

# 1           **Basic Locomotor Learning Model: New Approach Using Small Games**

## 2           **Competition in Elementary School**

### 3

### 4           **Abstract**

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

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

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

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

28

29           **Keywords:** Basic Locomotor, Elementary School, Learning Model, Small Games

## 30            **Introduction**

31            Physical education is an important part of the overall education system.  
32            Physical education is a medium to encourage the development of motor skills  
33            (basic movements), physical abilities, knowledge, reasoning, appreciation of  
34            values (attitude, mental, emotional, and social), and habituation of healthy  
35            lifestyles that lead to increased balanced growth. and development (Young et al.,  
36            2021; Carson Sackett & Edwards, 2019). In developing concepts with various  
37            teaching methods, the material is given during physical education learning  
38            (Hartati et al., 2019). Physical education is the occurrence of learning through  
39            physical activity by designing so that physical fitness, knowledge, healthy living  
40            behaviour, being active, sportsmanship, emotional intelligence, development  
41            skills and motor skills can be improved (Silva et al., 2019). Physical education  
42            learning at the education level is found in elementary schools, junior high schools,  
43            and high schools (Montero-Carretero & Cervelló, 2020).

44            Physical education material contained in elementary schools is about  
45            learning basic movements. Regulation of the Minister of Education and Number  
46            67 of 2013 concerning the Basic Framework and Curriculum Structure of  
47            Elementary Schools/*Madrasah Ibtidaiyah* states that one of the characteristics of  
48            the curriculum is designed to develop attitudes (affective), knowledge (cognitive)  
49            and skills (psychomotor) and their application in various situations in schools and  
50            schools. school. Public. The structure and curriculum of physical education in  
51            sports and health in existing primary schools have the characteristics of basic  
52            technical skills from various sports.

53            The 2013 curriculum at the elementary school level is used thematically  
54            integratively for learning physical education subjects (Hartati et al., 2018). The  
55            basic technical skills of this sport will be mastered by students if they have  
56            mastered the basic movement skills first. Motor skills are a process of developing  
57            a person's ability to move which is controlled by the brain through the interaction  
58            of various parts and systems in the body (Ayubi & Komaini, 2021) Basic  
59            movements are skills that involve the brain, muscle strength involving the arms  
60            and legs that are used to achieve an exercise or movement, such as throwing a  
61            ball, visiting, or jumping through air movements, or maintaining balance  
62            (Komaini et al., 2021). Motor skills are divided into two, namely fine motor skills  
63            and gross motor skills. Through various activities including motor skills, physical  
64            education learning in elementary schools will train children to learn various  
65            movement skills in the form of games, athletics, and gymnastics (Dapp et al.,  
66            2021).

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

82 Reviana et al., (2021) in their journal has the same problem, namely,  
83 students do not like learning basic movements because they feel bored with the  
84 applied learning model. In line with research by Hernawan et al. (2019) in his  
85 research to overcome this problem, the researcher used the development of a  
86 locomotor basic movement learning model for elementary school students using  
87 PACEF (Productive, Active, Creative, Effective and Fun). For elementary school  
88 students, mastery of locomotor skills can also be done through throwing and  
89 catching activities (Jaakkola et al., 2019). In addition, physical activity such as  
90 aerobic fitness exercise can be used as a medium to improve the basic motor skills  
91 of elementary school students (de Bruijn et al., 2019; Grissmer, Grimm, Aiyer,  
92 Murrah, & Steele, 2010; Logan, Kipling Webster, Getchell, Pfeiffer, & Robinson,  
93 2015).

94 Various studies have shown that basic movement skills competence and  
95 moderate to vigorous physical activity are opportunities for locomotor movement  
96 skills (Cohen, Morgan, Plotnikoff, Callister, & Lubans, 2014; Han, Fu, Cobley,  
97 & Sanders, 2018; Webster, Martin, & Staiano, 2019). Because children who  
98 cannot master FMS are more likely to experience failure in the motor domain  
99 movement in games and sports is also impaired (Hardy, King, Farrell, Macniven,  
100 & Howlett, 2010; Bryant, Duncan, & Birch, 2014; Shams, Hardy, Vameghi,  
101 Loovis, & Shamsipour Dehkordi, 2021). In addition, FMS is the basis of early  
102 motor markers, especially for autism spectrum disorders (Gandotra et al., 2020)

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

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

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## 127 **Materials and methods**

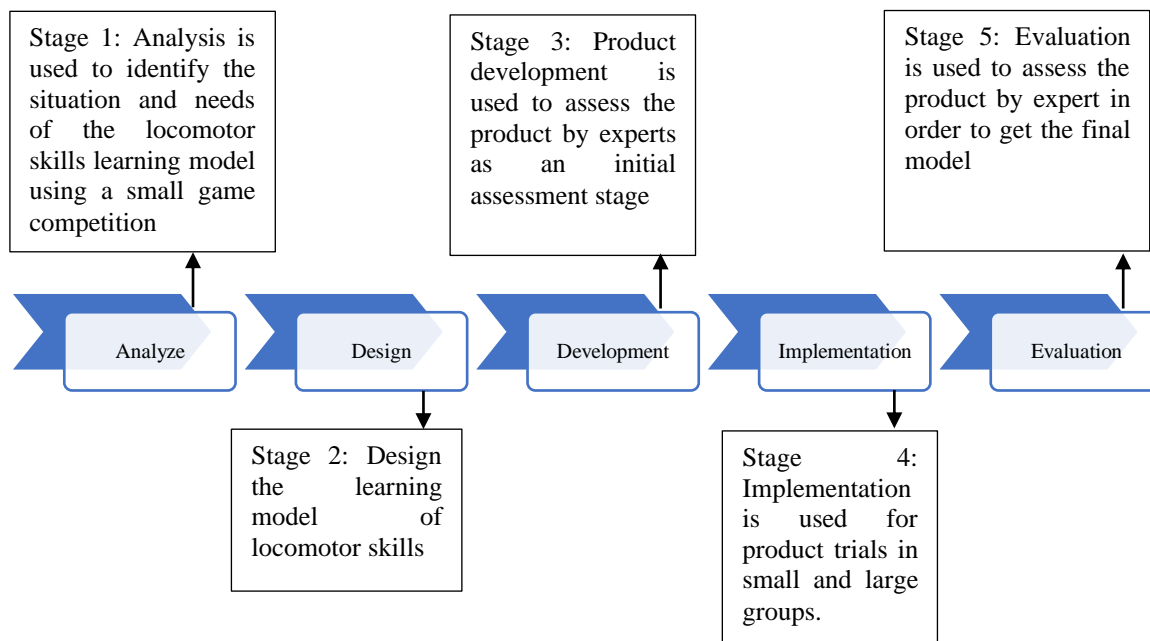
128 This study used a research and development approach. It is used to produce  
129 certain products and tests their effectiveness these products (Creswell, 2012; Gall  
130 et al., 2010). It is used to create a new model for locomotor skills learning using  
131 small games competition. This research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

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141 **Picture 1.** The Steps of research adapted from the ADDIE model  
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143 **Participants**

144 The participants were students from three elementary schools was around  
145 50 students and 10 teachers. Besides, the expert was learning media experts,  
146 curriculum experts, and locomotor and sports learning experts.  
147

148 **Measures**

149 The data used in the study are 1) observation used for problem  
150 identification and to determine the effectiveness of product trials in the field. 2)  
151 Interviews were used to analyze students' perceptions of the practicality of using  
152 a game-based locomotor motion learning model. 3) Questionnaires are used to  
153 obtain an analysis of the needs of the basic locomotor movement model from  
154 students and teachers. Questionnaires were distributed to students (N=100) and  
155 teachers (N=10). The questionnaire was designed using a closed questionnaire  
156 type and participants had to choose the answers that had been provided related to  
157 the questions. The questionnaire instrument used in this study was the Guttman  
158 scale questionnaire because by using the Guttman scale the researchers got clear  
159 answers from students and teachers. Questionnaires were also used for product  
160 assessment by teachers. The model validation uses expert judgment consisting of  
161 learning media experts, curriculum experts, and locomotor and sports learning  
162 experts. 4) The test is used to determine the increase in student locomotor skills  
163 learning activities before and after using a small game competition. Researchers  
164 use correlation tests to see the relationship between pretest and posttest during

165 product testing. The questionnaire used to analyze the need for locomotor skills  
 166 was distributed to 100 students and 10 physical education and sports teachers.  
 167 The results of the needs analysis are presented in percentages. The following is  
 168 the questionnaire of needs analysis of the locomotor skills model (Sari, 2019);  
 169

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

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

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## Results

### 1. Needs Analysis and Design

174 In this initial product development stage, the researcher first analyzed the  
 175 goals and practice of the product in the form of a small game aimed at training  
 176 elementary school students' basic movements. Then the researchers analyzed the  
 177 character of the students, the target students were elementary school children. In  
 178 the analysis, elementary school-aged children are very happy to play, love to  
 179 move, enjoy group activities, and enjoy hands-on practice. The main purpose of  
 180 physical and health education is to increase life-long physical activity and  
 181 encourage the physical, psychological and social development of students. The  
 182 initial product developed by the researcher was a game to watch out for  
 183 crocodiles, a continuous running game, a box jump game and a grave jump game.

184 The result of locomotor skills learning needs for elementary school  
 185 students is explained in the following table;

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187

**Table 1.** 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%
Grave jump game	Walk, Run, Slide, Leap, Gallop, Skip, Jump, Hop	90%	90%

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

## 194 2. Development, Implementation, and Evaluation of Product

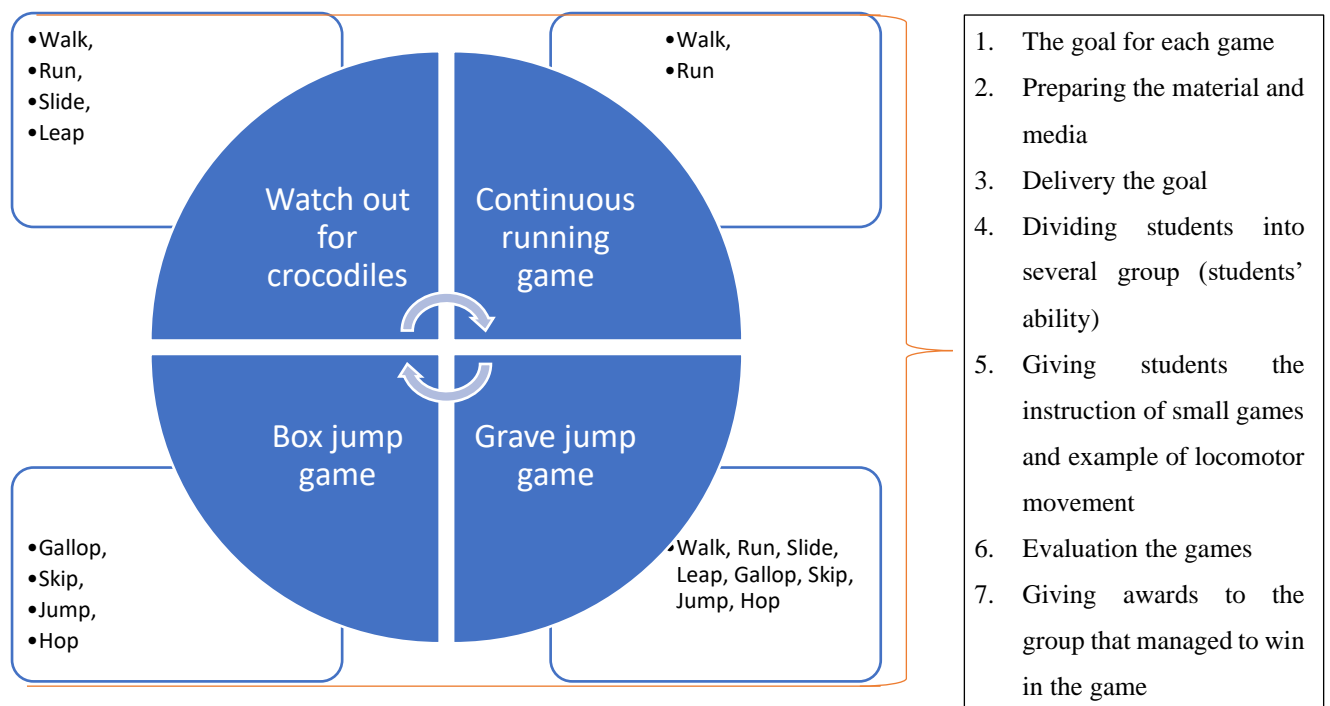
195 Researchers used a validation sheet that was used to assess whether the  
 196 design of the locomotor basic movement learning model would be more effective  
 197 than before or not. The results of the small game product assessment have an  
 198 average of 80% with a "good" rating category. Based on this assessment, it can  
 199 be concluded that the small game product is feasible and ready to be used in  
 200 further research. In addition to the assessment, the validator also provides  
 201 suggestions and comments regarding the small game product developed by the  
 202 researcher. Suggestions and comments that are corrected by the validator will  
 203 then be used as the basis for researchers to improve the product, to produce a  
 204 product that is worthy of being tested at a later stage. The validator suggests that  
 205 each game is equipped with media or facilities that can be obtained easily so that  
 206 this game can also be played by students at home.

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

219 Based on the results of the large group effectiveness test conducted on the  
 220 fifth-grade students of Elementary school 22 Gelumbang, Elementary school 11

221 Gelumbang and Elementary school 2 Lembak, totalling 50 people, it can be seen  
 222 that the small game product that the researcher developed is considered effective  
 223 for use in the physical education learning process in elementary schools. In the  
 224 watch game, there are crocodiles, there is a 60% increase in the results of the  
 225 pretest and post-test differences, then in the continuous running game there is a  
 226 60% increase in the results of the pretest and post-test differences, then in the box  
 227 jump game there is a 42.4% increase in the results of the pretest and posttest  
 228 differences, and finally, in the graveyard game, there was a 35% increase from  
 229 the difference between pretest and posttest.

230 The following is the final learning model of locomotor skills using  
 231 competition small games;



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 234  
 235

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

236 **Discussion**

237 The locomotor basic movement learning model is based on small game  
 238 competition in small and large group trials, and peer assessment and the experts  
 239 show the valid model. The results of the assessment of game product drafts in  
 240 small group trials and expert validators obtained an average percentage of 86%.  
 241 The validation results that have been assessed by the validator (learning media  
 242 experts, curriculum experts, and locomotor and sports learning experts ) and small  
 243 game-based locomotor basic movement learning are included in the good or valid



244 category and can be continued for small group trials. Validation is considered  
245 fulfilled if the instrument has been designed well, and the validation is tested by  
246 experts (Faizah et al., 2019).

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

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

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

281 post-test differences, then in the box jump game there is a 42.5% increase in the  
282 results of the pretest and posttest differences, and finally, in the graveyard jump  
283 game, there was a 35% increase from the difference between pretest and posttest.

284 This research has a mission to develop a basic locomotor learning model  
285 for elementary school students in Class VI that supports productive, active,  
286 creative, effective and fun learning in the learning system of Physical Education,  
287 Sports and Health in school. In addition to increasing student activity, small  
288 games in the form of "watch out for crocodiles", continued running, box jumping,  
289 and grave jumping can increase students' motivation to learn (Irfandi & Rahmat,  
290 2016'; Palmizal et al., 2020). Researchers tried learning through play for the  
291 development of creativity and cognitive early childhood (Nurjanah &  
292 Wahyuseptiana, 2018).

293 The interesting thing that researchers found was that students liked small  
294 game-based learning in the form of "watch out for crocodiles" and continued  
295 running, box jumping and grave jumping seen from the enthusiasm shown by  
296 students and students focused on learning basic locomotor movements seen from  
297 the focus of students listening to instructions teacher or researcher and from the  
298 activeness of students because they are excited when playing. Each instruction  
299 given in this learning model has been adapted to the learning outcomes of the  
300 2013 curriculum. This means that the development of this small game-based  
301 locomotor skills learning model has a context that is in line with the 2013  
302 curriculum so that it can be used by all regions in Indonesia. Every movement of  
303 the game also shows the traditional games that are often played by children in  
304 Indonesia.

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

316

317

318 **Conclusions**

319 The results of the research and development data analysis that have been  
320 carried out conclude that the locomotor skills learning model for elementary  
321 school students based on small game competitions has been feasible and effective  
322 for use in sports and health physical education classes. This model can also be  
323 applied in all elementary schools in the territory of Indonesia because product  
324 development has referred to competencies and learning outcomes in the 2013  
325 curriculum. There are four types of games that have been developed for learning  
326 locomotor skills, namely 1) grave jump game, 2) watch out for crocodiles, 3)  
327 continuous running game, and 4) box jump game. Each game has different  
328 locomotor skill movements, including walk, run, slide, leap, gallop, skip, jump,  
329 and hop. This means that each game can have one or more or even all the moves  
330 that have been identified during the needs analysis activity. This small game-  
331 based locomotor basic movement learning model can motivate students to carry  
332 out basic locomotor movement learning activities. Based on the effectiveness  
333 aspect, the results of the product trial show that the "wary crocodile game" is a  
334 game that is in great demand and favoured by students. The results of the tests  
335 conducted, also show that the type of game that watches out for costs has the  
336 highest percentage.

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

351

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353 Thank you to all students and teachers at Elementary school 22  
354 Gelumbang, Elementary school 11 Gelumbang and Elementary school 2 Lembak,

355 as well as the entire research team who have helped the research process from the  
356 beginning to produce the product.

357

### 358 **Conflict of interest**

359 There are no conflicts of interest to declare.

360

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## Participants

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Dear Galyna Protsenko

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Best regards,  
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Dear Mr Stepan Shulga

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Thank you for your attention

Regards,

Hartati

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# Basic Locomotor Learning Model: New Approach Using Small Games Competition in Elementary School

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

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## Abstract

**The study purpose.** Physical education, sports and health for elementary school students are oriented to 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 collected using observation, interview, questionnaire and test. The questionnaire instrument used in this study was the Guttman scale questionnaire because by using the Guttman scale. Judgment expert 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) grave jump 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, hop. 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 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

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 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). 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 (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 the 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).

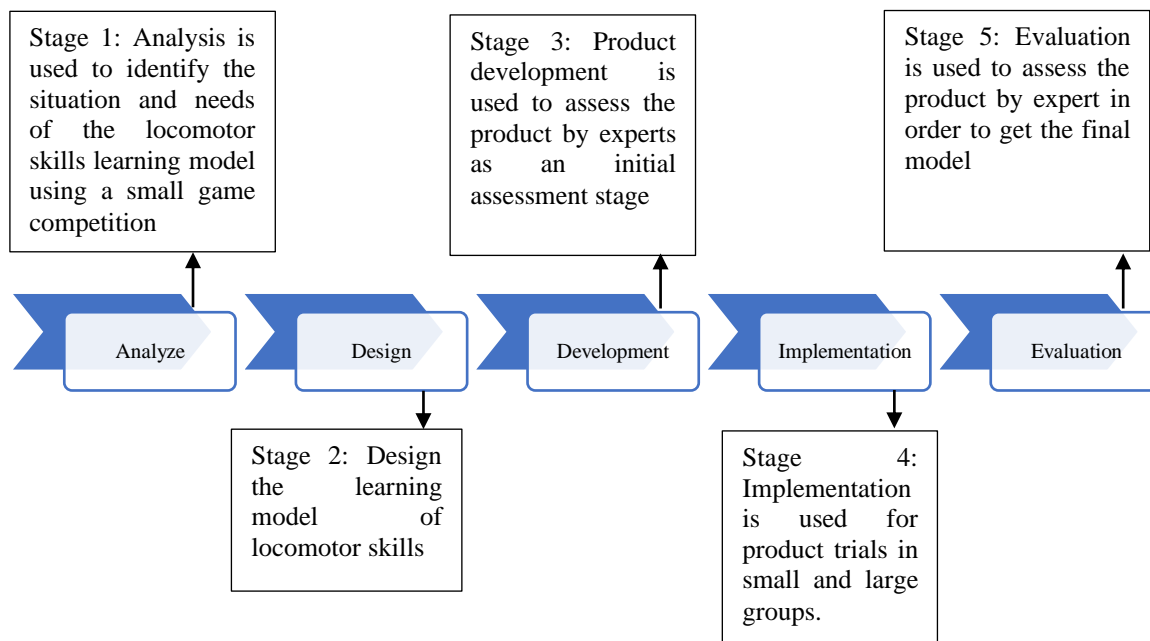
Various studies have shown that basic movement skills competence and moderate to vigorous physical activity are opportunities for locomotor movement skills (Cohen, Morgan, Plotnikoff, Callister, & Lubans, 2014; Han, Fu, Cobley, & Sanders, 2018; Webster, Martin, & Staiano, 2019). Because children who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



**Picture 1.** The Steps of research adapted from the ADDIE model

## 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 by 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 100 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);

**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

## Results

### 1. 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 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 grave jump game.

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

**Table 1.** 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%
Grave jump game	Walk, Run, Slide, Leap, Gallop, Skip, Jump, Hop	90%	90%

Table 1 shows that the small game competitions that students want and need in order are 1) grave jump 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.

## **2. Development, Implementation, and Evaluation of Product**

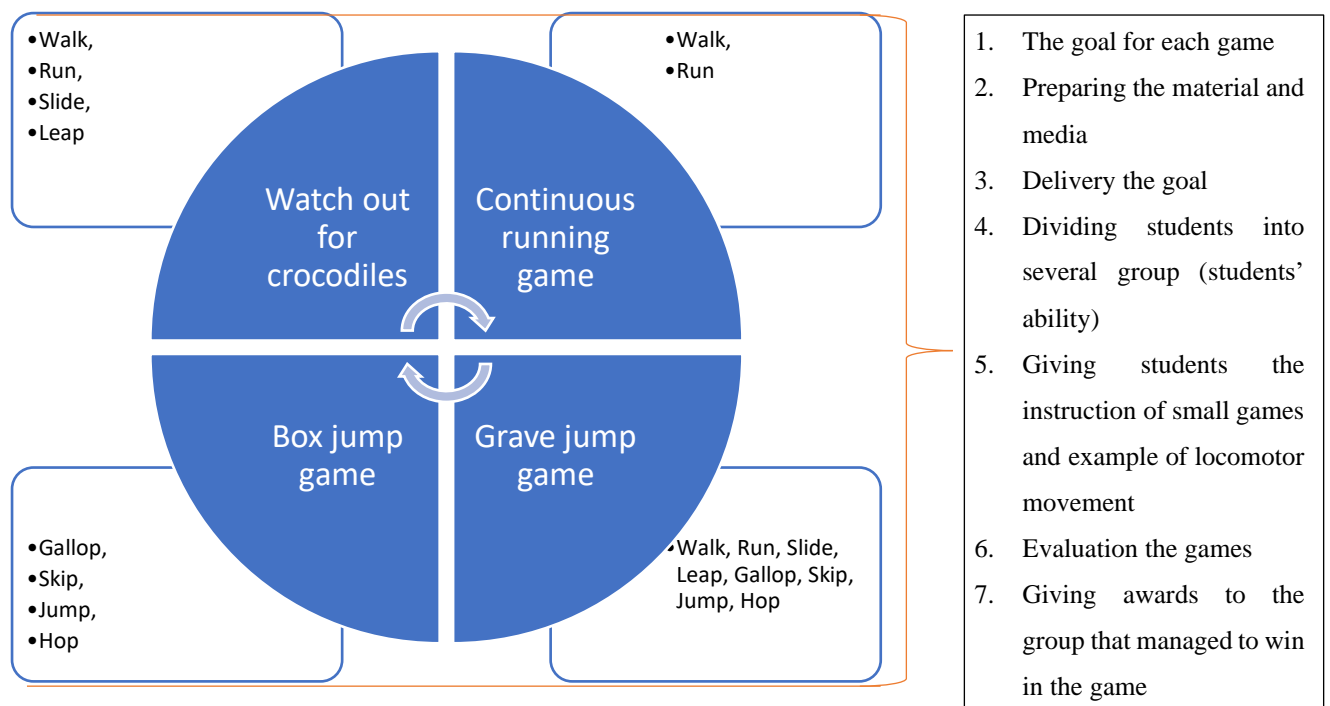
Researchers used a validation sheet that was used to assess whether the design of the locomotor basic movement learning model would be more effective than before or not. The results of the small game product assessment have an average of 80% with a "good" rating category. Based on this assessment, it can be concluded that the small game product is feasible and ready to be used in further research. In addition 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 posttest differences, and finally, in the graveyard jump 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 graveyard 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;



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

## Discussion

The locomotor basic movement learning model is based on small game competition in small and large group trials, 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 out for crocodiles 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 graveyard jump 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 Mantilla & 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 graveyard jump 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 supports 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 grave 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 grave 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 they 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) grave jump 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 skill 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.

## **Acknowledgement**

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as well as the entire research team who have helped the research process from the beginning to produce the product.

### **Conflict of interest**

There are no conflicts of interest to declare.

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## 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 to 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 is in 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

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

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). 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

(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 the 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, Copley, & 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.

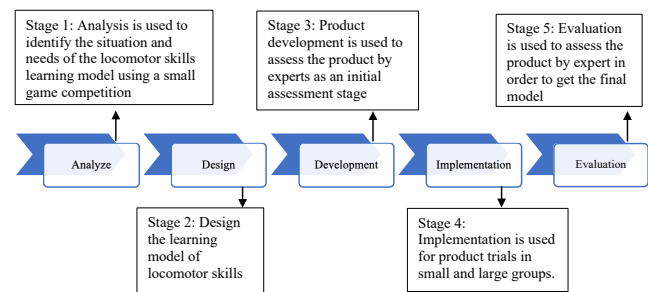


Fig. 1. The Steps of research adapted from the ADDIE model



**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 by 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 100 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 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 80% 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,

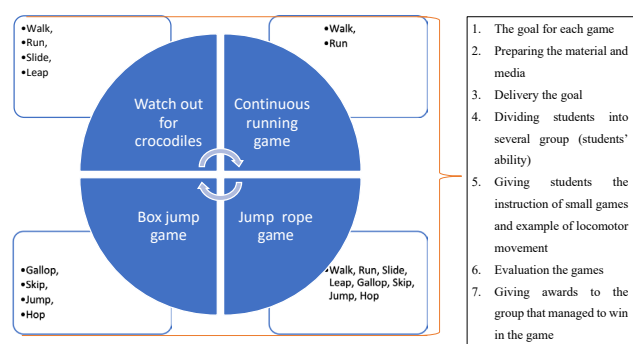


Fig. 2. Syntax of Small Games Competition for Locomotor Skills Learning Model

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 out for crocodiles 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 Mantilla & 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 supports 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 they 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 skill 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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## 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; Е – 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 здійсненою 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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