEVELOPING FINE MOTOR AND SELF-HELP SKILLS OF KINDERGARTEN LEARNERS

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Abstract

The study is designed to determine the effectiveness of using in-hand manipulation in developing fine motor and self-help skills of kindergarten learners. It focuses on the extent the learners understood the instruction by modelling instruction and feedback, the extent have the learners achieved the in-hand manipulation activities, and the extent of development of fine motor and self-help skills.

Keyword*s: Fine Motor, Self-Help, Modeling Instruction, Feedback*

Introduction

The paper is designed determine the effectiveness of using in-hand manipulation in developing fine motor and self-help skills of kindergarten learners.

Republic Act 10157, also referred to as "The Kindergarten Act," made kindergarten a compulsory and mandatory stage of basic education. The Department of Education thinks that kindergarten is the transition period from informal to formal schooling (Grade 1-12). Extensive research has demonstrated that this era of maximum growth and development during which the brain continuously develop most rapidly and its almost at its fullest according to K to 12 Kindergarten Curriculum Guide, 2015. The kindergarten learners undergo assessment three times a year; pre, mid, and post assessment using the National tool, Early Childhood Care and Development (ECCD) Checklist. It is a monitoring tool which use to track the development of the learners in different developmental domains. Two of these developmental domains are fine motor domain and self-help domain. Fine motor abilities involve complicated movement of small muscles in the hand, fingers, and thumb. Fine motor abilities, like big motor skills, develop progressively over

time with extensive practice and repetition. Fine motor and self-care skills are separated in terms of developmental milestone but they work together in the development of the child for their effects are interconnected with each other. A study found that children must learn fine motor skills in order to develop self-care skills in preschool (Frank & Esbensen, 2015). Therefore, the deficiencies children's fine motor skills can prevent self-care skills such as food eating, dressing-undressing (Feder et al., 2015).Moreover, Insufficiency in motor and self-care skills of preschool children also affects school performance negatively (Feder & Majnemer, 2017). The main purpose of this study is to determine the utilization of in-hand manipulation activities towards developing fine motor and self-help skills of kindergarten learners. Specifically, this study aims to determine the extent of instructions understood by the learners in terms of modelling instruction and feedback, the extent of achievement of the learners of in-hand manipulation activities, and the extent of development of learner's fine motor and self-help skills.

This study aimed to increase teachers 'awareness to the importance of in-hand activities to the development of fine motor and self-help skills of the kindergarten learners.

Methods

The paper is a descriptive research design which focuses on understanding instructions in terms of modeling instruction and feedback, in-hand hand manipulation activities utilization, and fine motor and self-help skills development in terms of in-hand manipulation activities.

Results

1 Extent of Instructions Understood by the Learners in terms of Modeling Instruction

Table 3.1. One Sample T-test result on the Extent of Instructions Understood by the

Learners in terms of Modelling Instruction

Indicators	Mean	Std. Deviation	t-test	Statistical Significance (2-talied test)
1. The learner can quickly follow the steps about the given tasks.	3.80	0.79	3.648	.005
2. The learner is able to finish the tasks with few errors.	4.00	0.67	4.838	.001
3. The learner do the given tasks without copying others work.	4.10	0.74	5.014	.001
4. The learner completed the task correctly.	3.80	0.79	2.927	.017

The results revealed that the computed over-all mean for modeling instruction was 4.77 which is described as a very high extent. This implies that the instructions were fully understood by the learners in terms of modeling instruction, while the result of standard deviation of 0.73, shows homogeneity of data result gathered. Moreover, it follows that all of the p-values are less than level of significance $\alpha = .05$ implying the rejection of the null hypothesis. This further implies that the kindergarten learners significantly understood the instructions in terms of modeling instruction. This result suggests that modeling as an instructional strategy is highly effective in communicating tasks and expectations to young learners. The rejection of the null hypothesis implies that the pupils' comprehension of modeling instructions is not due to chance, but rather a clear indicator of their ability to follow and understand structured guidance in developing their fine motor and self-help skills.

2 Extent of Instructions Understood by the Learners in terms of Feedback

Table 3.2. One Sample T-test result on the Extent of Instructions Understood by the Learners in terms of Feedback

Indicators	Mean	Std. Deviation	t-test	Statistical Significance (2-talied test)
1. The learner is able to tell the process how his/her work was done.	3.60	0.70	2.895	.018
2. The learner can point out areas where his/her work needs to be improved.	3.50	0.53	2.700	.024
3. The learner is able to effectively communicate details of his/her work.	3.50	0.53	3.660	.005
4. The learner is able to pinpoint any gaps or lacks in his/her work.	3.60	0.63	3.858	.004

The result revealed that the extent of instructions understood in terms of feedback by the kinder pupils was high with mean of 3.55 and standard deviation of 0.55. Moreover, it follows that all of the p-values are less than level of significance α = .05 implying the rejection of the null hypothesis. Thus, the findings from the study show that kindergarten pupils at Hugo Perez Elementary School-Annex significantly understood all indicators related to feedback. This suggests that feedback, as an instructional method, played a crucial role in enhancing the comprehension of tasks among the learners. The statistical significance of the findings implies that the children were able to internalize and act upon the feedback given to them, which contributed positively to their development of fine motor and self-help skills.

3 Extent of Learners Achieved the In-Hand Manipulation Activities in terms   Storing Construction Materials

Table 3.3. One Sample T-test result on the Extent of Learners Achieved the In-Hand Manipulation Activities in terms of Storing Construction Materials

Indicators	Mean	Std. Deviation	t-test	Statistical Significance (2-talied test)
1. The learner has the ability to open and close the bottle's lid.	3.60	0.52	4.409	.002
2. The learner can open and close the lunch box.	3.60	0.52	3.919	.004
3. The learner can wrap and unwrap food packaging.	4.20	0.53	5.800	.000

The results indicated that learners have achieved a high level of proficiency in in-hand manipulation activities related to storing construction materials, as evidenced by a computed mean of 3.80 and a standard deviation of 0.61. The high mean score suggests that, on average, learners possess the necessary fine

motor skills and dexterity to effectively handle and store various construction materials. This proficiency is crucial for ensuring that learners can engage in hands-on tasks and activities that require precise manipulation, which is particularly important in fields such as construction, where the ability to manage materials efficiently can significantly impact productivity and safety.

Results of the study revealed that all the indicators in the in-hand manipulation activities in terms of storing construction materials were achieved by the kindergarten pupils. This was supported by the computed p-values of .000 to .004, which are less than the level of significance of α = .05 indicating the rejection of the null hypothesis. This further implies that the kindergarten learners significantly achieved the in-hand manipulation activities in terms of storing construction materials. This statistically significant result suggests that the learners were able to develop the necessary fine motor skills to successfully handle and store small objects, such as construction materials, within the context of classroom activities. The rejection of the null hypothesis highlights the effectiveness of in-hand manipulation activities in enhancing the children's ability to manage tasks that require dexterity, coordination, and precise motor control.

Extent of Learners Achieved the In-Hand Manipulation Activities in terms of Craft Activities

Table 3.4. One Sample T-test result on the Extent of Learners Achieved the In-Hand
  Manipulation Activities in terms of Craft Activities

Indicators	Mean	Std. Deviation	t-test	Statistical Significance (2-talied test)
1.The learner uses the glue correctly.	4.30	0.67	6.044	.000
2.The learner can paste the things right.	4.30	0.67	5.529	.000
3.The learner can accurately and properly cut the paper.	3.60	0.52	3.307	.009

Generally, the computed mean was 4.07 and standard deviation was 0.69 indicating that in general the kindergarten learners have achieved to a high extent the in-hand manipulation activities in terms of storing craft activities. The high mean score suggests that, on average, learners possess the essential fine motor skills and dexterity necessary to effectively engage in various craft tasks, which include manipulating materials such as paper, glue, and cutting tools. This proficiency is critical in fostering creativity and self-expression in young learners, as crafting activities often serve as a foundational platform for developing more complex skills in art and practical tasks.

Findings of the study revealed that the t-test result yielded all p-values that are less than the level of significance of α = .05, and hence we reject the null hypothesis. The results of the study indicate that the kindergarten learners at Hugo Perez Elementary School-Annex significantly achieved that in-hand manipulation activities in

terms of craft activities. This statistically significant result suggests that the use of craft activities, which involve cutting, pasting, coloring, and other fine motor tasks, played a crucial role in the development of fine motor skills. These activities allowed the learners to practice precise hand movements and coordination, contributing to their ability to perform tasks that require dexterity and control. The success of these activities implies that integrating creative, hands-on tasks into early childhood education can effectively promote motor skill development, which is foundational for many other academic and self-help skills.

Extent of Learners Achieved the In-Hand Manipulation Activities in terms of Hand Tracing

Table 3.5. One Sample T-test result on the Extent of Learners Achieved the In-Hand

   Manipulation Activities in terms of Hand Tracing

Indicators	Mean	Std. Deviation	t-test	Statistical Significance (2-talied test)
1. The learner can draw different lines using crayons.	4.30	0.67	5.716	.000
2. The learner can draw basic shapes	4.20	0.63	5.200	.001
3. The learner can draw basic images.	3.50	0.53	2.940	.016

The findings from the study revealead that the kindergarten learners at Hugo Perez Elementary School-Annex significantly achieved the in-hand manipulation activities related to hand tracing. This statistically significant result suggests that hand tracing activities were effective in helping the learners develop fine motor skills. The rejection of the null hypothesis implies that the learners' ability to trace hand shapes accurately was not due to random chance but rather a direct result of the structured in-hand manipulation activities provided during instruction.

6 Extent of Learners Achieved the In-Hand Manipulation Activities in terms Dressing

Table 3.6. One Sample T-test result on the Extent of Learners Achieved the In-Hand

   Manipulation Activities in terms of Dressing

Indicators	Mean	Std. Deviation	t-test	Statistical Significance (2-talied test)
1. The learner is able to tie and untie shoe laces.	3.10	0.32	2.500	.034
2. The learner can button and unbutton clothes.	3.80	0.78	3.408	.008
3. The learner can put on shoes without assistance.	3.20	0.42	2.400	.040

The results in Table 3.6 reflected a significant achievement in learners' in-hand manipulation activities related to dressing, with an overall mean score of 3.37 and a standard deviation of 0.61. This mean indicates that, on

average, learners exhibit a high level of proficiency in essential dressing tasks, which are crucial for fostering independence and self-care skills in young children. The relatively high mean suggests that many learners are developing the fine motor skills necessary for various dressing activities, such as fastening buttons, zipping zippers, and putting on shoes.

Furthermore, findings showed that all the indicators in the in-hand manipulation activities in terms of dressing were achieved by the kindergarten pupils supported by the computed p-values of .008 to .040 which are less than the level of significance of $\alpha = .05$ indicating the rejection of the null hypothesis. Thus, the results showed that the kindergarten learners at Hugo Perez Elementary School-Annex significantly achieved the in-hand manipulation activities in terms of dressing. This suggested that the children's development of fine motor skills essential for self-help tasks, such as buttoning, zipping, or tying, was significantly improved by the in-hand manipulation activities employed in the study. The rejection of the null hypothesis further confirms that the learners' abilities to perform dressing-related tasks are a direct outcome of their engagement in these structured activities.

7 Extent of Learners Achieved the In-Hand Manipulation Activities in terms of Routine Activities

Table 3.7. One Sample T-test result on the Extent of Learners Achieved the In-Hand Manipulation Activities in terms of Routine Activities

Indicators	Mean	SD	t-test	Statistical Significance (2-talied test)
1. The learner takes a nap during nap time.	4.70	0.48	9.951	.000
2. The learner completes the assignments assigned by the teacher on their own.	4.30	0.67	4.826	.001
3. The learner keep his/her belongings properly.	4.10	0.57	4.902	.001

The result showed that there is a high extent of achievement in in-hand manipulation activities in terms of routine activities with computed mean of 4.37 and standard deviation of 0.61. This high average reflects a strong proficiency in performing daily activities that involve fine motor skills, self-management, and consistency—qualities essential for independent functioning in both academic and personal settings. The data suggest that learners are generally well-equipped to handle routine tasks independently, underscoring their readiness for more complex responsibilities as they develop.

Furthermore, findings further suggests that all of the indicators in the in-hand manipulation activities in terms of routine activities were achieved by the kindergarten pupils since all of the computed p-values are less than the level of significance $\alpha = .05$ implying the rejection of the null hypothesis. Hence, results of the study demonstrate that the kindergarten learners at

Hugo Perez Elementary School-Annex significantly achieved the in-hand manipulation activities in terms of routine activities. This statistically significant result suggests that the learners demonstrated a notable improvement in performing everyday tasks that require fine motor skills, such as managing classroom materials, participating in cleaning routines, and handling objects during activities like snack time. These routine activities are critical for developing the coordination, dexterity, and strength necessary for independent functioning in both school and home settings.

Extent of Development of Learners in terms of Fine Motor Skills

Table 3.8. One Sample T-test result on the Extent of Development of Learners in terms of Fine Motor Skills

Indicators	Mean	SD	t-test	Statistical Significance (2-talied test)
1. Cuts out simple shapes	3.60	0.52	2.939	.017
2. Copies triangle	4.70	0.48	9.558	.000
3. Colors within lines	4.70	0.48	9.034	.000
4. Uses a 3 fingered grasp of pencil	4.70	0.48	8.903	.000
5. uses fingers to generate movement	4.70	0.48	9.623	.000
6. Pastes and glues appropriately	4.30	0.67	4.545	.001
7. Can draw basic pictures	3.80	0.42	4.050	.003

Table 3.8 also displayed the computed over-all mean for the extent of development of learners in terms of fine motor skills was 4.36 and standard deviation of 0.66 which is described as very high extent. This high mean score suggests that learners are generally well-equipped with the fine motor skills necessary for various tasks, ranging from writing and drawing to manipulating tools and materials effectively. Such skills are critical not only for academic success but also for everyday activities that require hand-eye coordination and dexterity.

Furthermore, it can be inferred from the table that the t-test yielded p-values of .000 to .017, which are less than the level of significance $\alpha = .05$ suggesting the rejection of the null hypothesis. Therefore, this further suggests that kindergarten learners at Hugo Perez Elementary School-Annex showed a significant development in terms of fine motor skills. The statistical significance of these results suggests that the learners' improvement in tasks requiring fine motor precision – such as gripping, manipulating small objects, and coordinated hand movements – was a direct result of the in-hand manipulation activities integrated into their curriculum. This development is crucial, as fine motor skills are foundational for a wide range of everyday tasks, from writing to self-care activities.

8 Extent of Development of Learners in terms of Self-Help Skills

Table 3.9. One Sample T-test result on the Extent of Development of Learners in terms of Self-Help Skills

Indicators	Mean	SD	t-test	Statistical Significance (2-talied test)
1. Feeding self without difficulty.	4.20	0.63	5.200	.001
2. Opening lunch boxes, zip lock bags, food packaging.	4.20	0.63	5.650	.000
3. Sitting at a desk, following teacher instructions, and independently doing simple in-class assignments.	4.30	0.67	4.826	.001
4. Settling independently for sleep.	4.70	0.48	9.885	.000
5. Packing a bag for school or other outings without assistance.	3.90	0.99	2.894	.018
6. Dressing independently.	4.20	0.78	4.650	.001
7. Morning routine at school (putting bag away, putting drink bottle in correct spot).	4.20	0.63	5.750	.000

Table 3.9 presented that there is a very high extent of development of learners in terms of self-help skills based on the computed overall mean 4.27 and standard deviation of 0.75. This suggests that learners are generally adept at managing various self-help tasks, reflecting significant growth in their independence and ability to navigate everyday challenges. The high degree of self-help skill development is crucial as it lays a strong foundation for learners' autonomy, enabling them to take on responsibilities related to their personal care and daily routines.

Moreover, the results of the study, supported by a computed p-values which are less than the level of significance α = .05 implying the rejection of the null hypothesis, indicate that the kindergarten learners at Hugo Perez Elementary School-Annex demonstrated significant development in self-help. This finding suggests that the in-hand manipulation activities effectively contributed to the children's ability to perform daily tasks independently, such as dressing, eating, and managing personal belongings. Self-help skills are critical for children's autonomy, and their mastery is directly linked to improved confidence and readiness for more complex tasks in both academic and home environments.

IV DISCUSSIONS

The success of modeling in this context aligns with findings from Raver and Knitzer (2017), who emphasized that young learners often benefit from concrete, visual examples provided by teachers, which helps them grasp abstract concepts and tasks more effectively. Additionally, Barnett and Hustedt (2019) highlighted that modeling improves children's learning outcomes by enabling them to observe and imitate tasks, thus improving their motor skills, understanding of self-care routines, and problem-solving abilities.

Research supports the notion that effective feedback, particularly when given consistently and clearly, helps young learners to refine their motor skills and become more independent in self-help tasks. Hattie and Timperley (2017) assert that feedback is one of the most powerful influences on learning and achievement, especially when it clarifies goals, provides direction for improvement, and motivates learners. Similarly, Shute (2018) found that formative feedback is particularly beneficial for younger learners as it fosters engagement,

helps those correct mistakes, and encourages a sense of accomplishment.

The findings supported by research that emphasizes the role of in-hand manipulation activities in promoting fine motor skill development in young children. Case-Smith and O'Brien (2015) found that activities involving object manipulation, such as storing or sorting small materials, are critical for developing fine motor control in early childhood. Such tasks help children build strength and coordination in their hands and fingers, which are essential for more complex self-help skills like dressing, feeding, and writing. Additionally, Exner (2019) highlights that fine motor tasks involving object management not only improve physical dexterity but also contribute to cognitive development by teaching children problem-solving and organizational skills.

Similar findings were reported in a study by Chang and Gu (2021), where they found that art-based activities, such as crafting and drawing, significantly improved young children's fine motor development. These activities helped children refine their hand-eye coordination and finger dexterity, making them better prepared for tasks such as writing and self-care. Additionally, a study by Wilson (2019) emphasized that manipulating small objects and materials during craft activities enhances children's cognitive engagement and motor planning, both essential components for learning.

Hand tracing is a common fine motor activity that requires precision and control, as learners must use their dominant hand to guide a pencil or crayon along the contours of the opposite hand. This activity strengthens hand-eye coordination, dexterity, and the small muscles of the hands and fingers, all of which are crucial for fine motor development. McHale and Cermak (1992) suggest that activities like hand tracing promote fine motor skills that are foundational for future tasks, such as writing and cutting.

Moreover, Sandler and Rudel (2015) highlight the importance of such activities in early childhood education, stating that they enhance spatial awareness and bilateral coordination, which are key for complex motor skills development.

Dressing tasks require complex in-hand manipulation skills, including precise finger movements, coordination, and strength. Research has shown that practicing such tasks promotes not only fine motor skill development but also independence and confidence in young learners. Case-Smith and Holland (2019) found that engaging children in self-care activities like dressing supports the development of dexterity and hand strength, which are critical for mastering everyday tasks. Similarly, AOTA (2014) highlights that early participation in self-help tasks significantly improves children's fine motor abilities, enabling them to become more independent and capable of handling personal care routines.

Similar studies highlight the importance of routine activities in fostering fine motor skills in young children. According to Exner (2019), engaging children in repetitive daily tasks such as organizing their materials or participating in clean-up routines promotes the development of precision and control in hand movements, essential for more complex tasks. Moreover, Missiuna (2015) emphasizes that these types of activities not only improve physical motor skills but also enhance children's confidence and autonomy, contributing to overall development.

Similar findings emphasize the importance of early intervention in developing fine motor skills in young children. Cameron, Cottone, Murrah, and Grissmer (2016) noted that structured fine motor activities significantly improve young children's abilities to perform both academic and self-help tasks. Likewise, Case-Smith and O'Brien (2015) have documented that early and consistent engagement in fine

motor activities enhances children's hand-eye coordination, dexterity, and ability to manage more complex tasks as they progress through early childhood education.

The significant development in fine motor skills seen in the study underscores the importance of incorporating in-hand manipulation activities in kindergarten programs. These activities play a crucial role in preparing children for more demanding tasks both in school and in everyday life, setting a strong foundation for future learning and independence.

Similar studies highlight the role of structured fine motor and manipulation activities in enhancing self-help skills. Bart, Hajami, and Bar-Haim (2017) found that activities targeting motor skills, such as manipulation of objects, significantly improved children's ability to manage tasks like dressing, feeding, and organizing personal items. Ziviani and Watson (2015) also emphasize the strong relationship between fine motor development and the acquisition of self-care abilities in early childhood, noting that these skills are foundational for children's success both inside and outside of school.

END NOTES

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