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The Effect of Creative Dance Based on Identity Elements on Motor Development in Early Childhood Education

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ABSTRACT

Gross motor development is an important aspect of early childhood growth, yet in many early childhood education institutions, motor stimulation remains limited and suboptimal. One potential medium is creative dance based on identity elements, as it can integrate physical movement, rhythm, and creative expression in an enjoyable way. This study aimed to examine the effect of creative dance based on identity elements on the motor development of children at Semayang Ni Ine Bintang early childhood education. The research problem arose because some children were unable to perform gross motor movements in a coordinated and independent manner in response to the teacher's cues and demonstrations. The method employed a quantitative, experimental design in which the experimental group received a creative dance intervention, and motor skills were measured before and after the intervention. Data analysis using a paired sample t-test showed a significant difference between pre-test and post-test scores ($p = 0.001 < 0.05$), indicating a positive effect of creative dance on children's motor skills. The study concludes that creative dance based on identity elements is effective in enhancing gross motor development in early childhood. The significance of this research lies in providing an innovative learning model that not only optimizes physical abilities but also encourages creativity and active engagement in the learning process.

Keywords: *Creative Dance, Early Childhood, Child Motor Skills, Identity*

A. INTRODUCTION

Early childhood, particularly in PAUD (Early Childhood Education), is considered a golden age of development, a period critical for physical, cognitive, socio-emotional, language, and moral growth (Windari et al., 2025). Any stimulation provided during this period can have long-term impacts on a child's readiness for subsequent educational stages (Sulistiawati et al., 2023). Therefore, the learning process in kindergartens should not only focus on early academic aspects but also be designed to optimize the child's overall developmental potential (Aziz et al., 2021). Education plays a vital role in determining a child's development and is also emphasized in the Qur'an, Surah Al-Alaq verses 1–5, which provide comprehensive guidance on education (Destiani et al., 2025). One developmental aspect that plays a significant role in early childhood education is motor development (Candra et al., 2023). Motor development includes a child's ability to control bodily movements, encompassing both gross and fine motor skills (Juliyanti et al., 2023).

Gross motor skills involve movements that use large muscles, such as walking, jumping, running, and dancing, whereas fine motor skills involve coordination of small muscles, such as grasping, writing, and manipulating objects (Oktaviani et al., 2025). Optimal development of motor skills supports a child's independence, enhances self-confidence, and fosters growth in other domains, including cognitive and socio-emotional development (Azhari et al., 2024). Active, creative, and contextual learning has been shown to be more effective in stimulating early childhood development than instructional and passive approaches (Tukly et al., 2025). Therefore, educators are expected to design learning activities that are not only visually and physically engaging but also meaningful and aligned with the child's developmental characteristics (Susanti & Anhar, 2025).

Art, particularly dance, is a learning medium with great potential to develop gross motor skills in early childhood (Utami & Pamungkas, 2025). Dance activities involve coordination of body movements, rhythm, expression, and spatial awareness, which directly stimulate balance, flexibility, and bodily control (Asmuddin et al., 2022). Movement and song activities in dance education encourage children to coordinate movements with music, thereby naturally and enjoyably enhancing gross motor skills (Badriyah et al., 2020). Beyond physical development, dance also serves as a means of self-expression and the development of imagination through meaningful movement experiences (Haryadi, 2025). With its active and creative characteristics, dance can increase children's engagement in learning while optimizing gross motor stimulation in early childhood (Tortella, 2025).

Developing gross motor skills in early childhood through dance aligns with play-based learning approaches that emphasize movement experiences, exploration, and active child participation (Tortella, 2025). Play-based dance learning not only supports physical development but also contributes to cognitive and socio-emotional growth. Dance is also considered a sensorimotor activity that helps children understand the function of their bodies and the environment through movement and sensory stimulation (Håkstad et al., 2017). Empirical studies show that structured physical activity significantly improves preschool children's gross motor abilities (Gu et al., 2021). Psychomotor development programs based on play and movement have been shown to enhance balance, coordination, and locomotor skills (Betancur et al., 2024). Educational play approaches based on movement also strengthen comprehensive gross motor stimulation in early childhood (Marwan & Rohayati, 2025).

Although, in theory, creative dance based on identity elements has many advantages, its implementation in PAUD institutions remains limited. Pre-study observations at TK Semayang Ni Ine Bintang indicated that some children had not yet mastered gross motor movements optimally, particularly in creative dance activities, such as swinging arms, walking, jumping, and performing sequences independently according to rhythm. Children's movements tended to be monotonous, less varied, and poorly coordinated, making it difficult for them to follow the teacher's demonstrations. This condition is likely influenced by unengaging learning media and inappropriate methods, which can make children feel compelled and quickly bored with gross motor activities. Furthermore, teachers often focus more on academic activities than on physical development, resulting in low stimulation of children's gross motor skills. Consequently, children still face difficulties performing locomotor and non-locomotor movements, as well as coordinating their eyes, hands, and other body parts.

Creative dance has been shown to positively impact early childhood gross motor development, particularly in body movement coordination and fundamental motor skills in kindergarten. Children who actively participate in dance activities show significant improvement in motor skills, as these activities encourage structured, rhythmic movements while training balance and muscle strength (Utari & Yeni, 2020). Other studies indicate that regular involvement in creative dance enhances gross motor skills, as evidenced by observations and documentation of children's developmental progress over time (Yusri et al., 2024). Furthermore, repeated application of creative dance in learning activities gradually stimulates gross motor development, as indicated by increased average motor skill scores from the initial to subsequent sessions, demonstrating its effectiveness in supporting the motor development of children aged 5–6 years (Arinda et al., 2025).

Although creative dance based on identity elements has proven effective in enhancing early childhood gross motor skills, its implementation in PAUD institutions remains limited, leaving many children unable to perform locomotor and non-locomotor movements optimally according to rhythm and teacher demonstrations. This highlights a gap between the pedagogical potential of dance and current learning practices. The uniqueness of this study lies in applying creative dance, grounded in self-identity, as a systematic medium for gross motor learning, distinct from traditional physical approaches that are less engaging. This study aims to evaluate the effect of creative dance on children's motor development through an experimental design with pre-test and post-test assessments. The results demonstrate a significant improvement in children's gross motor skills, confirming the effectiveness of dance as both a physical stimulation medium and a channel for creative expression. The contributions of this study include: (1) providing empirical evidence that creative dance effectively enhances gross motor skills; (2) offering an innovative arts-based learning model for PAUD; and (3) promoting engagement, creativity, and enjoyable learning experiences for early childhood learners.

B. RESEARCH METHOD

This study was conducted at TK Semayang Ni Ine Bintang using a quantitative experimental approach with a One-Group Pretest-Posttest design. Initially, the children's motor skills were assessed through a pre-test (O_1), followed by an intervention consisting of creative dance exercises based on identity elements (X), and concluded with a post-test (O_2) to evaluate the development of children's motor skills after the intervention. The study population included all children at the kindergarten, totaling 30. The sampling technique used was saturated sampling, meaning all children in the selected class were included as research participants. The research instrument is presented as follows:

Table 1. Research Observation Instrument

Element	Identity
Learning Achievement	Using gross motor functions to explore the surrounding environment
Assessment Objective	The child is able to use gross motor functions to explore the surrounding environment
Assessment Technique	The child demonstrates the ability to use gross motor functions to explore the surrounding environment
Context	1. The child can maintain balance while moving 2. The child can coordinate body movements during dance 3. The child can move in accordance with rhythm 4. The child can change positions with movement variations (jumping, walking) 5. The child demonstrates joyful expression while moving

Element	Gross Motor Skills
Learning Achievement	The child can maintain body balance while dancing
Assessment Objective	The child is able to imitate movements accurately
Assessment Technique	The child demonstrates stable motor coordination
Context	1. The child repeats movements consistently 2. The child can perform locomotor and non-locomotor movements 3. The child can perform spontaneous reflexive movements during dance

After data collection, statistical analysis was conducted, starting with tests for normality and homogeneity. The normality test indicated $p > 0.05$, showing that the data were normally distributed, while the homogeneity test indicated $p > 0.05$, confirming that variances among samples were homogeneous. Subsequently, a paired sample t-test was performed to determine the significant differences between pre-test (O_1) and post-test (O_2) scores after the creative dance intervention (X). The decision criteria were as follows: Sig < 0.05 → H_a accepted (significant difference). Sig > 0.05 → H_0 accepted (no significant difference). The results showed a significant improvement in children's motor development following the creative dance training.

C. RESULTS AND DISCUSSION

1. Data Normality

Table 2. Normality Test Results

Variable	Experimental Class (Sig.)	Description
Pre-test	0,080	Normal
Post-test	0,063	Normal

Based on Table 2, the normality test results indicate that both pre-test and post-test data in the experimental class are normally distributed. The significance values (Sig.) for the pre-test and post-test are 0.080 and 0.063, respectively, both of which are greater than 0.05. Therefore, the data do not deviate from normality and are suitable for further analysis using parametric tests. This conclusion is reinforced by Table 2, which shows that the pre-test and post-test variables each meet the normality criteria. Establishing normality is a critical prerequisite before performing a t-test to assess significant differences in children's gross motor skills before and after the creative dance intervention, ensuring the statistical analysis results are valid and reliable.

2. Data Homogeneity

Table 3. Homogeneity Test Results

Variable	Metode	*Levene* Statistic	df1	df2	Sig. (p-value)
Motor Development	Based on Mean	0.987	3	54	0.406
	Based on Median	0.871	3	54	0.462
	Based on Median and with adjusted df	0.871	3	46.216	0.463
	Based on the Trimmed Mean	1.088	3	54	0.362

As shown in Table 3, the homogeneity test indicates that the variance in motor development within the experimental group is homogeneous. The significance values for all methods, based on Mean (0.406), based on Median (0.462), based on Median with adjusted df (0.463), and based on Trimmed Mean (0.362), are all greater than 0.05. This demonstrates that the variance across experimental groups is sufficiently uniform, satisfying the homogeneity assumption required for parametric analysis. Therefore, comparisons among

groups can be conducted validly and reliably to assess the effect of the intervention on children's motor development.

3. t-Test Results

Table 4. Paired Sample t-test Pre-test and Post-test

Variabel	Std.Dev	t	Sig.
Pre-test	18.3881	30.052	0,001
Post-test			

Based on Table 4, the paired-samples t-test results indicate that the pre-test standard deviation is 18.3881 and the t-value is 30.052. The two-tailed significance (p) is 0.001, which is less than 0.05. Therefore, the null hypothesis (H_0) is rejected, and it can be concluded that there is a highly significant difference between the pre-test and post-test scores. This indicates that the creative dance intervention grounded in identity elements has a positive effect on children's gross motor development in the experimental class. These results support the finding that systematic creative movement activities can significantly enhance gross motor skills within the context of early childhood education.

The results of the paired sample t-test in this study indicate a highly significant difference between children's gross motor development scores before (pre-test) and after (post-test) receiving creative dance interventions based on identity elements at Semayang Ni Ine Bintang early childhood education ($p = 0.001 < 0.05$). These findings demonstrate that creative dance exercises can significantly enhance children's motor development. This is consistent with previous studies showing that dance or creative movement activities improve motor skills in early childhood.

Prior research has shown that creative dance effectively develops gross motor skills in children aged 5–6 years through variations in movement during dance activities, thereby supporting coordination and balance (Khotimah et al., 2023). Similar results were reported in kindergarten settings, indicating that creative dance has a positive effect on children's gross motor development, including coordination and balance (Utari & Yeni, 2020). Additionally, creative movement programs have been found to enhance fundamental motor development in preschool children (Thomaidou et al., 2021), while dance activities have been shown to improve balance, coordination, and locomotor skills (Aldemir et al., 2021). Studies on the effects of dance education on motor performance also report increased variety in motor skills, such as balance and flexibility, and research across various locations and approaches supports this, including the use of Maena Maena creative dance, which significantly improved gross motor skills in children aged 5–6 years at TK Najmah Rugayah Darus Medan (Panggabean et al., 2024).

Creative dance training improves early childhood motor development through multiple mechanisms. Eight-week creative dance programs have demonstrated significant increases in children's motor creativity, though they do not always lead to statistically significant improvements in overall motor competence, suggesting that dance encourages creative movement even when it does not cover all motor skills (Thomaidou et al., 2021). Moreover, creative dance positively influences proprioception and rhythm synchronization, both critical for motor development, as they help children understand body positioning and movement timing (Chatzopoulos et al., 2019). Structured dance programs, such as hip-hop, have also shown significant improvements in motor competence and physical activity levels in preschool children (Mercê et al., 2025). Beyond motor skills, dance education supports cognitive development,

emotional regulation, and social skills, providing holistic stimulation during early development (Faber, 2017; Yetti, 2018).

In addition to short-term benefits, creative dance exercises yield long-term effects on motor creativity and prosocial behavior, although these benefits require sustained practice (Vasilopoulos & Dumontheil, 2025). Creative activities also show significant correlations with motor learning, where participation in creative movement promotes better acquisition, consolidation, and retention of skills (Ghanamah, 2024). Creative dance has also been proven feasible and beneficial for children with developmental disorders, improving balance and active participation in physical activities (Kempner et al., 2024). These findings underscore the importance of integrating creative movement into early childhood education to optimize motor development.

Gross motor skills are essential for overall child development because they enable control of large muscle groups, coordination, and balance, forming the foundation for daily activities and future physical abilities (Badriyah et al., 2020). These skills also support cognitive development, such as spatial awareness, problem-solving, and attention during movement-based activities (Vagnetti et al., 2025). Structured physical activities, including gymnastics, sports, and traditional games, provide systematic opportunities for children to develop muscular strength, endurance, and motor coordination while enhancing motivation and engagement (Adi et al., 2022). Furthermore, multilateral activity models, which involve sequential variations of movement patterns, allow children to practice multiple motor skills in dynamic contexts, thereby improving overall motor proficiency (Tortella et al., 2016). Regular participation in such activities provides both physical and psychosocial benefits, such as increased self-confidence, teamwork skills, and resilience, supporting mastery of complex movements. Thus, integrating structured and multilateral activities into early childhood programs is crucial for optimizing gross motor development.

Creative movement, particularly dance, has been recognized as an effective way to enhance children's gross motor skills. Dance combines music, rhythm, and coordinated body movements, enabling children to explore spatial awareness, balance, and locomotor skills in enjoyable and engaging ways (Su et al., 2025). Traditional games and team-based activities also play a significant role by promoting physical activity through challenges that require running, jumping, and other gross motor movements (Rombot, 2017). Multilateral activity models that integrate diverse movement patterns further strengthen children's strength, agility, and coordination (Lengkana et al., 2025). Additionally, integrating technology, such as gamified applications and virtual reality platforms, creates interactive environments where children can practice motor skills through engaging, stimulating experiences, thereby enhancing both motivation and skill retention (Machay et al., 2026). Overall, combining creative dance, traditional games, multilateral training, and modern technology forms a comprehensive strategy to support gross motor development in early childhood, while simultaneously stimulating cognitive and emotional growth through varied and engaging experiences (Fakhrurozi et al., 2024).

D. CONCLUSION

Creative dance based on identity elements has been proven to have a highly significant effect on the motor development of children at Semayang Ni Ine Bintang early childhood education. This creative dance activity not only emphasizes physical movement but also

integrates cultural and local identity elements, allowing children to express themselves while training their body coordination. Through structured and repetitive learning processes, children show improvements in controlling body movements, maintaining balance, coordinating hands and feet, and synchronizing movements with musical rhythm.

The analysis results indicate a clear difference between children's conditions before and after participating in the creative dance activities. These changes confirm that identity-based creative dance effectively stimulates both fine and gross motor development in children. In other words, creative dance serves not merely as a form of entertainment or artistic expression but as an educational medium that supports holistic physical and motor development. The activity encourages children to move actively, enhances body awareness, and fosters self-confidence in expressing their creativity. Creative dance based on identity elements positively impacts children's motor skills by improving coordination, balance, and body control. Additionally, it promotes creativity, self-confidence, and awareness of cultural identity, thereby supporting children's overall physical and emotional growth.

E. DECLARATION OF AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author utilized ChatGPT for translation support and QuillBot for stylistic refinement, solely to improve linguistic clarity and readability. Following a meticulous, sentence-by-sentence review process that corrects ambiguous expressions and cross-checks the final text against original sources, the author affirms that the work remains original and accurate. Crucially, the author retained complete control over all scientific and interpretive decisions. Consequently, the author assumes full and exclusive responsibility for every aspect of the intellectual content, including core arguments, result interpretations, and any remaining errors or omissions, regardless of their significance. This approach ensures transparency in AI-assisted writing while fully upholding authorial integrity.

F. ACKNOWLEDGMENT

The authors express sincere gratitude to all parties who supported this research. The findings demonstrate that implementing identity-based creative dance significantly enhances children's motor skills at TK Semayang Ni Ine Bintang. The activities not only improve coordination, balance, and body control but also foster creativity and self-confidence in children. The study's positive outcomes highlight the importance of integrating the arts and culture into early childhood motor skill education. It is hoped that these findings will serve as a reference for teachers, parents, and other researchers in developing creative and beneficial learning methods to support children's development.

G. AUTHOR CONTRIBUTIONS

Author 1 : Developed the theoretical framework on creative dance and its impact on children's motor development, designed the research methodology and data collection methods, analyzed pre-test and post-test results, and drafted the manuscript linking findings to practical applications in early childhood education.

Author 2 : Developed valid and reliable motor assessment instruments for kindergarten children, implemented the creative dance activities and monitored children's responses, and interpreted the results within the context of physical development, creativity, and children's self-confidence.

H. LITERATURE

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