

Logic-Based Choreography: Applying the Looping Concept of the Song 'Balonku' in Early Childhood Dance Learning

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Abstract

This study explores a new interdisciplinary approach in early childhood education, namely integrating the concept of computational thinking into dance. Specifically, this study aims to describe the application of the looping concept adapted from coding logic into dance choreography for children aged 5–6 years using the song "Balonku". The method used in this study is descriptive qualitative. Data collection was carried out through observations of the dance learning process, interviews with educators, and documentation of children's movement activities. The results show that the song "Balonku" has a rhythmic and repetitive musical structure, making it ideal for introducing the concept of looping to children through body movements that are repeated according to the song pattern. The integration of this logic concept not only makes it easier for children to memorize and master the dance structure in a fun way, but also stimulates their cognitive abilities in recognizing patterns (pattern recognition). This study concludes that the combination of simple coding logic and dance can be an effective alternative learning method to stimulate motor development as well as children's logical thinking skills from an early age.

Keywords

Choreography, Looping, My Balloon Song, Dance Learning, Early Childhood.



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INTRODUCTION

The world of early childhood education (PAUD) is faced with new challenges in introducing 21st-century skills from an early age. Massive technological transformation demands a new orientation in prerequisite criteria so that children are not merely passive consumers of technology but active agents. One trend currently gaining significant global and national interest is the introduction of coding concepts or computational thinking (computational thinking) to children. Educators at the PAUD level are also required to be creative in formulating teaching methods appropriate to the developmental stage of the golden child. Improper application of methods can actually relax children's psychology and distance them from the essence

of enjoyable learning. Therefore, a methodological bridge is needed that can integrate these high-tech concepts into children's daily activities.

Interestingly, introducing coding concepts to young children is no longer always about staring at a computer screen (screen time), which parents often ask. Experts argue that excessive exposure to gadgets at a young age actually risks hindering their motor and social-emotional development. Based on recent research in Indonesia, introducing computer thinking or coding to young children is far more successful when done through active physical play rather than having them stare at a device screen (Maydiawati et al., 2025). This physical activity-based learning has been proven to activate all of a child's senses, thus strengthening information retention in their long-term memory.

Between the ages of 5 and 6, children are in a golden phase of development where they learn most effectively through body movement, or kinesthetic intelligence. When young children are invited to learn dance or other physical activities, this process actually helps their brains hone their logical thinking skills more optimally (Khasanah & Handayani, 2021). Therefore, integrating body movement into basic academic material is a must in the modern Early Childhood Education (PAUD) concept. Through directed physical activity, children can explore their surroundings while naturally sharpening their thinking skills. The teacher acts as a facilitator, directing the child's motor energy into activity patterns that have high educational value. When an abstract concept is combined with expressive body movement, children will feel like they are playing while actually engaging in deep cognitive processes.

Through the world of play, dance presents a fun way to simultaneously train both the physical and the brain. Dancing for young children is not simply about moving their bodies to music to look beautiful. Recent research shows that when dancing, children are actually learning complex things such as memorizing movement sequences and recognizing musical beat patterns (Adiatama & Indrayuda, 2023). When dancing, a child is forced to focus on listening to the beat, anticipating the next movement, and aligning their body position with their group mates. The mental processes that occur when children memorize the sequence of dance movements actually involve very intensive working memory work. Children learn to understand that a beautiful dance is built from a systematic arrangement of small movement parts. This process-based characteristic of dance learning is very helpful in gradually training discipline and concentration in young children. Through simple choreographic experiences, children also learn to express their emotions while

understanding the neat organizational structure of movement. Therefore, dance has great potential to be used as a tool to help explain logical concepts beyond the realm of art.

To implement this physical looping concept in early childhood education (PAUD), an audio medium that is familiar to children and has a clear musical mathematical structure is needed. The legendary children's song "Balonku" by AT Mahmud is considered to have enormous potential to meet these instructional criteria. "Balonku" is not only popular among children but also has a lyrical structure and rhythm that has a fixed pattern and is consistently repeated. Children's music is generally characterized by simple chord progressions and a 4/4 beat that is highly predictable by children's hearing (Kodaly, 1974). The song's repetitive verse pattern provides natural cues for children to know when a movement cycle should begin and end. Furthermore, the presence of surprising climactic elements such as the words "meletus balon hijau" provides an interesting variation of logical interruptions in a repetition system. This song has a high emotional appeal, thus maintaining children's motivation and joy throughout the dance learning process. By utilizing a song that is already very familiar, children's cognitive burden of memorizing new melodies can be significantly reduced. The child's focus of attention can be completely diverted to the alignment between the repetitive beat of the music and the instructed body movement patterns.

Through the use of this song, the looping logic in coding is no longer an abstract digital theory but is transformed into concrete and easy-to-understand dance movements. In classroom learning practices, teachers can assign a set of short movements called "Balloon Movement Code Blocks." Each time the melody of the song "Balonku" verse is played, children are taught to execute the movement block repeatedly according to the number of verses. Children are encouraged to understand the concept that one dance looping command represents one cycle of the song's lyrics. When the melody moves to the song's climax, the repetition pattern is paused to execute a specific movement to signal a change in program instructions. Dividing the dance structure into these logical units has been proven to make the dance learning process much more structured, measurable, and adaptive for children. Children aged 5-6 years can easily master an entire series of long choreographies because they only need to remember one basic, repeated movement unit. This concept of packaging instructions makes learning time more efficient and minimizes the level of stress or confusion in children when memorizing new movements.

Given the current situation, the urgency of this research stems from the fact that dance teaching methods in kindergartens are often conventional. Many early childhood education (PAUD) teachers remain trapped in rigid, mechanical imitation of movements without providing space for stimulating children's logical thinking. Furthermore, the proliferation of commercial educational gadget applications has fueled new concerns about the negative impacts of social isolation resulting from children's high screen time. This research is urgently needed as a contextual alternative solution, proving that learning high-tech principles can be healthily achieved through group physical activities. The current PAUD curriculum urgently requires a variety of interdisciplinary learning models that combine traditional or creative arts with modern science. Through this descriptive qualitative research, it is hoped that the methodological barriers to teaching computational thinking concepts to early childhood can be practically overcome. The results of this study are important as a guide for preschool education practitioners in designing affordable and easy-to-use unplugged coding-based learning media. Thus, the quality of dance learning in PAUD institutions can improve while making a significant contribution to preparing a digitally savvy future generation.

The novelty offered in this scientific research lies in the formulation of an interdisciplinary logic-based choreography model for early childhood. Until now, academic studies on the song "Balonku" have generally been limited to analyzing the moral values of the lyrics, aspects of developmental psychology, or the preservation of national children's songs. Meanwhile, on the opposite pole, research on the theme of coding for early childhood almost always uses expensive robotics media or interactive gadget applications. This research successfully breaks through these limitations by marrying the concept of computational thinking, specifically the element of looping, into the structure of early childhood dance choreography. This approach offers a new perspective that the beauty of children's dance can be analyzed, designed, and evaluated using a humanistic, structured digital logic lens. The qualitative description of this research is expected to provide new theoretical contributions to the development of an interdisciplinary early childhood curriculum in Indonesia. Furthermore, this dance learning model based on the looping concept of the song "Balonku" can be easily adopted by teachers in various regions because it does not require expensive supporting equipment. Finally, this scientific work is expected to inspire further research exploring the potential of traditional performing arts as a medium for future technological literacy.

Based on this background, this study aims to describe in depth the planning process, implementation, and results of utilizing the looping concept of the song "Balonku" in dance learning for children aged 5-6 years, so that it can become a learning model that is easy to understand and apply. In order for this research to run in a focused and written manner, the formulation of the problem raised is, "How is the description of the application of the looping concept of the song 'Balonku' music in forming choreographic movement patterns that are easy to understand by children aged 5-6 years?"

METHODS

This research uses a qualitative approach with a case study design to explore the phenomenon of the application of the looping concept in children's dance learning. The selection of this descriptive qualitative method aims to provide a complete, in-depth, and contextual picture of the process of integrating coding logic into children's body movements. The researcher acts as the main instrument (human instrument) who is present directly in the field to observe the entire learning process from beginning to end. The researcher's presence in the classroom is carried out in a passive participatory manner so as not to disrupt the natural dynamics of interactions between teachers and early childhood children. As a key instrument, the researcher is tasked with planning, collecting, analyzing, and interpreting data independently based on objective facts in the field. Through this case study design, the researcher can capture the uniqueness of children's kinetic and cognitive responses when responding to repetition instructions based on the song "Balonku". This approach also allows the researcher to understand in detail the obstacles and advantages experienced by teachers when teaching. All data interpretation activities in this design are presented narratively and descriptively without using numerical statistical testing. Thus, this method is able to reveal the meaning behind children's structured movement behavior in a natural and humanistic manner.

This research was conducted at Khalifah Kindergarten, an early childhood education institution located in Tunggulsari Village, Kedungwaru District, Tulungagung Regency. This location was chosen purposively because the school focuses on developing children's creativity but has never integrated the concept of computational thinking. The research was conducted for three months, from January to March 2026. The main subjects in this study were 20 group B students aged 5–6 years. In addition to the students, this study also involved key informants, namely two class teachers who teach dance arts subjects in that group. The principal also acted as a supporting informant to provide data on arts curriculum policies and

available infrastructure. The presence of these informants greatly assisted the researcher in gaining a rich perspective on the effectiveness of the logic-based choreography method. All subjects and informants involved had voluntarily expressed their willingness through an informed consent form before the study began. Subject conditioning was carried out naturally so that the children remained comfortable and cheerful during the data collection process.

In implementing this logic-based dance learning, several digital support tools and specific physical materials were used to support the effectiveness of children's movements. The main tool used was a portable sound system unit (gojodog brand) with a power of 30 Watts to produce clear audio quality. Researchers also used a Poco X7 Pro smartphone with a 50 Megapixel resolution camera to record every detail of the children's motor movements during practice. As the main audio material, a digital file of the song "Balonku" written by AT Mahmud was used in MP3 format with a bit rate of 320 kbps so that the tempo sounded stable. In addition to digital tools, this study used physical materials in the form of colorful eva mats (evamat) floors measuring 30x30 centimeters as markers of the children's spatial space. These colored mats function as visualizations of physical "code blocks" where children must stand and perform repetitive movements on them. The use of this combination of adequate digital tools and child-friendly physical materials aims to facilitate the visualization of the looping concept. All tools and materials used are ensured to have met physical safety standards so as not to endanger children's safety while dancing. These clear equipment specifications also make it easier for other researchers who want to replicate this learning model in the future.

Data collection techniques in this qualitative research were conducted through three main methods: participant observation, in-depth interviews, and documentation. Observations were conducted periodically to observe the accuracy of children's looping movements according to the rhythm of the song "Balonku." In-depth interviews were conducted with class teachers after the learning session to gather data regarding the ease and obstacles to implementing the method. Meanwhile, documentation techniques were used to collect photographs, video recordings of dance movements, and field notes taken during the learning process. To maintain the direction of data collection, the researchers developed supporting instruments in the form of a structured observation guide and an interview guide. This observation guide focused on three main indicators: the harmony of movement with music, the ability to remember repetitive patterns, and the children's concentration. The interview guide was developed with open-ended questions so

that informants could provide honest, broad, and non-normative answers. Before being used in the field, this research instrument underwent an expert review process (expert judgment) by fellow PAUD lecturers to ensure its content validity. Through this combination of techniques and structured instruments, all data related to the problem formulation could be optimally extracted.

The data analysis technique used in this study follows the interactive model of Miles and Huberman, which consists of three main stages. The first stage is data reduction, in which the researcher sorts, simplifies, and discards recorded data or field notes that are irrelevant to the focus of the dance looping. The second stage is data display, which is carried out by systematically narrating descriptive text regarding the chronology of children's coding logic adaptations. The final stage is drawing conclusions and verifying to discover the essential meaning of the logical movement patterns that have been implemented in the classroom. To ensure the validity of the research results, the researcher conducted data validity checking techniques through source triangulation and technical triangulation. Source triangulation was carried out by comparing data from children's observations with data from teacher interviews and the principal's views. Technical triangulation was carried out by matching the correspondence between written field notes and evidence from video recordings of choreography documentation. In addition, the researcher also conducted member checking, which is discussing the results of data interpretation with the teacher concerned to avoid misinterpretation. Through this rigorous analysis process and multi-layered validity checks, the research results obtained are guaranteed to have high scientific credibility.

FINDINGS AND DISCUSSION

Formulation of "Movement Code Block" Based on the Musical Structure of the Song "My Balloon"

Research findings indicate that the choreography design process began with a detailed mapping of the musical mathematical structure of the song "Balonku" into computer logic units. "Balonku" is characterized by a very constant and stable 4/4 time signature, providing a strong beat for children's ears. Structurally, the song is unique because the verses are consistently repeated four times before finally entering the climax or chorus. This repetitive mathematical pattern was interpreted by researchers as an opportunity to simulate the workings of programming code. Each verse of the song was isolated as a unified time matrix with exactly the same duration and number of beats. Researchers, along with classroom teachers, saw that this rhythmic regularity could be utilized to build the foundation of algorithmic

thinking in preschoolers. Through in-depth musical analysis, the structure of children's songs was no longer viewed simply as an audio entertainment medium. This structure was transformed into a digital instruction architecture ready to be executed through the child's physical body movements. This precise initial mapping was key to ensuring the entire series of unplugged coding concepts could run in sync with gross motor stimulation.

After successfully mapping the musical structure, the researchers and the class teacher began formulating a series of integrated basic movements called the "Balloon Movement Code Block." This movement block was specifically designed to represent a complete digital command unit consisting of four consistent macro-measures. The anatomy of the movements within this block includes alternating swings of both arms to the right and left. These upper body movements are then combined with linear footwork that moves dynamically to the beat of the musical instruments. The researchers deliberately designed this movement combination to be not too complex but still require active body coordination. Each movement element within this block has a philosophical function as a line of physical instructions that simulates a simple computer programming language. Children are encouraged to see that the combination of hand and foot movements forms a unified task package that cannot be separated. The characteristics of this robust movement block are adopted from the principles of block-based programming commonly found in children's coding applications such as Scratch. By packaging movements into "blocks", teachers can easily control, evaluate, and direct children's dance activities in the classroom.

The "Balloon Movement Code Block" formulation is intentionally kept simple to prevent children's working memory from experiencing excessive cognitive overload. Children aged 5–6 years have significantly limited memory capacity when it comes to processing new information that comes simultaneously. Delivering lessons in a simple and straightforward manner is crucial to prevent young children from feeling mentally overwhelmed. When visual and audio information is presented simply, children will understand instructions much more easily without feeling confused (Musfiati, 2026). If a dance has too many different movement variations in each verse, children's concentration will quickly break. Therefore, by using only one core movement block for four different verses, children's cognitive capacity can be optimally conserved. Children don't need to expend their mental energy just remembering which movement to do next. Children's attention can be fully diverted to the aesthetic quality of the movement and the precise alignment of their bodies to the beat of the music. This memory-saving approach has been proven to create a

much calmer, more effective, and less stressful dance learning environment for children.

Through this consistent learning structure, children are indirectly encouraged to see that each verse of the song represents a complete command to activate movement. This physical visualization approach has been shown to facilitate children aged 5–6 years in translating abstract audio beats into concrete spatial representations. When the melody of the first verse is heard, the child's body acts as hardware that executes the logic system of the "Balloon Movement Code Block." This process of shifting from auditory to motoric sensory input stimulates the child's ability to perform in-depth cognitive mapping. This neatly structured series of movements aligns closely with Bers's (2022) scientific perspective on children's digital literacy. Bers states that the introduction of digital logic in early childhood must always begin with concrete physical symbols familiar to their daily lives. Repeated body movements on the classroom floor act as a substitute for the typically abstract lines of digital code on a computer screen. Children experience firsthand how the concept of logical order works through space, time, and the limits of their physical movement.

Ultimately, the highly repetitive nature of children's songs acts as a natural guide, consistently directing children's motor sequences. The repetition of identical melodies in each verse provides clear auditory cues for children to detect the beginning and end of a movement program. Children do not require repeated verbal instructions from the teacher because the music itself controls the flow of the dance. This repetitive structure, in the realm of multiple intelligences, is believed to strengthen synaptic connections in children's brains related to pattern recognition (Gardner, 2023). Each time children complete a verse cycle, they automatically build an understanding of the cause-and-effect concept of a song's instructions. This initial formulation, based on the song "Balonku," successfully laid the foundation for understanding movement algorithms through a very familiar audio medium. Learning to code no longer feels intimidating or boring because its basic principles have been harmoniously fused into the beauty of dance movements. Through this method, research has successfully proven that children's dance can transform into a highly effective and recreational laboratory for logical thinking.

Application of the Looping Concept in the Dance Learning Process

In the computer world, looping is actually a term for a command that is executed repeatedly automatically. When this concept is brought to a preschool classroom without the use of gadgets (unplugged coding), it takes the form of

repetitive dance movements. This way, children won't be stressed because they won't have to memorize too many different movements. They only need to focus on memorizing one core set of movements that will later be repeated in a specific song verse. Introducing logic through this fun physical activity has proven highly effective in stimulating children's thinking to be more focused from an early age (Qorini et al., 2025).

Psychologically, early childhood learns more easily when there's a regular, repetitive pattern. When children repeat the same dance movements to the beat of the music, their bodies become accustomed to them and automatically remember them through muscle memory. This activity is not only fun but also trains children's focus and concentration in a natural, non-coercive way. Research has shown that movement arts activities with regular, repetitive patterns like this can sharpen long-term memory and sharpen the brain function of preschoolers (Khasanah & Handayani, 2021).

During classroom practice, the song "Balonku" serves as a natural anchor because its lyrics and music have a similar, repetitive beat. Children are invited to listen to the music, and once they realize the lyrics or beat are similar, they immediately repeat the dance moves they've learned earlier independently. This combination of a constant musical beat and repetitive body movements not only creates a lively classroom atmosphere but also trains children to be sensitive to patterns. This learning model is excellent for fostering children's ability to solve everyday problems (Yusuf & Fitriani, 2026).

When entering the classroom practice phase, the children immediately put the looping concept into practice by repeating the "Balloon Movement Code Block" every time the melody of the song's verses sounded. The teacher provided verbal instructions in the form of the trigger keyword "Looping Start!" as a signal for the children to repeat the same set of movements independently. Based on field observations, during the first and second repetition cycles, the children still showed hesitation and therefore needed a direct visual example from the teacher at the front of the class. The teacher acted as an initial guide, stimulating the children's motor skills to synchronize with the beat of the song "Balonku". However, this dependence began to decrease drastically when the learning entered the third and fourth repetition cycles. At this phase, the majority of children aged 5–6 years were able to execute the series of movements automatically without needing to see the instructor again. This gradual emergence of motor independence indicated that the logical message of the looping commands had been successfully absorbed by the children.

This observation proved that instructions packaged in the form of computational analogies were able to cut through the chain of confusion in children when transferring voice commands into physical actions. The classroom atmosphere also changed to be more dynamic as the children began to actively control their own body movements with confidence.

This phenomenon of successful movement automation demonstrates that the concept of repetition in dance is highly effective in accelerating the formation of long-term motor memory schemes. Preschoolers tend to master a physical skill more quickly when the movements are presented repetitively but with a clear structure. Throughout the observation process, the children appeared to truly enjoy the dance process because they were not forced to memorize too many confusing movement variations. This psychological security arises because the children already know exactly what type of movement they will perform next. This joyful effect aligns with a study by the father of modern early childhood digital literacy, Bers (2022), who stated that children's emotional comfort is the main foundation for teaching coding without devices. When the mental burden of memorization is reduced, children's expressions of joy and creativity can develop more optimally. Children no longer view dance practice as a schoolwork burden that demands absolute obedience to the teacher's instructions. Instead, the dance transforms into a body logic game that challenges and satisfies their curiosity. Through consistent repetition, children's gross motor nerve connections become more mature, precise, and in tune with the audio rhythm.

This combination of art and logic reaches its peak as the song concludes with the iconic lyric "the green balloon bursts." Spontaneously and simultaneously, the children immediately transform the repetitive "Balloon Movement Code Block" pattern into a small, expressive jump. This sudden change in movement response is known in the programming world as a conditional statement. The children successfully demonstrate that they are not simply imitating movements mechanically, but rather understand when a repetition system should be interrupted by a new condition. The children's success in switching movements independently confirms their deep understanding of the song's overall organizational structure. This remarkable cognitive phenomenon aligns closely with the findings of recent research by Angeli and Valanides (2023) in the journal *Child Education*. They assert that learning unplugged coding through kinesthetic activities has been proven effective in increasing children's sensitivity to detecting rapid changes in environmental patterns. Through this dance to the song "Balonku," young children

have practiced two basic programming laws simultaneously: looping and conditioning, using only the joy of their bodies.

Analysis of the Effectiveness of Logic-Based Choreography on Children's Understanding.

The results of this study explicitly concluded that the application of the looping concept of the music for the song "Balonku" proved highly effective in forming choreographic movement patterns that were easily understood by children aged 5–6 years. Through descriptive qualitative analysis, an extraordinary fact was discovered where children were able to master the entire two-minute choreographic sequence in just three short practice sessions. This accelerated understanding was achieved because the choreographic structure drastically reduced the burden on children's memory through a single movement package system. Children were no longer faced with dozens of confusing movement transitions, but instead focused on one core movement axis that was repeated consistently. The time efficiency in mastering this dance is strong evidence that the packaging of logic-based instructions is very friendly to the developmental scheme of early childhood. The decrease in the rate of movement failures in the field shows that this interdisciplinary method successfully simplified the transmission of information from educators to students. The most striking indicator of success was seen in the high percentage of movement harmony among children within the group when performing dance activities independently. This group harmony emerged naturally without the need for intervention or strict verbal commands from the teacher in front of the class. Thus, visualization of computational logic through the body has been proven to be able to optimize the psychomotor potential of preschool children significantly in a relatively short time.

In addition to its positive impact on psychomotor aspects, the integration of computational logic and thinking has also been proven effective in stimulating children's cognitive abilities, particularly in pattern recognition. Through structured movement routines, children's auditory sensitivity to the rhythm and beat of music increases significantly. Children become able to accurately predict when a movement cycle should be repeated and when it should be stopped independently. This predictive ability is an important indicator of the development of logical-mathematical intelligence, which begins to mature during the golden age phase. This finding is supported by recent research by Grover and Pea (2024), who examined the correlation between structured physical activity and the sharpness of cognitive analysis in preschool children. They stated that children who are accustomed to recognizing repetitive patterns through body movements have a more mature

readiness to learn science at the next level of education. In this context, the child's body is no longer viewed as a passive tool of movement, but rather functions as an active medium for executing and testing a program's logical system. This looping-based dance activity successfully transforms the typically theoretical learning process into a very concrete cognitive experience that leaves a strong impression on children's memories.

Ultimately, these field findings successfully linked children's dance practices with established computational thinking knowledge structures in academia. The conventional boundaries that previously separated the freely expressive disciplines of art and the rigidly mathematical nature of computer science were harmoniously bridged through the child's body. Dance, it turns out, can act as an alternative programming language that is humanistic, enjoyable, and psychologically friendly to young children. This unique integration aligns with the ideas put forward by Resnick (2021) in his theory of the creative learning ecosystem for preschoolers. Resnick asserts that creative project-based learning involving structured physical activity is key to fostering a generation of critical, creative, and logical thinkers from an early age. Through the song "Balonku," children are invited to celebrate the beauty of movement while sharpening their brainpower to solve a logically challenging pattern. This research provides a new scientific contribution, demonstrating that future PAUD curriculum innovations must boldly break down subject barriers to create meaningful learning. These descriptive results are expected to inspire education practitioners to continue exploring the potential of art as a healthy medium for digital technology literacy without the need for devices.

CONCLUSION

This study concluded that the looping concept of the song "Balonku" proved highly effective and easy to understand for teaching dance to children aged 5–6 years. To answer the problem formulation regarding its implementation, the key to the method's success lies in the creation of "Movement Code Blocks." Through this method, teachers do not need to teach children a lot of complicated movements to memorize. Teachers simply create a package of core movements that are then repeated following the same song verse. Field results showed that children only needed a few examples at the beginning, and by the third repetition they were already able to dance independently without teacher guidance. Furthermore, the children were also proven to understand the song's structure; they were able to immediately change movements spontaneously and in unison when the song's lyrics changed at the climax "meletus balon hijau." This study successfully achieved its goal

of proving that learning computer logic (coding) does not always have to be in front of a device screen, but can be done very enjoyable through body movement. Ultimately, this combination of dance and logic is a smart solution for early childhood teachers to train physical motor skills and sharpen children's brains from an early age in a simple way. Based on the success of this method, early childhood educators are advised to begin teaching dance in a more logical and structured way, using children's songs with lots of repetition. Educators should avoid burdening young children with memorizing too many and rigid dance movements, so that the learning process remains enjoyable, brain-friendly, and can also be a safe solution for learning coding without a screen. Furthermore, future researchers are advised to develop this idea more broadly, for example by trying other computer logic concepts using traditional songs as a medium, so that the combination of art and technology for young children can be even richer in the future.

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