

# BASIC LOCOMOTOR LEARNING MODEL: NEW APPROACH USING SMALL GAMES COMPETITION IN ELEMENTARY SCHOOL

*By Hartati Hartati*



## BASIC LOCOMOTOR LEARNING MODEL: NEW APPROACH USING SMALL GAMES COMPETITION IN ELEMENTARY SCHOOL

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### Abstract

**Study purpose.** Physical education, sports and health for elementary school students are oriented learning locomotor movements, so learning these skills requires fun activities, such as games. This research aims to develop a basic locomotor learning model based on a small game competition for elementary school students.

**Materials and methods.** This study used a research and development approach using ADDIE model. This research was carried out in three elementary schools, namely: Elementary school 22 Gelumbang, Elementary school 11 Gelumbang and Elementary school 2 Lembak. Data were collected using observation, interview, questionnaire, and test. The questionnaire instrument used in this study was the Guttman scale questionnaire because of using the Guttman scale. Expert judgments were used to analyze the product.

**Results.** The model can be applied in all elementary schools in the territory of Indonesia because product development has referred to competencies and learning outcomes in the 2013 curriculum. There are four types of games that have been developed for learning locomotor skills, namely 1) jump rope game, 2) watch out for crocodiles, 3) continuous running game, and 4) box jump game. Each game has different locomotor skill movements, including walk, run, slide, leap, gallop, skip, jump, and hop. Based on the effectiveness aspect, the results of the product trial show that the 'wary crocodile game' is a game that great demand and favored by students.

**Conclusions.** The locomotor skills learning model for elementary school students based on small game competitions has been feasible and effective for use in sports and health physical education classes. This model can also be applied in all elementary schools in the territory of Indonesia because product development has referred to competencies and learning outcomes in the 2013 curriculum.

**Keywords:** basic locomotor, elementary school, learning model, small games.

### Introduction

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Physical education is an important part of the overall education system. Physical education is a medium to encourage the development of motor skills (basic movements), physical abilities, knowledge, reasoning, appreciation of values (attitude, mental, emotional, and social), and habituation of healthy lifestyles that lead to increased balanced growth and development (Young et al., 2021; Carson Sackett & Edwards, 2019). In developing concepts with various teaching methods, the material is given during physical education

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learning (Hartati et al., 2019). Physical education is the occurrence of learning through physical activity by designing so that physical fitness, knowledge, healthy living behaviour, being active, sportsmanship, emotional intelligence, development skills and motor skills can be improved (Silva et al., 2019). 16  
Physical education learning at the education level is found in elementary schools, junior high schools, and high schools (Montero-Carretero & Cervelló, 2020).

Physical education material contained in elementary schools is about learning basic movements. Regulation of the Minister of Education and Number 67 of 2013 concerning the Basic Framework and Curriculum Structure of Elementary Schools/Madrasah Ibtidaiyah states that one of the characteristics of the curriculum is designed to develop attitudes

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(affective), knowledge (cognitive) and skills (psychomotor) and their application in various situations in schools and schools. school. Public. The structure and curriculum of physical education in sports and health in existing primary schools have the characteristics of basic technical skills from various sports.

The 2013 curriculum at the elementary school level is used thematically integratively for learning physical education subjects (Hartati et al., 2018). The basic technical skills of this sport will be mastered by students if they have mastered the basic movement skills first. Motor skills are a process of developing a person's ability to move which is controlled by the brain through the interaction of various parts and systems in the body (Ayubi & Komaini, 2021) Basic movements are skills that involve the brain, muscle strength involving the arms and legs that are used to achieve an exercise or movement, such as throwing a ball, visiting, or jumping through air movements, or maintaining balance (Komaini et al., 2021). Motor skills are divided into two, namely fine motor skills and gross motor skills. Through various activities including motor skills, physical education learning in elementary schools will train children to learn various movement skills in the form of games, athletics, and gymnastics (Dapp et al., 2021).

Elementary school 22 Gelumbang has implemented the 2013 curriculum, therefore researchers analyzed core competencies and basic competencies. After that, analyze student needs, student characteristics, and facilities to support the learning process in Physical Education subjects. The results of preliminary analysis are the observations of researchers in the field during the physical education learning process, learning basic locomotor movements in fifth-grade students still uses the teacher method (theory) and demonstration (practice). After that, the researcher conducted an interview with one of the physical education subject teachers at Elementary school 22 Gelumbang, the information on learning problems obtained by the researcher included: (1) the teacher's inability to explain basic movement material, especially locomotor basic movements (2) the inability of students to accept learning material basic locomotor movements (3) students prefer to play rather than pay attention to the teacher's explanation. Most students do not like the basic locomotor movement material, because the characteristics of elementary school children prefer to play and move actively.

Reviana et al., (2021) in their journal has the same problem, namely, students do not like learning basic movements because they feel bored with the applied learning model. In line with research by Hernawan et al. (2019) in his research to overcome this problem, the researcher used the development of a locomotor basic movement learning model for elementary school students using PACEF (Productive, Active, Creative, Effective and Fun). For elementary school students, mastery of locomotor skills can also be done through throwing and catching activities (Jaakkola et al., 2019). In addition, physical activity such as aerobic fitness exercise can be used as a medium to improve the basic motor skills of elementary school students (de Bruijn et al., 2019; Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010; Logan, Kipling Webster, Getchell, Pfeiffer & Robinson, 2015).

Various studies have shown that basic movement skills competence and moderate to vigorous physical activity are opportunities for locomotor movement skills (Cohen, Morgan, Plotnikoff, Callister, & Lubans, 2014; Han, Fu, Cobley, & Sanders, 2018; Webster, Martin, & Staiano, 2019). Because

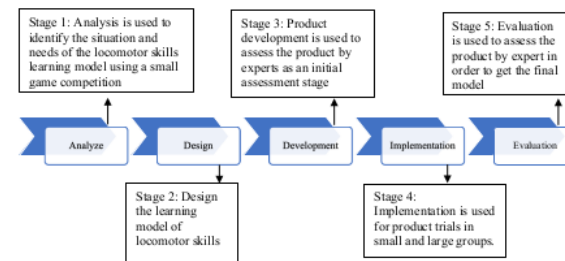
children who cannot master FMS are more likely to experience failure in the motor domain movement in games and sports is also impaired (Hardy, King, Farrell, Macniven, & Howlett, 2010; Bryant, Duncan, & Birch, 2014; Shams, Hardy, Vameghi, Loovis, & Shamsipour Dehkordi, 2021). In addition, FMS is the basis of early motor markers, especially for autism spectrum disorders (Gandotra et al., 2020)

From previous research, it is illustrated that locomotor skills can be trained with various physical activities. One of the activities that can provide fun stimulation for children to practice their locomotor skills is games. This is the gap to be presented in this game. Games (small games competitions) for the development of learning models for students' basic locomotor skills in elementary schools. The design of this learning model was developed by the 2013 Curriculum Basic Competencies in sports and health physical education lessons for elementary school students. The design of this model is also a new approach to locomotor skills activities. While the basic reason for implementing this research is the need for the development of learning models for basic locomotor skills by the use of the curriculum, student backgrounds, and learning needs by current scientific developments in the field of physical education and sports.

Thus, the purpose of this study was to develop a basic locomotor learning model based on small game competitions for elementary school students. The development of this learning model is expected to be a good, effective, fun learning, and make students more active in the teaching and learning process of basic movements to achieve physical education learning objectives. In addition, this model also allows students to receive basic locomotor movement learning with a new model and by student characteristics, namely, students love to move and play. This means that playing activities become physical learning. Teachers and students are expected to be motivated to learn the basic locomotor movements taught by the teacher which can have an impact on improving motor skills.

## Materials and methods

This study used a research and development approach. It is used to produce certain products and tests their effectiveness these products (Creswell, 2012; Gall et al., 2010). It is used to create a new model for locomotor skills learning using small games competition. This research was carried out in three elementary schools, namely: Elementary school 22 Gelumbang, Elementary school 11 Gelumbang and Elementary school 2 Lembak. This study used the ADDIE model (Branch, 2010). The stages of the ADDIE model to develop a small game competition-based locomotor skills learning model are described as follows.



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Fig. 1. The Steps of research adapted from the ADDIE model



**Table 1.** Dimension Movement for Basic Locomotor Skill Instrument

Locomotor Skills	Indicators
Walk	The eyes view are straight forward, the hands are swinging back and forth, the body position is upright, and the feet move forward alternately
Run	Straight forward view, relaxed body position and leaning forward, hands swing back and forth alternately, knee position raised with both feet moved quickly and flying towards the front.
Slide	The body moves sideways, the eyes look horizontally, the arms move following the movement of the body, and the legs are not crossed
Leap	Both legs are raised, moving forward alternately for several steps and then jumping and preceded landing on one leg, swinging hands following body movements, and straight eyesight.
Gallop	In a straightforward view, the position of the foot is lifted alternately and moves forward, relaxing the body, the position of the hand follows body movements
Skip	The feet jump alternately (up and down), the position of the body upright moves to float, a straightforward view, and the hand swings following the body movements.
Jump	The position of the body is lifted and moves from one place to another place, hands are swinging forward following body movements, feet are raised forward (down and up) quickly, and knees are bent when landing.
Hop	One of the legs is lifted alternately and moves forward, one hand straight up opposite the leg raised, body position is upright, and when landing begins with one leg as a pedestal

### Participants

The participants were students from three elementary schools was around 50 students and 10 teachers. Besides, the expert was learning media experts, curriculum experts, and locomotor and sports learning experts.

### Measures

The data used in the study are 1) observation used for problem identification and to determine the effectiveness of product trials in the field. 2) Interviews were used to analyze students' perceptions of the practicality of using a game-based locomotor motion learning model. 3) Questionnaires are used to obtain an analysis of the needs of the basic locomotor movement model from students and teachers. Questionnaires were distributed to students (N=100) and teachers (N=10). The questionnaire was designed using a closed questionnaire type and participants had to choose the answers that had been provided related to the questions. The questionnaire instrument used in this study was the Guttman scale questionnaire because by using the Guttman scale the researchers got clear answers from students and teachers. Questionnaires were also used for product assessment teachers. The model validation uses expert judgment consisting of learning media experts, curriculum experts, and locomotor and sports learning experts. 4) The test is used to determine the increase in student locomotor skills learning activities before and after using a small game competition. Researchers use correlation tests to see the relationship between pretest and posttest during product testing. The questionnaire used to analyze the need for locomotor skills was distributed to 5 students and 10 physical education and sports teachers. The results of the needs analysis are presented in percentages. The following is the questionnaire of needs analysis of the locomotor skills model (Sari, 2019);

### Results

#### Needs Analysis and Design

In this initial product development stage, the researcher first analyzed the goals and practice of the product in the form of a small game aimed at training elementary school

students' basic movements. Then the researchers analyzed the character of the students, the target 5 students were elementary school children. In the analysis, elementary school-aged children are very happy to play, love to move, enjoy group activities, and enjoy hands-on practice. The main purpose of physical and health education is to increase life-long physical activity and encourage the physical, psychological and social development of students. The initial product developed by the researcher was a game to watch out for crocodiles, a continuous running game, a box jump game and a jump rope game.

The result of locomotor skills learning needs for elementary school students is explained in the following table 2.

Table 2 shows that the small game competitions that students want and need in order are 1) jump rope game, 2) watch out for crocodiles, 3) continuous running game, and 4) box jump game. Of the four games, there are eight basic locomotor skills required. Meanwhile, each small game competition has a different orientation of locomotor skills.

**Table 2.** The Result of Needs Analysis

Types of Competition Small Games	Types of Locomotor Skill	Students	Teacher
		%	%
Watch out for crocodiles	Walk, Run, Slide, Leap	77	90
Continuous running game	Walk, Run	65	70
Box jump game	Gallop, Skip, Jump, Hop	60	70
Jump rope game	Walk, Run, Slide, Leap, Gallop, Skip, Jump, Hop	90	90

#### Development, Implementation, and Evaluation of Product

Researchers used a validation sheet that was used to assess whether the design of the locomotor basic movement learning model would be more effective than before or not. The results of the small game product assessment have an average of 86 with a "good" rating category. Based on this assessment, it can be concluded that the small game product is feasible and ready to be used in further research. In ad-

dition to the assessment, the validator also provides suggestions and comments regarding the small game product developed by the researcher. Suggestions and comments that are corrected by the validator will then be used as the basis for researchers to improve the product, to produce a product that is worthy of being tested at a later stage. The validator suggests that each game is equipped with media or facilities that can be obtained easily so that this game can also be played by students at home.

Based on the results of the small group effectiveness test conducted on the fifth-grade students of Elementary school 22 Gelumbang, Elementary school 11 Gelumbang and Elementary school 2 Lembak, totalling 20 people, it can be seen that the small game product that the researcher developed is quite effective for use in the physical education learning process in elementary schools. In the watch game, there is a crocodile, there is a 50% increase in the results of the pretest and post-test differences, then in the continuous running game there is a 70% increase in the results of the pretest and post-test differences, then in the box jump game there is a 30% increase in the results of the pretest and post-test differences, and finally, in the jump rope game, an 80% increase was seen from the difference between pretest and posttest. After conducting a small group effectiveness test, the researchers then conducted a large group test.

Based on the results of the large group effectiveness test conducted on the fifth-grade students of Elementary school 22 Gelumbang, Elementary school 11 Gelumbang and Elementary school 2 Lembak, totalling 50 people, it can be seen that the small game product that the researcher developed is considered effective for use in the physical education learning process in elementary schools. In the watch game, there are crocodiles, there is a 60% increase in the results of the pretest and post-test differences, then in the continuous running game there is a 60% increase in the results of the pretest and post-test differences, then in the box jump game there is a 42.4% increase in the results of the pretest and posttest differences, and finally, in the jump rope game, there was a 35% increase from the difference between pretest and posttest.

The following is the final learning model of locomotor skills using competition small games.

## Discussion

The locomotor basic movement learning model is based on small game competition in small and large group trials,

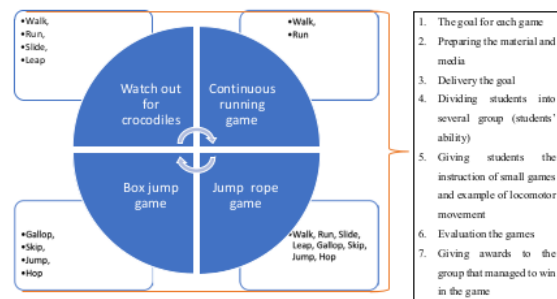


Fig. 2. Syntax of Small Games Competition for Locomotor Skills Learning Model

and peer assessment and the experts show the valid model. The results of the assessment of game product drafts in small group trials and expert validators obtained an average percentage of 86%. The validation results that have been assessed by the validator (learning media experts, curriculum experts, and locomotor and sports learning experts) and small game-based locomotor basic movement learning are included in the good or valid category and can be continued for small group trials. Validation is considered fulfilled if the instrument has been designed well, and the validation is tested by experts (Faizah et al., 2019).

Based on the results of the small group effectiveness test, it can be seen that the small game product that the researcher developed is considered effective for use in the physical education learning process in elementary schools. In the watch game, there is a 50% increase in the results of the pretest and post-test, then in the continuous running game there is a 70% increase in the results of the pretest and post-test differences, then in the box jump game there is a 30% increase in the results of the pretest and posttest differences, and finally in the jump rope game showed an 80% increase from the difference between pretest and posttest.

The results of the research conducted are in line with previous research conducted by Reviana et al. (2021), this research has problems in following the learning process because they admit to being bored with physical education lessons so that students have difficulty in improving basic movement skills. The purpose of holding this research is to solve the problem by applying an interesting learning method for students, namely using the play method. This research provides a solution to the problem of boredom in the learning process and improves the quality of learning to achieve learning objectives. This research is in line with research conducted by Harvey et al. (2021) in his research, who tried to develop a game-based skill learning model for elementary school children. Research from Hanief (2021) forms the basic movements of elementary school students in the form of clogs, Sodor carts, and forts that have a close relationship with the intellectual, social, and character development of children.

The results of the assessment of the product draft of developing a small game-based locomotor basic motion learning model for large group trials from the validation of experts obtained an average percentage score of 88%. It means the accuracy of a test tool or scale in carrying out its measurement function (Rodríguez Quintilla & Fernández Díaz, 2015). The product draft of the locomotor basic movement learning model based on small games has been validated and revised by an expert validator so a large group trial is carried out in elementary schools. Based on the results of the large group effectiveness test, it can be seen that the product is considered effective for use in the physical education learning process in elementary schools. In the watch game for crocodiles, there is a 65% increase in the results of the pretest and post-test differences, then in the continuous running game there is a 60% increase in the results of the pretest and post-test differences, then in the box jump game there is a 42.5% increase in the results of the pretest and posttest differences, and finally, in the jump rope game, there was a 35% increase from the difference between pretest and posttest.

This research has a mission to develop a basic locomotor learning model for elementary school students in Class



VI that support 17 productive, active, creative, effective and fun learning in the learning system of Physical Education, Sports and Health in school. In addition to increasing student activity, small games in the form of “watch out for crocodiles”, continued running, box jumping, and rope jumping can increase students’ motivation to learn (Irfandi & Rahmat, 2016; Palmizal et al., 2020). Researchers tried learning through play for the development of creativity and cognitive early childhood (Nurjanah & Wahyuseptiana, 2018).

The interesting thing that researchers found was that students liked small game-based learning in the form of “watch out for crocodiles” and continued running, box jumping and rope jumping seen from the enthusiasm shown by students and students focused on learning basic locomotor movements seen from the focus of students listening to instructions teacher or researcher and from the activeness of students because the 15 are excited when playing. Each instruction given in this learning model has been adapted to the learning outcomes of the 2013 curriculum. This means that the development of this small game-based locomotor skills learning model has a context that is in line with the 2013 curriculum so that it can be used by all regions in Indonesia. Every movement of the game also shows the traditional games that are often played by children in Indonesia.

Thus, learning basic locomotor movements that appear in traditional games provides a comfortable learning environment for elementary school children and is easy to socialize (Awalludin Nugraha et al., 2018). In addition, the games used in learning locomotor skills also simultaneously build students’ motor creativity (Roslan & Abdullah, 2020). There is an interactive diversity made by students in every movement made during game activities, so this condition can have a positive impact on their physical, emotional and cognitive development (Oboeuf et al., 2020). The physical and motor development of each child during the product trial showed a level of difference, but overall this small game-based locomotor skills learning model had a significant effect on improving locomotor skills.

## Conclusions

The results of the research and development data analysis that have been carried out conclude that the locomotor skills learning model for elementary school students based on small game competitions has been feasible and effective for use in sports and health physical education classes. This model can also be applied in all elementary schools in the territory of Indonesia because product development has referred to competencies and learning outcomes in the 2013 curriculum. There are four types of games that have been developed for learning locomotor skills, namely 1) jump rope game, 2) watch out for crocodiles, 3) continuous running game, and 4) box jump game. Each game has different locomotor skill movements, including walk, run, slide, leap, gallop, skip, jump, and hop. This means that each game can have one or more or even all the moves that have been identified during the needs analysis activity. This small game-based locomotor basic movement learning model can motivate students to carry out basic locomotor movement learning activities. Based on the effectiveness aspect, the results of the product trial show that the “wary crocodile game” is a game that is in great demand and favoured by students. The results

of the tests conducted, also show that the type of game that watches out for costs has the highest percentage.

These findings also have advantages and disadvantages. The advantages of small games in learning locomotor skills are 1) the types of movements that are carried out are movements that are carried out every day by students in their playing activities, and 2) four types of small games are designed to have the same concept as various traditional games such as hide and seek, jump rope, sack racing, crankshaft, jump rope, and so on. 3) Learning instructions are made simple and easy to understand by students. However, the drawbacks of this game are the trials carried out in only one area and the less diverse types of small games. Therefore, this research can still be developed by further researchers such as developing more diverse types of games, such as traditional and modern games or multimedia technology that can complement games for locomotor skills movements. The results of this study also have an impact on the diversity of physical education and sports learning models in schools, especially for learning locomotor skills.

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## 24 Conflict of interest

There are no conflicts of interest to declare.

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## БАЗОВА ЛОКОМОТОРНА МОДЕЛЬ НАВЧАННЯ: НОВИЙ ПІДХІД ДО ВИКОРИСТАННЯ ЗМАГАНЬ У МАЛИХ ІГРАХ У ПОЧАТКОВІЙ ШКОЛІ

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 7 с., 1 табл., 2 рис., 35 джерел.

**Мета дослідження.** Фізичне виховання, спорт і здоров'я для учнів початкових класів спрямовані на вивчення локомоторних рухів, тому навчання цих навичок вимагає цікавих занять, наприклад ігор. Це дослідження має на меті розробити базову локомоторну модель навчання на основі невеликих ігрових змагань для учнів початкової школи.

**Матеріали та методи.** У цьому дослідженні використовували підхід дослідження та розробки з використанням моделі ADDIE. Це дослідження було проведено в трьох початкових школах, а саме: початкова школа №22 міста Гелумбанг, початкова школа №11 міста Гелумбанг і початкова школа №2 міста Лембак (Індонезія). Дані збирали за допомогою спостереження, інтерв'ю, анкетування та тестування. Інструментом анкетування, який використовували в цьому дослідженні, був опитувальник за шкалою Гутмана через використання шкали Гутмана. Для аналізу продукту використовували експертні оцінки.

**Результати.** Цю модель можна застосовувати в усіх початкових школах на території Індонезії, оскільки розробка продукту стосується компетенцій і результатів навчання в навчальній програмі 2013 року. Існує чотири типи ігор, які були розроблені для вивчення локомоторних навичок, а саме: 1) гра в стрибки через скакалку, 2) гра в стеження за крокодилами, 3) гра в безперервний біг і 4) гра в стрибки з коробки. Кожна гра передбачає різні рухові навички, зокрема ходьбу, біг, обережний плавний рух, перестрибування, галоп, перескакування, стрибки, підскакування. З огляду на аспект ефективності, результати випробування продукту показують, що «гра в обережного крокодила» — це гра, яка користується великим попитом і прихильністю учнів.

**Висновки.** Модель навчання локомоторних навичок для учнів початкової школи на основі невеликих ігрових змагань виявилася практично здійсненною та ефективною для використання на уроках спортивно-оздоровчого фізичного виховання. Цю модель також можна застосовувати в усіх початкових школах на території Індонезії, оскільки розробка продукту стосується компетенцій і результатів навчання в навчальній програмі 2013 року.

**Ключові слова:** базовий локомоторний, початкова школа, модель навчання, малі ігри.

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