

Development of Education Gymnastics Video to Stimulate Children's Motor Skills

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ABSTRACT

This study is motivated by the low motor physical abilities of children due to a lack of engaging and structured learning stimulation. The study aims to develop an educational exercise video media to stimulate children's motor physical abilities in Group B1 at Samporoa Pembina State Kindergarden. The method used is Research and Development (R&D) with the ADDIE model, including the stages analysis, design, development, implementation, and evaluation. The subjects consisted of 15 children. Data collection techniques used were observation, interviews, documentation, and questionnaires. Validation results showed that the media was highly feasible to use with a percentage of 98.75% from media experts and 98.6% from material experts. Implementation results showed an increase in children's motor abilities in the aspects of coordination, balance, and agility. Thus, educational exercise videos are effectively used to stimulate the development of children's early motor physical skills.

Keywords: Educational Video, Educational Exercise, Gross Motor, Early Childhood

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INTRODUCTION

Development is a gradual process that occurs through growth, maturation, and interaction with the environment, leading to increased functional capacity of individuals (Cogan et al., 2026; Jiang et al., 2026; Meriem et al., 2020). In the context of education, development is facilitated through structured learning experiences designed to optimize students' potential, including physical, cognitive, emotional, and social competencies (Antunes et al., 2026; Z. Chen & Chen, 2025; Giuliani et al., 2026; Pramono et al., 2025). One of the most critical stages of human development is early childhood, often referred to as the golden age, during which rapid brain growth and foundational skill formation occur. At this stage, appropriate stimulation is essential to ensure optimal development, particularly in the domain of motor skills.

Motor development, especially gross motor skills, plays a fundamental role in children's physical independence and overall development. Gross motor skills involve large muscle activities such as walking, running, jumping, and balancing, which are closely related to neurological development and environmental stimulation (Hannah et al., 2025; Hao et al., 2025; J. Zhang et al., 2025). However, in the current digital era, children tend to engage in more sedentary activities, resulting in reduced physical movement and insufficient motor stimulation. This condition is further exacerbated by limited teacher innovation and lack of structured physical learning activities, as well as minimal parental attention to children's motor development (Abusleme-Allimant et al., 2023; Amir et al., 2025; Cheung et al., 2023).

Previous studies have attempted to improve children's motor skills through various interventions. For instance, rhythmic gymnastics activities have been proven to enhance coordination and movement skills (Ahdal et al., 2026; Karageorghis et al., 2019; Wen et al., 2023). Similarly, the use of gymnastics videos has shown effectiveness in improving children's motor development (Niaradi et al., 2024; Radanović et al., 2025; Sönmez et al., 2026a; Zhou, 2023). Video-based learning media has also been reported to increase children's engagement and participation in physical activities (Aryanti et al., 2025; Kumar et al., 2026; Manches et al., 2026). In addition, cheerful gymnastics programs contribute to improving children's motivation and physical activity levels (Ambarita & Sunardi, 2023; Andriani et al., 2022), while audiovisual media has been found to enhance learning effectiveness in motor stimulation (Nuernberger et al., 2023; Sumarsono & Anisa, 2019).

However, despite these positive findings, several research gaps remain. First, most previous studies focus primarily on the effectiveness of interventions without employing a systematic instructional design model such as ADDIE. Second, existing video-based learning media often lack integration between pedagogical design, structured movement sequences, and developmental appropriateness. Third, previous studies tend to focus on specific aspects of motor skills rather than providing a comprehensive approach that simultaneously develops coordination, balance, and agility.

These gaps highlight the importance of developing a more structured, systematic, and theory-based learning media that can effectively stimulate children's gross motor skills. Therefore, this study is important as it integrates instructional design principles with motor development strategies to produce a more effective and applicable learning solution in early childhood education. Based on these considerations, the objective of this study is to develop and validate an educational gymnastics video using the ADDIE model to stimulate gross motor skills of children in Group B1 at TK Negeri Pembina Samporoa.

METHOD

This type of research uses development research or Research and Development (R&D). According to (Sugiyono, 2019), "the Research and Development (R&D) research method is a research method used to produce a specific product and test the effectiveness of that product." To produce a specific product, needs analysis research is used, and to test the effectiveness of the product so that it can function according to the needs of the school, research is needed to test the effectiveness of the product so that the final result of this research will produce an educational gymnastics video to stimulate children's physical motor skills. The development model used is the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. Each stage in this model is carried out systematically to produce a learning media product that is feasible and effective for use in the teaching and learning process. The development procedure to be carried out consists of five stages according to (Retno et al., 2025), namely Analyze, Design, Development, Implementation, and Evaluation. The following is an illustration of the implementation of the ADDIE development model, as follows:

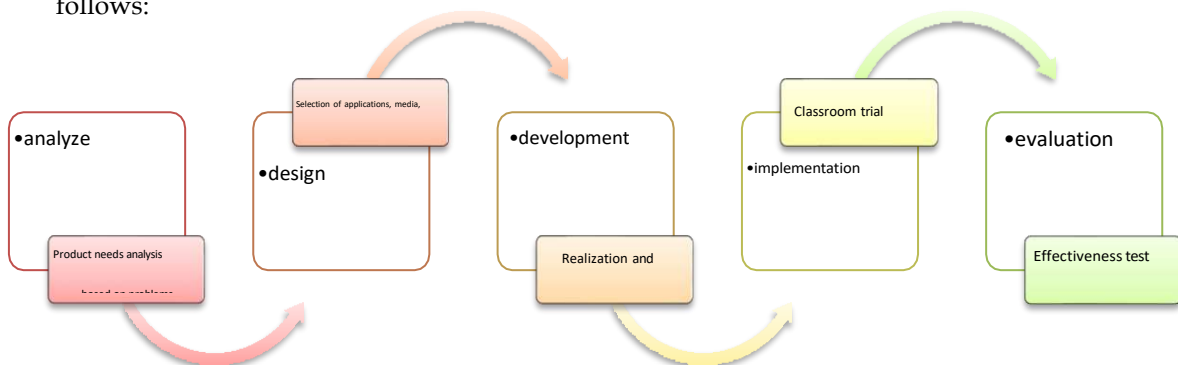


Figure 1. Product Development Stages Adapted from the ADDIE Model

1. The analysis stage begins by gathering information about learning needs during class, related to the needs of children's motor problems. The learning objective to be achieved is to stimulate children's physical motor skills through educational gymnastics videos, and the characteristics of the students are children in group B. The results of this stage's analysis help the author understand the learning needed in the classroom and the challenges faced by the children so that they can enjoy the learning process in a more interesting and entertaining way.
2. Design Stage (Design). After the information is collected, the next step is for the researcher to carry out the design stage regarding the product to be made, such as determining the type of educational gymnastics movements. This stage consists of frameworks before developing the product. In addition, clarification of the designed learning product is needed so that the product can achieve the expected learning objectives, related to stimulating children's physical motor skills.
3. Development Stage (Development),, The development stage involves creating material for learning based on the design that has been previously made. The development stage includes:
 - a. Product creation. This stage is the production stage based on the product design that has been created in the design phase. All components that have been designed and prepared are assembled into a single unified component of the educational exercise video media product.
 - b. Validation. The validation design and media usage trial in this research are carried out through an assessment stage by one media expert (lecturer) and one material expert or academic expert (lecturer). The results of this stage are critiques, suggestions, and comments that can be used as the basis for the first revision of the developed media. The product will be revised based on comments and suggestions from the validators. After the initial revision, the product is resubmitted to the media expert, material expert, and practitioner expert for final validation. Once declared feasible for testing, the next step is to trial the media with users.
4. Implementation Stage, This stage involves testing the educational exercise video media product that will be tested on early childhood children in Group B1 TK Negeri Pembina Samporoa. This stage can be a consideration for whether or not to revise the product so that the product becomes even better. The implementation step is often associated with the implementation of the learning program itself.
5. The evaluation stage is carried out by reviewing the impact of learning with the product that has been developed and the achievement of the product development objectives. This stage is carried out to determine what improvements need to be made to the developed learning media. The evaluation stage also aims to analyze the validity, practicality of the media, and the children's motor skills after using the educational exercise video media developed in the implementation stage.

The subjects of this research are all children in Group B1 TK Negeri Pembina Samporoa. With a total of 15 children, 7 boys and 8 girls. The sample in this study is all children in group B1. The data analysis technique used in this research is descriptive qualitative and quantitative. Qualitative data is obtained from the input of validators during the validation stage, which is used as the basis for improving the educational exercise video in stimulating children's physical motor skills. Quantitative data is obtained from the results of questionnaire assessments regarding the feasibility level of the educational exercise video in stimulating children's physical motor skills. Data collection instruments in this study include observation, interviews, documentation, and questionnaires. Validation is carried out by two validators, namely material validator and media validator, calculated using a percentage formula based on the rating scale: score 1 (not feasible), 2 (less feasible), 3 (feasible), and 4

(very feasible). Validation data analysis is obtained through the calculation of feasibility

$$P = \frac{f}{N} \times 100 \%$$

percentage using the formula:

Description:

P = Percentage of change level

f = Frequency of scores obtained by children

N = Number of children

Table 1. Percentage of Media Feasibility Assessment

AVERAGE SCORE (%)	CATEGORY
0 - 25	Not Feasible
26 - 50	Less Feasible
51 - 75	Feasible
76 - 100	Very Feasible

The developed product is considered feasible for use in learning if it is a product that has an assessment percentage of 51% to 100% or is categorized as Very Feasible or Very Good when applied to users, in this case the early childhood education children being studied

RESULT AND DISCUSSION

Results of the study in developing an educational exercise video to stimulate children's physical motor skills will be described according to the procedures in the ADDIE development model stages (Analyze, Design, Development, Implementation, Evaluation). This research is described based on the steps of the model ADDIE, chosen because it is simple and easy to apply in developing research products. Described in the following stages:

1. Analysis

In the Analyze stage, identification is made of the causes of the problems found in the field, based on surveys and initial observations, the researchers found an interesting phenomenon at TK Negeri Pembina Samporoa where most children in group B1 still show delays in physical and motor abilities. It is evident from the learning process that tends to be monoton and a lack of stimulation for motor development in children, which can reduce children's interest in learning, as well as coordination development disorders and the children's limited ability to perform activities independently. Based on problem findings and needs analysis at the field, there is a need for a more structured and focused approach to stimulate children's physical motor abilities in this kindergarten. The need to stimulate physical motor abilities is very important and should be pursued in various forms of enjoyable activities for children. However, this condition is increasingly aggravated by limitations of facilities and learning media at the kindergarten, which often become obstacles and challenges in providing a variety of optimal play activities for children.

One effective approach in stimulating children's physical motor abilities is through an educational exercise video. The video media is a teaching aid or learning media that uses moving images accompanied by accompanying sound, such as a video or film. Meanwhile, exercise is a form of physical activity performed with regular and systematic body movements, aimed at improving physical fitness, health, and body skills. Educational can be interpreted as anything educational. Everything used for education must contain educational value. The researcher intends to stimulate gross physical and motor skills of children through an educational exercise video. This educational exercise video presents several exercise movements that have educational value and train each body part to be fitter and healthier. Some educational exercise movements to be trained by the author are walking in place, jumping, hands on hips, forward and backward walking, jumping to the left-to the right, arm swings extended forward, upward, and downward. Based on the

background described above, the researcher is interested and challenged to study more deeply the development research problem titled "Development of an Educational Exercise Video in Stimulating Children's Physical Motor Skills in Group" B1 TK Negeri Pembina Samporoa.

2. Design

In the Design stage in this development, it includes drafting the movements of the educational exercise video the drafting of scripts, as well as the preparation of evaluation instruments for the educational exercise video media created. The process of drafting movements and selecting instruments starts with selecting those instruments. The educational exercise video consists of opening, warm-up movements, main movements, and cooling movements. After the movements and instruments of the educational exercise video are arranged, the next step is to draft the script contained in the educational exercise video. Furthermore, the preparation of research instruments at the design stage becomes a hallmark of the ADDIE development method. In addition to designing product needs, the researcher must also design evaluation steps for the developed product. In preparing the research instruments, the instruments are made and adjusted to the product being created and the evaluations conducted to ensure accuracy. The instruments developed include several types, namely media expert instruments and material expert instruments. The instruments that are prepared are developed and consulted with instrument validators. This consultation aims to correct instruments that are not yet suitable, so that finally the instruments are completed and approved by the instrument validator.

3. Development

In the Development stage there are two sequential steps. The first step is the development of a product aimed at producing a product. The second step is evaluation (review) by media experts, in this case, if the media has not yet received a feasible category, revisions are carried out until a score that falls into the feasible (valid) category is achieved. The development of this educational exercise video starts by selecting the instruments used in this educational exercise video. After the instruments are available, then the next step is to compose the exercise movements. These exercise movements are divided into 3 (three) parts, namely warm-up movements, core movements, and cooling movements. After these movements are arranged, the next step is to record an educational exercise video in accordance with the movements previously arranged. After the video recording is completed, it will enter the stage of editing the exercise video into a single unit. Once all components are combined into one, this educational exercise video is ready to enter the next stage. Here is the educational exercise video to stimulate the child's motor physical activity:



a. Cover



d. Cooling Movements



b. Warm-Up Movements

e. Closing



c. Core Movements

Figure 2. Trial of Educational Exercise Video Media

After the educational exercise video is produced, the next stage is assessment (review) is the initial stage of media evaluation; in this stage a media will be tested for feasibility conceptually by a media expert and a material expert to determine the validity of the educational video media. After the questionnaire is validated, the media that has been designed and produced is handed over to the media and material validator experts. Here are the validation results from the media and material experts. Media validation obtained a percentage of 98.75% (highly feasible), while the material expert validation reached 98.6% (highly feasible).

Table 2. Validation Test Data

NO	VALIDATOR	PERCENTAGE	DESCRIPTION
1.	Media Expert	98.75	Highly Feasible
2.	Material Expert	98.6	Highly Feasible

4. Implementation (Implementation)

In the implementation stage, the validated and revised educational exercise video media, then tested directly on children of B1 group at TK Negeri Pembina Samporoa. This stage aims to test the effectiveness of the educational exercise video in stimulating the motor physical abilities of B1 group children through enjoyable and structured exercise activities. Implementation is carried out

gradually to ensure active participation of children, involving class teachers as facilitators, and using a Digital TV for playing the educational exercise video.

- a. First meeting before introducing the educational exercise video, the researcher first introduce themselves and greet the children. The researcher then introduces and explains the educational exercise video that will be tested on children in group B1. Then the researcher shows the educational exercise video using a Digital TV. The educational exercise video is replayed slowly to introduce the movements in the video such as small jumps, arm swings, and simple body twists. Children are invited to imitate the movements while seated first, then stand and line up to foster the children in group B1 to gain confidence.
- b. Second meeting, the researcher replays the educational exercise video that has been introduced at the previous meeting. Children are invited to imitate the movements in a line such as "Walking in place, small jumps, arm swings, and turning the body," to enhance the children's motor physical abilities. The meeting ends with praise to the children of group B1.
- c. Third meeting, the researcher replays the educational exercise video, children are invited to follow the exercise movements shown on the digital TV. The researcher monitors each child's participation, gives instructions, and encourages collaboration among children to build confidence and enthusiasm of children in group B1. The meeting ends with the researcher asking (reflection) the children about their enjoyable Experiences in following the exercise, then the researcher gives praise (Appreciation) to the children of group B1 at TK Negeri Pembina Samporoa.



Figure 2. Test of the Educational Exercise Video

Recapitulation of observation results on the introduction of the educational exercise video in three aspects observed, in the Coordination aspect of eye-foot-hand-head movement in imitating the movements, there are 3 children (20%) in BSB category, 7

children (47%) in BSH category, 5 children (33%) in MB category, and no child in BB category. In the body balance aspect, there are no children in BSB and BB, 8 children (53%) in BSH, and 7 children (47%) in MB. The last aspect of agility of the body, there are no children in BSB and BB, 9 children (60%) in BSH, and 6 children (40%) in MB.

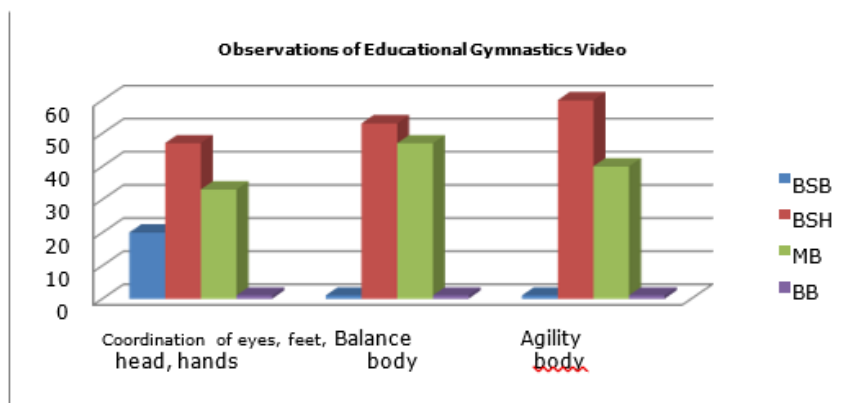


Figure 1. Histogram Result of Educational Gymnastics Video Data

5. Evaluation (Evaluation)

In this evaluation stage, the achievement of development goals is measured comprehensively, with the results serve as feedback for children and users. The evaluation confirms that the educational video for supportive gymnastics in stimulating children's motor physicals in group B1 has been achieved well. This is evidenced by children's ability to coordinate eye-foot-hand-head movements in imitating gymnastics moves, body balance, body agility, while showing happiness and high enthusiasm in following the exercise.

The findings conclude that its implementation is more focused on the development of physical motor skills, including locomotive and non-locomotive movements, eye-hand coordination, agility, flexibility, strength, and balance. Barriers to implementing gemari exercise in stimulating gross motor development include limited space, and teachers' lack of IT operation skills. Enablers are educators' competence and the very good exercise activities, which raise children's motivation, and adequate facilities such as computers and a sound system.

DISCUSSION

This study presents a significant novelty by developing an educational gymnastics video using a systematic ADDIE model that integrates instructional design, structured physical movement, and audiovisual media tailored to early childhood characteristics. Unlike previous studies that mainly focused on implementing existing gymnastics programs or using general video media, this research emphasizes a comprehensive development process that ensures the product is pedagogically valid, developmentally appropriate, and empirically tested. This approach represents an advancement in the design of motor learning media in early childhood education.

The findings of this study indicate that the developed educational gymnastics video is highly feasible and effective in improving children's gross motor skills, particularly in coordination, balance, and agility. The validation results from experts show very high feasibility levels, while the implementation phase demonstrates increased enthusiasm, active participation, and improved motor performance among children. These results confirm that structured and engaging audiovisual media can significantly enhance motor development in early childhood.

These findings are consistent with previous studies. (Arya Tangkas Prasetya et al., 2022; Indrayana & Hasibuan, 2021; Luji & Yuliantina, 2025; Sönmez et al., 2026b; Tumangger & Siahaan, 2022) found that gymnastics videos effectively improve children's motor skills through structured and repetitive movement activities. Similarly, (Russo et al., 2025; D. Zhang et al., 2024; Zhao et al., 2024) demonstrated that rhythmic gymnastics significantly enhances children's coordination and motor control. (B. Chen et al., 2024; Petancevski et al., 2022; Zhou et al., 2025) also reported that video-based gymnastics learning improves children's gross motor development. Furthermore, (Ambarita & Sunardi, 2023; Petancevski et al., 2022; Radanović et al., 2025; Wahyudin et al., 2022) showed that engaging gymnastics activities increase children's motivation and participation, while (Abusleme-Allimant et al., 2023; I Ketut Sumerta et al., 2021; León Méndez et al., 2023; Piotrowski et al., 2025; Radanović et al., 2025; D. Zhang et al., 2024) emphasized the effectiveness of audiovisual media in stimulating children's motor skills.

The similarities between this study and previous research can be attributed to the use of structured movement, repetition, and engaging media, which are essential components in motor learning. Children learn motor skills effectively through continuous practice and multisensory stimulation, which explains the consistent findings across studies. However, this study also demonstrates several differences. Unlike previous research, this study applies a systematic ADDIE development model, ensuring that the learning media is carefully designed, validated, and refined before implementation. Additionally, this study integrates multiple motor components coordination, balance, and agility into a single structured learning media, whereas previous studies often focus on only one aspect of motor development. Differences in methodology, research context, and sample characteristics may also contribute to variations in findings.

The main contribution of this research lies in providing a structured and validated model for developing educational video media that can be directly applied in early childhood education settings. This study bridges the gap between instructional design theory and practical motor learning applications, offering a more comprehensive and replicable approach for educators and researchers. Practically, this study suggests that teachers can utilize educational gymnastics videos as an effective alternative learning medium, especially in situations with limited facilities. Academically, this research enriches the literature by integrating instructional design models with motor development strategies. From a policy perspective, the findings support the integration of technology-based learning media in early childhood curricula to promote active learning and healthy lifestyles. Future research is recommended to involve larger samples, diverse educational settings, and experimental designs to further validate these findings. Additionally, future studies may explore interactive or adaptive video technologies to enhance engagement and personalize children's learning experiences.

CONCLUSION

Based on the research results, the development of an educational exercise video using the ADDIE model is deemed highly suitable for use as a learning medium. This is evidenced by the validation results from media and material experts who achieved the very suitable category. The media implementation shows improvements in children's physical motor abilities, especially in coordination, balance, and agility. Additionally, children show enthusiasm and active participation throughout the activities. Thus, the educational exercise video is effective in stimulating the physical motor development of early childhood.

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