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Development of a Physical Motor Learning Model to Improve Basic Locomotor Movement Literacy in Early Children

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Abstract

The research aimed to develop a learning model for physical movement (physical motor) in the form of a Daily Learning Implementation Plan (RPPH) for basic locomotor movement literacy in children aged 5-6 years. The research methodology used is research and development using the ADDIE model. The subjects for the limited-scale test were 5 students from group B2 at TK Muslimat NU 01 Bululawang, while the subjects for the large-scale test were 10 students from group B1 at TK Muslimat NU 01 Bululawang. The results showed that the overall product feasibility test average was 94.51%. This means that the developed learning model can be declared useful (valid) as a guide for teachers in learning body movements, especially basic locomotor movement literacy in early childhood.

Keywords: Learning Model, Movement Literacy, Early Childhood.

Pengembangan Model Pembelajaran Fisik Motorik untuk Meningkatkan Literasi Gerak Dasar Lokomotor Anak Usia Dini

Abstrak

Penelitian bertujuan untuk mengembangkan model pembelajaran gerak tubuh (fisik motorik) berupa Rencana Pelaksanaan Pembelajaran Harian (RPPH) untuk literasi gerak dasar lokomotor pada anak usia 5-6 tahun. Metodologi penelitian yang digunakan adalah penelitian dan pengembangan dengan menggunakan model ADDIE. Subjek uji skala terbatas adalah 5 siswa kelompok B2 TK Muslimat NU 01 Bululawang, sedangkan subjek uji skala besar adalah 10 siswa kelompok B1 TK Muslimat NU 01 Bululawang. Hasil penelitian menunjukkan rata-rata uji kelayakan produk secara keseluruhan adalah 94,51%. Artinya model pembelajaran yang dikembangkan dapat dinyatakan bermanfaat (valid) sebagai pedoman guru dalam pembelajaran gerak tubuh khususnya literasi gerak dasar lokomotor pada anak usia dini..

Kata Kunci: *Model Pembelajaran, Literasi Gerak, Anak Usia Dini*

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INTRODUCTION

Early childhood is a time when every function, both physical and mental, is mature so that it can respond to every stimulus carried out by the environment. Periods of association with the process of laying the foundation for the development of physical potential, knowledge or intellectual, social or attitudes and behavior, feelings (emotional), communication skills (language), artistic values and values related to religion and morals of each child . If a child's expression continues to be limited, it can reduce the synapses in the brain in a child who is still in a developmental stage (Wedani et al, 2021).

Apart from its developmental aspect, the intellectual potential of children also needs to continue to be developed optimally, so that they can slowly find their potential when growing and developing. The potential for basic motor literacy in children is suitable when developed continuously. The development is so that the child's growth and development can be achieved optimally so that they have a strong physical ability to carry out various actions or movements that are equivalent to their growth and thought (Pambudi et al, 2022). For this reason, children at this time need to gain various sports experiences (multilateral). This is further strengthened by the assumption Zeng et al (2017) that is, childhood is the most appropriate time to deepen and learn about the ability of basic motion literacy in children.

Children who have intellectual potential barriers will mostly experience difficulties in basic movements such as throwing, kicking, jumping and running. The part of the brain is called the frontal lobe function as a motor area and is useful for controlling muscle work. It was also mentioned that children who experience mental retardation have the characteristics of one of which is weakening motor control, and lack of skills to coordinate, but on the other hand, Intellectual barriers can still be trained to achieve the ability, growth, and development to the normal point. This proves that to be able to achieve the child's development can be given stimuli continuously and carried out in the right way and the provision of interesting learning the child's interest (Bakhtia & Maulana, 2021).

Motion literacy according to assumptions Savelsbergh & Wormhoudt (2018) Revising its original definition to include the categorization of Morrison's previous movements as expressive, utilitarian, and objective. Physical literacy is seen as an important life skill for active participation in society and, therefore, must be considered an important factor in including all early childhood education in the education curriculum. The concept of physical literacy is defined as the ability and confidence to carry out various physical activities in various settings that are conducive to the healthy development of all children. Physical literacy has been renewed to reflect that it is an important element of lifelong physical activity and desired to learn outcomes for all children in many parts of the world (SHAPE America, 2022).

The learning model must have five elements, namely: (1) Syntax are the steps of learning operations, (2) Social Systems are an atmosphere and norms that are suitable for learning, (3) Responsive principles describe how the teacher must see, treat and respond to students (4) Supporting systems, namely all facilities, materials, tools or learning environments that support learning, and (5) Teaching and parenting effects are based directly on the underlying learning, the results of the goals (structural effects) and non -purpose learning outcomes (accompaniment effect) Examples of learning patterns in early childhood in this study are the child's habit of

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physical activity or can be called motor literacy that focuses on basic motion in early childhood (Khoerunnisa & Aqwal, 2020).

Developing RPPH (Daily Learning Implementation Plan) that integrates the learning process in aspects of development such as religious fields as well as morals, values, physical movements, cognition, language, and art to facilitate the learning process running flows smoothly according to the needs of children, the main subject of learning is through pleasant play activity (Wedani et al, 2021). RPPH that is made and arranged well can be the success of a learning activity (Fauziyah, 2021). Conversely, if the educator cannot plan well the same as learning programming that automatically becomes a failure (Bakhtia & Maulana, 2021). Therefore RPPH needs to have high absorbable (applicable) and can be understood by educators when carrying out the learning process (Jannah, 2017). It is expected that by making a learning model design that is suitable for the child's development is fully achieved and the pedagogical process of individual or group assistance can be given to children, which upholds the empowerment of skills and characteristics of physical literacy (PL), affective, cognitive and certain behaviors (Kaioglou & Venetsanou, 2019).

Various problems that have been presented previously, found a number of things, including basic locomotor movement literacy in everyday life in the family environment, which is still in the low group (Khoerunnisa & Aqwal, 2020). For this reason, in order to improve properly, a learning model is needed whose ultimate goal is to make children move actively in early childhood education institutions. This locomotor movement can be modified into a child's game so that without realizing it, students are doing locomotor movements, such as walking, running, jumping, skipping, and rolling. The purpose of doing the basic movements of walking and running is to improve the ability of the basic movements that are mostly done in everyday life. In the movement of jumping and jumping has a goal so that children have skills and skills in the future. This basic locomotor literacy activity makes children happier to continue exploring the school environment through their bodies. For this reason, this research will describe and develop innovations in learning that will be tested in an action research with the title "Development of a Physical-Motoric Learning Model" as Locomotor Optimization for Basic Literacy in Children Aged 5-6 Years". The model is a development of the "Construction Fitness Sign" game from research (Putri et al, 2021). The results of other studies also argue that the development of motion literacy understanding is very necessary, but in this study, some weaknesses only analyze data not yet reached a further stage of practice in children (Nur & Aprilo, 2021). This literacy of the basic motion of this locomotor encourages children to get used to physical activity and maintain health of children from an early age. By what has been explained, the researcher will later make an innovation in learning models that will provide the opportunity for them to continue to actively move to play or learn more in an early childhood educational institution.

Indicators that can be assessed in motion literacy are taken from American countries that are adapted to the characteristics of children in Indonesia according to (Department of Health and Human Services, 2018) Physical activity is easy, medium, and strong intensity for children in preschool age. Numbers one to 3 include easy intensity. (4) Sprint fast running, (5) running back and forth shuttle run, numbers four to five including moderate intensity. (6) crawling, (7) rolling, (8) Jumping, (9) Right and Left Legs, (10) Street jump, and (11) frog jumps. Some of these activities can also help children in developing physical activity (PA) in the form

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of physical fitness elements (Utoyo et al, 2020) namely balance, speed, strength, flexibility or flexibility, agility, and explosive power

METHODS

Research activities that will be carried out later utilize a type of research, namely Research, and Development with a reference 5 steps of the research model and the development of Dick and Carry according to (Fauziyah, 2021) namely Analyze, Design, Development, Implement, and Evaluate as follows.

The limitation of the problem in this study is that early childhood is in accordance with the characteristics of early childhood education and is based on play activities in physical education which gives students many choices with movements directed by the teacher.

Figure 1. Stages of Development of Adaptation Products from the Addie Model

The research model instrument begins with the resulting product in the form of a physical movement learning model to improve basic locomotor movement literacy in children aged 5-6 years in early childhood education institutions. The time of the research was carried out for one week. The test subjects in this study were 1 school principal, 4 teachers, and 1 supervisor of children aged 5-6 years at Muslimat NU Kindergarten 01 Bululawang consisting of 5 Limited Scale Field Test Subjects and 10 Large Scale Field Test Subjects. Data collection was carried out by observation, interviews, and questionnaires (Analyze). Qualitative designs were obtained from observations, interviews, and reviews of suggestions and bound input. Quantitative data from validation results, limited scale field tests, and large scale field tests (Design).

Instruments that will be used in collecting data can be in the form of interviews with several parties to be studied, conducting a preliminary study process on various relevant sources, validation questionnaires conducted by experts, distribution of response questionnaires from teachers, guidelines for observing responses by children, and guidelines for observing literacy basic locomotor movements in children (Development). The feasibility testing process for each product will be tested by 2 validators, namely material examiners and testing carried out by media experts. The feasibility of the Locomotor Literacy Movement Physical Motor Learning Model was analyzed by changing the audience validity score to 5. This study tested the effectiveness and practicality of the basic motion literacy learning model and was analyzed using the following formula (Implementation and Evaluation).

$$V = \frac{TSe}{TSh} x\ 100\%$$

V = validation, TSE = Total empirical score (value achieved), TSH = Total Maximum Score (expected outcome) 100 % = constant. The criteria used to determine the conclusions that have been achieved are as follows:

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Table 1. Feasibility Criteria

No.	Value Achievement Criteria	Practicality and Effectiveness Level
1.	81,00 % - 100,00 %	Practical and effective
2.	61,00 % - 80,00 %	Quite practical and effective
3.	3. 41,01 % - 60,00 %	Less practical and effective
4.	21,00 % - 40,00 %	Not practical and effective
5.	5. 00,00 % - 20,00 %	Very impractical and effective

RESULT AND DISCUSSION

The results of this motor physical learning model product start from the process of planning and design of daily activities using the flow of research methods. Pre-research analysis data (initial needs analysis) is the result of interviews with lecturers and school principals. This study shows the results of the development of motor physical learning models in improving early childhood 5-6 years old for the stimulation of literacy of the basic motion of locomotor so that children are accustomed to applying a healthy lifestyle through body movements.

Analyze

The first stage undertaken is the analysis of needs by interviewing and observation with instruments that have been well validated, it will be known the needs and conditions of each teacher on the material of the motor physical learning model. By the results of this study, they have never compiled RPPH and LKPD to increase basic motion literacy, especially locomotor motion. Teachers In fostering their students using a monotonous learning process, children hear the teacher speak. The theme selection was also carried out at this stage, namely the theme of my limb sub-theme. The material taken by the researcher based on basic competencies and indicators is explained in Table 2 below.

Table 2. Basic competencies and indicators

Development Aspects	Basic Competencies	Indicator
Values, religion, and morals	Believe in the existence of God through his creation	Living things created by God (humans)
Physical motor	Recognize and be skilled at using limbs for gross and fine motor development	Uses limbs to develop gross and fine motor skills in various movements and creations
Cognitive	Recognize and be able to convey what and how the familiar objects around him (name, color, shape, size, pattern, character, sound, texture, function, and other characteristics)	Carry out activities that show children can recognize objects by connecting games and LKPD
Social-emotional	Having behavior that reflects independence	Able to complete tasks without assistance

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Language	Understanding and demonstrating receptive language skills (listening and reading)	Retell what was heard
Seni	Recognize and demonstrate artistic works and activities	Making handwork of my limbs

This planning stage starts with (1) determining the learning model that will be used by teachers and group B students at the Muslimat NU 01 Bululawang Kindergarten. Learning model design planning is expected to be able to provide convenience to teachers in accompanying learning and providing motion literacy habits while at school, (2) designing content, learning model designs are developed based on material adjusted by selecting KI, KD, and indicators by the 2013 curriculum, formulating goals learning, using a scientific approach and using innovative learning models. Designing LKPD according to the material contained in the RPPH and providing an attractive design adapted to the characteristics of early childhood. The picture below is the result of criticism and suggestions from the validator of material and early childhood learning media experts.

Table 3. Before and After Revision

Before	**After revision**
Some words are not quite right	Correction of word writing
RPPH is not complete with an assessment rubric	Adding an assessment rubric in the RPPH
LKPD does not yet have a description of the steps	Added step-by-step description with details

Development

This development stage is carried out by validators who are material experts and experts in media assessment. The results of the validation test generated from each validator provide a result of the feasibility aspect. The results according to the criteria are considered feasible, 93.86% are included in the practical and effective category of the total questionnaire used. While results in the validity of the media experts obtained a result of 90% which was declared feasible in the practical and effective category of the total questionnaire tested. Overall the total results of this value can be concluded that the product is feasible with several revisions.

An extended definition of mobility literacy for the physically literate could include: (1) the ability to move calmly, gracefully, simply, and confidently in a variety of physically challenging situations; (2) the ability to read situations, anticipate and The ability to anticipate what might happen next in a given situation and then be able to respond through movement appropriately in a variety of physically challenging situations; (3) knowledge, skills, attitudes, and motivation to develop their capabilities and potential to the fullest; (4) movement skills based on motor potential or limited abilities and physical disabilities, according to local culture; (5) good self-confidence Developed motor activity: They feel comfortable expressing their bodies and are comfortable with their physical activities; (6) Good self-confidence and increased self-esteem of every child comes from trusting their bodies and abilities.

Implementation

This implementation stage is the process of testing the learning model design product on students and users. After getting suggestions and input from several material experts, the

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product was then repaired and validated. The application of the learning model design product was carried out in 2 scales, first by conducting a limited scale trial with 5 students, aged 5-6 years together with 4 teachers at the Muslimat NU 01 Bululawan Kindergarten and 1 observer. After going through the development and expert validation stages, the learning design product will be improved according to the expert's advice and then a limited trial will be carried out. Implementation of limited trials will be given practicality questionnaires for teacher users as an assessment or input as well as assignments or competency tests as student activities to see the effectiveness of learning design products. At the revision stage of the product design learning model, improvements were obtained from comments or suggestions on a limited-scale trial questionnaire for the practicality of teachers and parents. The result of the improvement is in the form of word order and writing layout. The following are the results of data analysis according to the criteria for assessing the practicality and effectiveness of learning models and children's basic locomotor movement literacy.

The concept of physical literacy is the ability and confidence to carry out various physical activities in various settings that are conducive to the healthy development of all children. Thus, a physically literate person: (1) demonstrates his ability for various motor skills and movement patterns, (2) applies knowledge of concepts, principles, strategies, and tactics related to movement and performance, (3) demonstrates knowledge of achieving and maintaining fitness and skills in physical activity, (4) demonstrating responsible personal and social behavior, respecting oneself and others, (5) recognizing the value associated with physical activity to achieve social interaction skills with others, pleasure in themselves, challenges, physical and mental health, and self-expression (Dewi *et al*, 2021).

In line with previous research (Bakhtia & Maulana, 2021) explained that good physical condition will give children strength and stamina so they can actively participate in every learning process. Developing a balanced motor learning model with direct action will impact other areas of development such as speech, cognitive development, social skills, and emotional development. The best time to develop basic motor literacy through a physical activity program is between ages 3-6, as this is a critical age for learning. The greater the number of childhood experiences, the more likely the child is to reach his highest potential in a particular field (Hamilton & Ahrens, 2019).

Table 4. Limited Scale Trial Evaluation Average Value

Indicator	Average	Criteria
Practicality of Application	93,12%	Practical
The Effectiveness of Learning Models	94,62%	Effective
The Effectiveness of Basic Locomotor Movement Literacy	95,26%	Effective
Total	283	
Overall Average	94,33%	Very Practical and Effective

Large-scale trials were conducted on 4 teachers, 1 observer, and 10 students aged 5-6 years. At the stage of the large-scale trial, practicality questionnaires were given to teachers as an application assessment, as well as competency tests or assessments for students as a reference

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for the effectiveness of the design of motor-physical learning models, especially children's basic locomotor literacy. Analysis data was obtained as follows.

Table 5. Mean Score Evaluation of Large-Scale Trials

Indicator	Average	Criteria
Practical Use	97%	Practical
The Effectiveness of Learning Models	92,24 %	Effective
The Effectiveness of Basic Locomotor Movement Literacy	94,88 %	Effective
Total	284,1	
Overall Average	94,70%	Very Practical and Effective

The overall average result of the evaluation is very practical and effective in the development aspect with an overall average score of 94.70%. Movement literacy is the ability, confidence, and desire to be physically active for life. Given the basic elements of movement literacy for a lifetime of healthy physical activity, it makes sense why physical education is a key space for introducing and developing movement literacy in early childhood. Based on a literature study, the majority of children aged 4 to 6 years do not meet the level of physical activity according to the recommendations outlined in the National Association of Sport and Physical Education (NASPE) guidelines. A comprehensive review by (Coe, 2020) found that young children spend between 3% and 6% of their time in moderate to vigorous physical activity. The current phenomenon is that the family and community environment have not provided ideal facilities or encouragement for physical activity opportunities and have affected increased daily physical activity, especially interesting play activities for children. Third, technological advances have resulted in today's children tending to choose digital activities, games, or new things in cyberspace. It is also related to the lack of coordination between teachers and parents regarding the dangers of cellphone addiction (Dewi et al, 2021).

If these physical activities are not carried out, children who are not physically active are more likely to gain unhealthy weight, skip school, and perform worse academically. Children who lack physical activity are also two times more likely to be obese than adults. They will have fewer opportunities when applying for jobs in the future, have higher healthcare costs, and have poor health conditions. Physical inactivity impairs the quality of life, and drains the economy (Bopp et al, 2022) basic movement literacy in early childhood has various obstacles or problems, namely, there are still obstacles in their opportunities to move and carry out various activities when they are outdoors. So this causes them to be more comfortable reducing their motion.

In terms of the intent and purpose of implementing movement literacy (physical), it focuses on inviting children to keep moving and helping each child to develop into a healthy and strong person, able to make various adjustments within themselves and able to be confident if they can do it (Barnett et al, 2016). However, some parties want an instant process, so instead of making their process successful, what happens reduces their interest in continuing to move and move when they are outside the room. Moreover, compounded by the various toys they play with and their cultural shift due to the role of the mass media, it greatly limits the movement of every child (Arham & Agustang, 2021).

Another real condition that is still a problem is that movement literacy and its development are still very much neglected and don't care about it. This occurs as a result of parenting patterns that do not apply discipline to children so that imitation of habits is carried out by the child. Inactive parents are 5.8 times more likely to have inactive children. This

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problem also occurs due to the limited ability of parents to explore basic movement literacy in children. Another thing that causes a decrease in movement literacy is due to the lack of habituation to movement activities carried out in the home or community environment (Karisman, 2021). So education in early childhood institutions is very suitable and necessary to improve children's basic locomotor movement literacy.

Evaluation

Occurs at each stage of the ADDIE model. At the evaluation stage, a formative evaluation and a summative evaluation are carried out. Formative evaluation is carried out in each stage of development and summative evaluation is carried out at the end of the lesson to find out the learning outcomes of students regarding the understanding of the material to measure effectiveness or not. The results of the evaluation phase are described as follows. (1) The formative evaluation of the design stage is carried out based on input and suggestions from the supervising lecturer. These improvements include the use of images according to the themes developed in LKPD activities. (2) The formative evaluation of the development stage is carried out based on input and suggestions from material and media examiners. Input and suggestions are used as a reference to improve learning design products. these improvements include: (a) The learning objectives are to bring up HOTS, so the operational verb (KKO) also leads to the emergence of HOTS. (b) In the assessment rubric, the descriptors are adjusted to the degree and behavior of the learning objectives. (c) Use of lowercase letters in each activity for children. (d) There are deceptive pictures or letters to make the HOTS stimulus more visible. (e) The font size for the cover is enlarged in the LKPD sentence and the word information is added. (f) In the content section, the preparation of indicators and learning objectives is improved. (8) Words and sentences are clarified. (3) The formative evaluation of the trial phase was carried out based on input from the teacher user practicality questionnaire which was carried out during a limited-scale trial. This is used to determine product deficiencies when tested. The improvements made were: (a) Clarifying the wrong words in writing the RPPH. (b) Clarify the font. (c) There are wrong words or typos. (4) Summative evaluation, carried out to determine the effectiveness after implementing the learning model design or after carrying out a competency test. Based on Figure 5, the data on the practicality and effectiveness of the physical-motor learning model to increase basic movement literacy for children on a limited scale obtained an average score of 94.33%, the level of eligibility criteria was stated to be very practical and effective. The second design trial was carried out on a large scale. In Figure 6 the data on the practicality and effectiveness of the physical-motor learning model to increase literacy for large-scale locomotor basic movements with a score of 94.70%. Based on the percentage results obtained from the limited scale test, it can be concluded that the design of the physical-motor learning model gets very practical and effective criteria.

The purpose of this study is first, to produce a physical-motor learning model that is used to increase basic locomotor movement literacy. Second, knowing or testing how the application of this motor-physical learning model is in terms of practicality and effectiveness. The benefits for early childhood educators are easier in planning knowledge transfer and motivation through motion literacy as early as possible. This habit has an impact on students who are more physically active for a healthier life in the future. There are strengths and weaknesses in this study. The visible advantages are (1) this physical-motor learning model is combined with games that attract children's enthusiasm, (2) this study uses a systematic design

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to make it easier for teachers to motivate children's physical literacy interest, (3) there are student worksheets adapted to characteristics of children aged 5-6 years. The weakness in this study is that it only discusses or only designs a learning model on one theme, namely on the theme of myself, the sub-themes of my limbs. In the implementation of the trial, only used group B students aged 5-6 years at the Muslimat NU 01 Bululawang Kindergarten.

Based on the explanation above, basic movement literacy can be said to be very beneficial for the next life, especially the life of early childhood. The benefits of this Literacy according to Centers for Disease Control and Prevention, (2021) namely (1) increasing attention memory during the academic process. (2) Physical fitness, increasing endurance (3) Cardiac metabolism, maintaining blood sugar levels. (4) Increases bone strength. (5) Brain health reduces the risk of depression. (6) Improving cardiorespiratory fitness (7) Reducing the risk of many chronic diseases, including obesity. (8) Helps manage a healthy weight. Understanding the importance of physical literacy through these benefits will support all aspects of children's development and engage in beneficial activities that can change and make their lives more productive. Physical literacy means understanding survival in the future. This study aims to develop basic locomotor movement literacy in the early learning of children's motor activities. There are tips for children's physical exercise, namely according to Kementrian Kesehatan Republik Indonesia (2018), (1) exercise for approximately 1 hour a day, with the amount of activity ranging from light to heavy. (2) Exercising for 1 hour has an impact on health. (3) Activities that can be done are bone and muscle strengthening exercises at least three times a week. Sports literacy can be integrated through learning models in Early Childhood Education Institutions (PAUD).

According to the understanding of learning according to Djamaluddin & Wardana (2019) learning is a process where the teacher observes what happens when students are experiencing educational activities to achieve goals in the form of changing patterns of knowledge and experience in the educational process. The learning model, on the other hand, is a framework created conceptually to guide each learning process (Hijrianti, 2017). Another view states that the learning model is a conceptual framework that describes a systematic process in which learning experiences are organized to achieve learning objectives (Febrianta, 2017). It can be concluded that learning patterns tend to be prescriptive (organized and firm), which are relatively indistinguishable from learning strategies. To develop children's motor skills, teachers can use various motor learning models designed to make learning fun and interest children. Preschool education has its characteristics, so the motor learning model must be selected according to the characteristics of the child. The selection of motor learning models is to ensure that children are not injured and children feel comfortable and are not afraid or anxious during the learning process.

CONCLUSIONS

Based on the results of the research and discussion, it can be concluded that this research and development produces valid, practical, and effective motor-physical learning model designs. This physical-motor learning model aims to facilitate teacher teaching assistance when familiarizing children in early childhood education institutions (PAUD) to understand the importance of basic locomotor movement literacy for health, providing joy through interesting physical play activities and producing products in the form of children's work to explore creativity. and self-confidence. So that the results of research and product development of motor-physical learning models to increase basic locomotor movement literacy for children

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aged 5-6 years at Muslimat NU 01 Bululawang Kindergarten with the ADDIE model are feasible to be used as models in physical-motor learning.

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