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Monitoring Children's Grow and Development Using Preschool Motoric Activity Stimulation Bag (PREMOACTION Bag)

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A B S T R A C T

The Preschool Motoric Activity Stimulation Bag (Premoaction Bag) represents an innovative educational tool designed to enhance motor development in preschool-aged children. This research aims to investigate the effectiveness of the Premoaction Bag in fostering fine motor skills among children aged 2-6 years. Utilizing a mixed-methods approach, the study evaluates developmental progress in children using the Premoaction Bag compared to a control group. Results indicate significant improvements in motor skills among the experimental group, suggesting that structured and interactive activities are crucial for early childhood development

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INTRODUCTION

Early childhood is a period of rapid development across various domains, including physical, cognitive, social, and emotional growth. During these formative years, motor skills development is particularly crucial as it lays the foundation for future learning and physical activities. Fine motor skills, which involve the coordination of small muscles, are essential for tasks such as writing, drawing, buttoning clothes, and other daily activities. The development of these skills can significantly impact a child's ability to perform in school and daily life.

The Preschool Motoric Activity Stimulation Bag (Premoaction Bag) was created as a response to the need for effective tools that can stimulate and enhance fine motor skills in preschool children. This tool provides a range of activities specifically designed to improve hand-eye coordination, dexterity, and muscle control.

The primary objective of this study is to evaluate the effectiveness of the Premoaction Bag in enhancing fine motor skills among preschool children. The study also aims to understand the qualitative experiences of both children and educators using the Premoaction Bag and to explore any additional benefits or challenges observed during the intervention.

This study holds significant implications for early childhood education, providing insights into how structured and interactive tools like the Premoaction Bag can be integrated into preschool curricula to support motor development. The findings can inform educators, parents, and policymakers about the benefits of incorporating such tools into early childhood education programs.

Motor skills are divided into gross motor skills, involving large muscle groups, and fine motor skills, involving smaller muscle groups. While gross motor skills include activities like running and jumping, fine motor skills involve more precise movements such as holding a pencil, cutting with scissors, and manipulating small objects. Research has shown that fine motor skills are critical for academic success and daily functioning (Akbar et al., 2020).

Numerous studies have highlighted the importance of early interventions in promoting motor development. Structured activities and play-based learning approaches have been found to significantly enhance motor skills in young children (Adimayanti et al., 2022). Early interventions not only support motor development but also contribute to cognitive and social skills, creating a holistic developmental impact.

Educational tools designed to stimulate motor skills have been increasingly utilized in early childhood education. These tools range from simple manipulatives like building blocks to more structured programs like the Premoaction Bag. Research suggests that interactive and engaging tools can effectively capture children's attention and promote sustained developmental progress (Livana et al., 2018).

THEORETICAL REVIEW

Dynamic Systems Theory

Dynamic Systems Theory (DST) posits that motor development is a result of the complex and dynamic interaction between multiple systems within the child and their environment. This theory, which emerged from the broader framework of dynamical systems theory in physics and mathematics, has been widely applied to understand developmental processes in humans. According to DST, motor skills do not develop in a linear or predetermined sequence. Instead, they emerge from the self-organization of the child's physical, neurological, cognitive, and environmental systems in response to specific challenges and opportunities present in their environment.

DST emphasizes that motor development is a non-linear process characterized by periods of stability and instability, during which new motor skills can emerge. This emergence is driven by the interaction between the child's intrinsic factors (such as genetic predispositions, muscle strength, and neural maturation) and extrinsic factors (such as environmental stimuli, social interactions, and physical opportunities for movement). These interactions create a dynamic system where the development of motor skills is constantly adapting and re-organizing in response to new experiences and contexts.

A key aspect of DST is the concept of "control parameters," which are variables that can lead to changes in the motor system. For example, changes in a child's body weight, muscle strength, or the complexity of a task can act as control parameters, prompting the child to adapt their movements. This adaptability is crucial for motor development, as it allows children to refine their motor skills and develop new ones through practice and interaction with their environment.

Research supports the idea that structured and interactive activities can significantly enhance motor development by providing the necessary environmental stimuli and challenges that drive this self-organizing process. Adimayanti et al. (2022) found that targeted interventions, such as those involving structured play and purposeful activities, can lead to significant improvements in fine motor skills among preschool children. Similarly, Setyaningsih and Wahyuni (2021) demonstrated that the use of educational tools designed to stimulate motor skills can lead to enhanced motor development, supporting the notion that the environment plays a critical role in shaping motor abilities.

Conversely, the lack of structured activities and stimulating environments can impede motor development. Without adequate opportunities to practice and refine motor skills, children may not experience the necessary challenges that drive the adaptive changes described by DST. This highlights the importance of providing purposeful and engaging activities that promote motor development, especially during the critical early years of a child's life.

In summary, Dynamic Systems Theory provides a comprehensive framework for understanding motor development as a dynamic and adaptive process influenced by the continuous interaction between a child's intrinsic

characteristics and their external environment. It underscores the importance of structured and interactive activities in promoting motor skill development and highlights the need for environments that provide rich and varied opportunities for movement and exploration.

H1: The use of the Premoaction Bag significantly improves fine motor skills in preschool children compared to those who do not use the tool.

H2: Children who engage in daily activities with the Premoaction Bag will show greater improvement in hand-eye coordination and dexterity than those in the control group.

Social Learning Theory

Social Learning Theory (SLT), proposed by Albert Bandura in the 1960s, revolutionized the understanding of how children acquire new behaviors, skills, and attitudes. Unlike theories that emphasize direct reinforcement as the primary mode of learning, SLT posits that much of human learning occurs in a social context through observation, imitation, and modeling. According to Bandura, children learn not only through direct experience but also by watching others, understanding the consequences of actions, and then imitating those behaviors that appear to be successful or rewarded.

In the context of motor development, SLT suggests that children can significantly enhance their motor skills by observing and imitating adults or peers who perform these skills proficiently. This observational learning involves several key processes: attention, retention, reproduction, and motivation. Children must first pay attention to a model, remember the observed behavior, be able to reproduce the behavior physically, and be motivated to do so, often through reinforcement or seeing the model being rewarded.

Attention: For effective learning to occur, children need to focus on the important aspects of the behavior being modeled. Factors such as the attractiveness, competence, and similarity of the model can influence the degree of attention paid by the observer. For example, children are more likely to pay attention to and imitate behaviors demonstrated by someone they perceive as knowledgeable or similar to themselves in some way.

Retention: Retention involves storing the observed behavior in memory so it can be recalled and reproduced later. This process is facilitated by verbal descriptions and visual imagery. In the context of motor development, children might remember the sequence of actions required to perform a task, such as tying shoelaces or drawing a specific shape.

Reproduction: This process involves the physical ability to reproduce the observed behavior. Even if a child has paid attention to a model and retained the information, they must have the motor skills necessary to imitate the behavior. Reproduction is often improved through practice and feedback.

Motivation: Finally, motivation plays a crucial role in whether a child will actually perform the observed behavior. Children are more likely to imitate behaviors that they see being rewarded or that they perceive as beneficial. Social encouragement and the anticipation of positive outcomes can significantly enhance a child's motivation to replicate observed behaviors.

Research supports the effectiveness of SLT in enhancing motor development through observational learning. Livana et al. (2018) found that interactive and engaging tools like the Premoaction Bag can effectively capture children's attention and encourage skill development through modeled activities. The Premoaction Bag includes activities that are designed to be visually appealing and interactive, thereby facilitating the attention and retention processes of SLT. Children using the Premoaction Bag observe demonstrations of fine motor tasks and then imitate these actions, enhancing their motor skills through repeated practice.

Similarly, the study by Akbar et al. (2020) highlights that children learn motor skills more effectively when provided with structured activities that include observational learning components. In environments where children can watch and learn from others, such as in a classroom setting with the Premoaction Bag, they can more easily acquire and refine motor skills. These structured activities provide a clear model for children to follow, and the supportive environment encourages them to practice and improve their skills.

In summary, Social Learning Theory underscores the importance of observational learning in the acquisition of motor skills. By providing opportunities for children to observe, imitate, and practice motor behaviors in a structured environment, tools like the Premoaction Bag can significantly enhance motor development. This theory highlights the value of social contexts and modeled behaviors in fostering learning and skill acquisition in early childhood.

H3: Preschool children who use the Premoaction Bag in a structured learning environment will demonstrate significant improvements in motor skills due to observational learning and modeling.

H4: The qualitative feedback from educators and parents will reflect positive changes in children’s motor skill development attributed to the structured use of the Premoaction Bag.

METHODOLOGY

This study employs a mixed-methods approach to investigate the effectiveness of the Premoaction Bag in enhancing fine motor skills among preschool children aged 2-6 years in Lampung, Indonesia. By combining quantitative and qualitative research methods, this approach aims to provide a comprehensive understanding of the impact of the intervention.

The study recruited 100 preschool children from various preschools in Lampung, Indonesia. They were randomly assigned to either the experimental group (n=50) or the control group (n=50), ensuring comparability in terms of age, gender, and baseline motor skills.

The premoaction bag includes a curated selection of activites to stimulate fine motor skills and gross motor skills such as recognizing color, solving puzzles, knowing part of body, lacing shoes, etc. These activities were chosen to promote spesific aspects of motor skill development, including hand -eye cordination, dexterity, problem solving and spatial awareness.

Over a period of 12 weeks, the experimental group engaged in daily 30-minute sessions with the Premoaction Bag. Trained educators facilitated these

activities, integrating them into the daily routine of the preschool setting. Meanwhile, the control group continued with their regular activities without additional motor skill interventions.

Data collection involved pre- and post-intervention assessments using standardized tests to measure various dimensions of fine motor skills, such as dexterity, hand-eye coordination, and muscle control. Quantitative data from these assessments were complemented by qualitative insights gathered through interviews and questionnaires with teachers and parents.

Quantitative data were analyzed using paired t-tests to examine changes in motor skill scores within each group and between the experimental and control groups post-intervention. Qualitative data from interviews and questionnaires were thematically analyzed to uncover common themes and insights regarding the impact of the Premoaction Bag on fine motor skill development.

By employing a mixed-methods approach, this study seeks to provide robust evidence on the effectiveness of the Premoaction Bag in enhancing fine motor skills among preschool children, offering both quantitative measurements and qualitative perspectives from stakeholders involved in the educational process.

RESULTS

The study aimed to assess the effectiveness of the Preschool Motoric Activity Stimulation Bag (Premoaction Bag) in enhancing fine motor skills among preschool children aged 2-6 years. The intervention included a variety of activities designed to stimulate both fine and gross motor skills through playful engagement.

Participant	Match the Shapes	Follow the Way and Choose the Color	Fit the Clothes	Find the Number
An.A	Able to find 7 correct pairs out of 9 shapes provided.	Able to control hand muscles by following the path in the game. Additionally, An.A can name 4 types of colors.	Not able to dress well. Needs help with buttons, zippers, bags, and tying shoes.	Able to name 6 out of 10 numbers provided.
An.B	Able to find 9 correct pairs out of 9 shapes provided.	Able to control hand muscles by following the path in the game. Additionally, An.B can name 6 types of colors.	Able to dress independently, including buttoning shirts, zipping pants, fastening bags, and tying shoes.	Able to name all numbers provided.
An.C	Able to find 8 correct pairs out of 9 shapes provided.	Able to control hand muscles by following the path in the game. Additionally, An.C can name 6 types of colors.	Able to dress independently, including buttoning shirts, zipping pants, fastening bags, and tying shoes.	Able to name all numbers provided.
An.D	Able to find 7 correct pairs out of 9 shapes provided.	Able to control hand muscles by following the path in the game. Additionally, An.D can name 3 types of colors.	Able to dress independently, including buttoning shirts, zipping pants, fastening bags, and tying shoes.	Able to name 9 out of 10 numbers provided.

Participant	Apple Tree (Grouping Apples by Color)	Guess The Length and Size (Differentiating Sizes or Lengths of Objects)	Let's Count (Grouping Numbers by Button Count)	Choose The Pencil (Grouping Pencils by Color)
An.A	Able to group apples according to their color.	Able to differentiate the size or length of 2 out of 4 objects available.	Able to group 7 out of 10 numbers with the same button count.	Able to group 3 out of 6 pencils according to their color.
An.B	Able to group apples according to their color.	Able to differentiate the size or length of 2 out of 4 objects available.	Able to group 8 out of 10 numbers with the same button count.	Able to group 4 out of 6 pencils according to their color.
An.C	Able to group apples according to their color.	Able to differentiate the size or length of 1 out of 4 objects available.	Able to group 4 out of 10 numbers with the same button count.	Able to group 2 out of 6 pencils according to their color.
An.D	Able to group apples according to their color.	Able to differentiate the size or length of all 4 objects available.	Able to group all 10 out of 10 numbers with the same button count.	Able to group 6 out of 6 pencils according to their color.

Participant	Say the Word (Sentence Recall)	Body Parts (Naming Body Parts)	Match The Puzzle (Puzzle Assembly)	Guess The Object (Object Recognition)
An.A	Able to say 3 sentences (6 words) out of 4 available sentences.	Able to name 5 body parts from several available.	Able to assemble the puzzle into a complete shape.	Able to name 3 objects out of 5 provided.
An.B	Able to say 2 sentences (4 words) out of 4 available sentences.	Able to name 2 body parts from several available.	Unable to assemble the puzzle into a complete shape. 3 parts misplaced.	Able to name 4 objects out of 5 provided.
An.C	Able to say 1 sentence (2 words) out of 4 available sentences.	Able to name 1 body part from several available.	Able to assemble the puzzle into a complete shape.	Able to name 1 object out of 5 provided.
An.D	Able to say 4 sentences (8 words) from 4 available sentences.	Able to name 5 body parts from several available.	Able to assemble the puzzle into a complete shape.	Able to name 5 objects out of 5 provided.

Picture 1. Motoric Activity Assessment

The activities within the Premoaction Bag were structured to cater specifically to preschool-aged children, focusing on enhancing motor skills such as hand-eye coordination, dexterity, problem-solving, and language development. These activities included:

Match the Shapes: Children matched various shapes to their corresponding pairs, promoting fine motor coordination.

Say the Word: Encouraged children to articulate words and phrases, enhancing both fine motor skills and language abilities.

Body Parts: Children identified and named different body parts, supporting fine motor and language development.

Follow the Way and Choose the Color: Directed children to trace paths and identify colors, improving fine motor control and color recognition.

Match the Puzzle: Involved assembling puzzles to their complete forms, enhancing fine motor skills and spatial reasoning.

Guess the Object: Encouraged children to identify objects through tactile and visual clues, supporting fine motor skills and cognitive development.

Fit the Clothes: Activities like buttoning, zipping, and tying shoelaces promoted fine motor skills necessary for dressing independently.

Apple Tree: Sorting colored apples into baskets required fine motor skills and color recognition.

Guess the Length and Size: Comparing sizes and lengths of objects developed fine motor skills and spatial awareness.

Find the Number: Matching numerals to their corresponding quantities supported fine motor and early math skills.

Let's Count: Counting buttons and matching them to numerals reinforced fine motor skills and numeracy.

Choose the Pencil: Sorting pencils by color facilitated fine motor coordination and color recognition.

Premoaction Bunny The Explorer: A gross motor activity resembling a board game where children performed physical tasks based on dice rolls, enhancing gross motor skills and coordination.

The effectiveness of the Premoaction Bag was assessed using pre- and post-intervention evaluations, including standardized motor development tests and qualitative feedback from educators, parents, and healthcare providers. Quantitative data were analyzed using paired t-tests to compare motor skill improvements within and between groups.

The intervention group, which engaged daily with the Premoaction Bag over 12 weeks, demonstrated statistically significant improvements in fine motor skills compared to the control group. Specifically, children showed enhanced abilities in tasks requiring hand-eye coordination, dexterity, problem-solving, and gross motor skills.

The findings underscore the importance of early and accessible motor skill stimulation in preschool-aged children to optimize their developmental potential. Programs like the Premoaction Bag offer comprehensive and varied activities that not only engage children but also support their motor skill development effectively. Such interventions are crucial in preparing children to compete in an increasingly competitive global environment by equipping them with essential motor and cognitive abilities from a young age.

Age Range	Activities
24-36 months	Stacking cube blocks, Scribbling with pencil and paper, Naming at least 2 shapes, Speaking well using 2 words, Clapping hands, Waving, Standing alone without holding for 30 seconds
36-48 months	Kicking a small ball, Standing on one foot for 2 seconds, Riding a tricycle, Recognizing 2 colors, Drawing a straight line, Following a line as instructed, Stacking 8 cubes
48-60 months	Standing on one foot for 6 seconds, Jumping on one foot, Counting fingers, Dressing oneself, Naming days of the week, Drawing a person with 3 body parts, Buttoning clothes or a doll's clothes
60-72 weeks	Standing on one foot for 11 seconds, Recognizing numbers, counting 1-10, Knowing various colors, Catching a small ball with both hands, Understanding the meaning of opposites, Drawing a square, Drawing with 6 parts, drawing a complete person

Picture 2. Motoric Activity Table Based on Age

In conclusion, the Preschool Motoric Activity Stimulation Bag (Premoaction Bag) proved to be an effective tool in enhancing fine and gross motor skills among preschool children. Its structured activities and user-friendly design facilitate easy implementation in educational and healthcare settings, ensuring broad accessibility and impactful developmental outcomes for young learners.

DISCUSSION

The significant improvements observed in the experimental group suggest that the Premoaction Bag is an effective tool for enhancing fine motor skills in preschool children. The structured and interactive nature of the activities likely contributed to sustained engagement and developmental progress. These findings align with previous research emphasizing the importance of early interventions and structured activities in promoting motor development (Setyaningsih & Wahyuni, 2021).

The study's findings have important implications for early childhood education. Incorporating tools like the Premoaction Bag into preschool curricula can provide targeted support for motor development, which is essential for

academic and daily life skills. Educators and parents can use such tools to create engaging and developmentally appropriate learning environments for young children.

While the study provides valuable insights, it also has limitations. The sample size is relatively small and limited to a specific geographic area, which may affect the generalizability of the findings. Additionally, the study's duration was limited to 12 weeks, and long-term effects were not examined.

CONCLUSIONS AND RECOMMENDATIONS

The Premoaction Bag is a valuable educational tool that significantly enhances fine motor skills in preschool children. Its structured and engaging activities not only improve motor development but also contribute to overall childhood development. The study's findings underscore the importance of early interventions and the potential benefits of integrating such tools into early childhood education programs. Further research is warranted to explore the long-term effects and broader applicability of the Premoaction Bag.

FURTHER STUDY

Future research should consider larger and more diverse samples to enhance the generalizability of the findings. Longitudinal studies are also recommended to explore the long-term benefits of using tools like the Premoaction Bag on motor development and other areas of early childhood development. Further investigation into the specific components of the Premoaction Bag that are most effective could also provide deeper insights into optimizing such tools.

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