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Developing a Movement-and-Song Video to Stimulate the Gross Motor Skills of Children Aged 4–5 Years

[1]Nurhalimah*, [2]Nasrul Umam, [3]Mei Khomsatun Nikmah
[1,2,3]Department of Early Childhood Islamic Education, Universitas Nahdlatul Ulama Al Ghazali Cilacap, Indonesia
Email: nurhalimah0688@gmail.com[1]; nasrulumam@unugha.id[2]; meikhomsatunnikmah@gmail.com[3]

ABSTRACT

Background: Gross motor skills underpin young children's daily activities, yet gross motor learning in many early childhood settings remains monotonous and lacks engaging media.

Methods: Using the ADDIE research and development model at PAUD Asy-Syifa Bajing Kulon, Cilacap, a movement-and-song video was developed, validated by experts, and trialled with teachers and ten children aged 4–5 years.

Results: The video (opening, warm-up, core activity, cool-down) was rated very feasible by the material (84.3%) and media experts (88.3%) and very practical by teachers (92.8%) and in children's responses (95%).

Novelty: The study offers a locally developed, theory-informed video that uses on-screen modelling as scaffolding and documents each ADDIE stage, so teachers can adapt it for routine gross motor learning.

Conclusion: The video is a feasible and practical alternative medium; its effectiveness should be tested in controlled studies.

KEYWORDS

movement and song; learning video; gross motor skills; ADDIE; early childhood.

Introduction

Early childhood is often described as a golden age because the brain develops rapidly and children require appropriate stimulation to optimise cognitive, linguistic, social-emotional, and physical-motor development (Dewi, Asril, and Handayani 2021). Indonesia's national education system aims to develop learners who are healthy, knowledgeable, capable, creative, and independent (Republik Indonesia 2003), and early childhood education must therefore provide learning experiences that stimulate all developmental domains, including physical-motor development as the basis of children's everyday activities.

Motor development refers to the child's ability to control body movements by coordinating the nervous, muscular, and skeletal systems. Motor ability provides the biological basis for systematic movement and develops with age and learning experience (Gallahue, Ozmun, and Goodway 2012; Samsudin 2008; Sumantri 2005). Gross motor skills involve the large muscles of the legs, arms, and trunk in activities such as running, jumping, kicking, and maintaining balance; they support not only physical activity but also children's confidence and social competence (Sujiono 2013). Young children therefore need deliberate and appropriate stimulation for their gross motor skills to develop optimally.

Contact Corresponding Author: *Nurhalimah: nurhalimah0688@gmail.com Department of Early Childhood Islamic Education, Universitas Nahdlatul Ulama Al Ghazali Cilacap, Indonesia

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Movement and song is a promising approach. Combining music and movement encourages children to move actively to an easy rhythm, and developmentally appropriate music-and-movement programmes have significantly improved young children's motor performance (Zachopoulou, Tsapakidou, and Derri 2004). In Indonesia, movement-and-song media have been shown to be enjoyable and effective in early childhood settings (Yusanti 2019; Dewi, Asril, and Handayani 2021). Video is particularly suitable because it presents visual, audio, and movement elements simultaneously, attracting children's attention and making content easier to understand (Mayar 2022), and it can be replayed so that children master the material gradually (Movitaria 2020). From a Vygotskian perspective, a video model can act as scaffolding within the zone of proximal development, providing examples that children imitate and practise step by step (Vygotsky 1978).

Observation at PAUD Asy-Syifa Bajing Kulon from 15 October to 16 November 2024 showed that some children still had difficulty with gross motor activities such as running, tiptoeing, and turning. Gross motor learning was conducted conventionally through exercise and games without supporting media, and the activities were often monotonous, so children lost interest and spent more time in seated activities such as worksheets. A medium that increases children's engagement in physical activity was therefore needed.

This study aimed to (1) develop a movement-and-song video for stimulating the gross motor skills of children aged 4–5 years and (2) determine its feasibility and practicality. The study contributes a locally developed, theory-informed learning video and documents its development process so that teachers and researchers can adapt it.

Methods

Research Design

This study employed a research and development design (Sugiyono 2019) using the ADDIE model, which consists of analysis, design, development, implementation, and evaluation (Branch 2009). ADDIE was chosen because it offers a systematic framework for developing and refining instructional products, and product quality was judged by its validity, feasibility, and practicality (Nieveen 1999). The activities carried out at each stage are summarised in Figure 1.

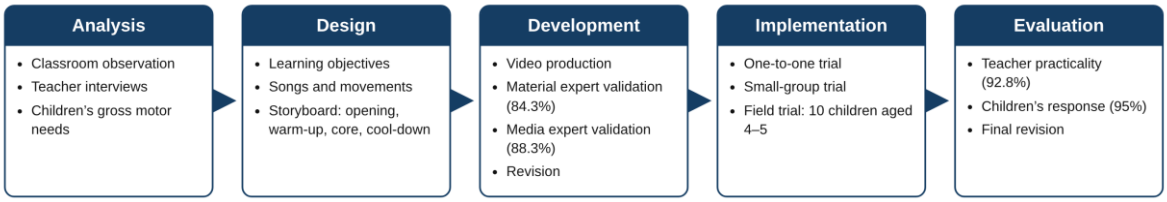


Figure 1. Development procedure based on the ADDIE model

Setting and Participants

The study was conducted at PAUD Asy-Syifa Bajing Kulon, Kroya District, Cilacap Regency, Central Java, from 15 October to 16 November 2024. Participants were the class teachers and all ten children aged 4–5 years at the institution. The implementation stage examined how teachers and children used the product in real learning situations (Richey and Klein 2007). The product was validated by a material expert and a media expert before being trialled.

Instruments and Data Analysis

Data were collected through observation, teacher interviews, expert validation questionnaires (material and media), practicality questionnaires for teachers, and observation of children's responses during the trials. All questionnaire items used a four-point Likert scale. Scores were converted into

percentages using the formula P = (Σ obtained score / Σ maximum score) × 100% and interpreted with the following criteria: 81–100% very feasible or very practical; 61–80% feasible or practical; 41–60% fairly feasible or practical; 21–40% less feasible or practical; and 0–20% not feasible or practical. A product was considered acceptable when it reached at least the feasible or practical category. Qualitative data from observations, interviews, and expert comments were analysed descriptively and used to revise the product.

Results

Analysis

Initial observation showed that gross motor learning relied on exercise and games without supporting media such as videos or interactive music. Teachers reported that children quickly became bored and lost focus when activities lacked music or attractive visuals. Observation and interviews identified three main gross motor problems among children aged 4–5 years, which informed the design decisions summarised in Table 1.

Table 1. Needs analysis findings and corresponding design decisions

Problem identified	Learning need	Design decision
Unbalanced hand–foot coordination	Rhythmic practice of coordinated movements	Movements synchronised with the rhythm of the song
Unstable balance during locomotor movement	Gradual practice of balance and transitions	Warm-up and core movements that train balance during locomotion
Low confidence in imitating exercise movements	Clear, attractive, and repeatable models	Clear on-screen movement model that can be replayed
Monotonous activities and low interest	Engaging audio-visual medium	Video integrating music, visuals, and movement

Design and Development

In the design stage, the learning objectives, songs, and movements were formulated and organised into a storyboard with four segments: opening, warm-up, core activity, and cool-down. The warm-up prepares the body for activity, the core activity presents gross motor movements synchronised with the song to train coordination and balance, and the cool-down closes the session (Figure 2). In the development stage, the video was produced according to the storyboard, validated by the experts for content, movement appropriateness, visual display, and language, and revised based on their feedback.



Figure 2. Stills from the developed video: (a) warm-up, (b) core activity, and (c) cool-down

Feasibility and Practicality

Table 2 and Figure 3 present the evaluation results. The material expert rated the video at 84.3% and the media expert at 88.3%, both in the very feasible category. After implementation through one-to-one, small-group, and field trials, the teachers' practicality rating reached 92.8% and the children's response reached 95%, both in the very practical category. Teachers reported that the video was easy to use and

attractive and helped them deliver gross motor activities in a more structured and enjoyable way. During the trials, children appeared more attentive and active and showed greater courage in following the movements.

Table 2. Results of the feasibility and practicality evaluation

Evaluation component	Aspects assessed	Score	Category
Material expert validation	Content suitability and language	84.3%	Very feasible
Media expert validation	Display and visual quality	88.3%	Very feasible
Teacher practicality	Ease of use and attractiveness	92.8%	Very practical
Children's response	Children's participation and interest	95.0%	Very practical

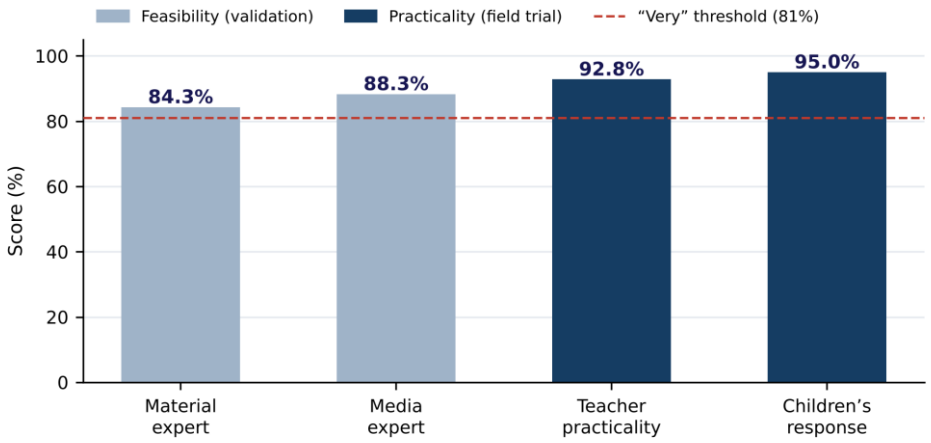


Figure 3. Feasibility and practicality scores of the movement-and-song video

Discussion

The results indicate that the movement-and-song video meets both feasibility and practicality criteria. Its feasibility rests on its alignment with children's needs identified in the analysis stage and on the expert review of content, movements, visuals, and language. Its high practicality can be explained by its multimodal nature: video presents visual, audio, and movement elements simultaneously, which attracts young children's attention and facilitates understanding (Mayar 2022), while the possibility of replaying segments supports gradual mastery (Movitaria 2020). These findings are consistent with Dewi, Asril, and Handayani (2021), who found that a movement-and-song learning video was suitable for stimulating locomotor skills in children aged 5–6 years, and with Yusanti (2019), who reported positive outcomes of movement-and-song media on young children's physical development.

The structure of the video also reflects developmental principles. The sequence from warm-up through core activity to cool-down follows safe physical activity practice and gives children a predictable routine. The on-screen model provides a concrete demonstration that children imitate, acting as scaffolding that teachers can gradually withdraw as children become more independent (Vygotsky 1978). Pairing movements with rhythm supports coordination and balance, consistent with evidence that structured music-and-movement programmes improve motor performance (Zachopoulou, Tsapakidou, and Derri 2004). Moreover, the observed increase in children's attentiveness and courage suggests that the medium addressed the low engagement and confidence identified in the needs analysis.

For practice, teachers can use the video regularly as an alternative to conventional exercise, pausing and replaying segments to give children individual feedback. Institutions should provide basic audio-visual facilities to support such media.

Limitations

This study has several limitations. It assessed feasibility and practicality but did not test effectiveness with a pretest–posttest or comparison-group design, so improvements in children's gross motor skills cannot be attributed to the video. The field trial involved only ten children in one institution, and expert validation relied on one material expert and one media expert. Future research should test the video's effectiveness using quasi-experimental designs with standardised gross motor assessments, larger samples, and a longer intervention period.

Conclusion

This study developed a movement-and-song video for children aged 4–5 years through the ADDIE model. The video, consisting of opening, warm-up, core activity, and cool-down segments, was rated very feasible by the material expert (84.3%) and the media expert (88.3%) and very practical by teachers (92.8%) and in children's responses (95%). The video helps teachers present clear and attractive movement models and appears to increase children's attention, activity, and confidence. It can therefore serve as an alternative learning medium for stimulating gross motor skills in early childhood, while its effectiveness should be established in future controlled studies.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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