RESEARCH ARTICLE

Learning Model for Game-Based Long Jump Skills In Children Aged 12-14 Years

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ARTICLE INFO	ABSTRACT
  --- ***Corresponding Author:** you.chong@mhs.unj.ac.id	This research uses qualitative and quantitative approaches to find answers to existing problem formulations. This research entitled game-based long jump learning model uses research and development steps from Borg and Gall which consist of 10 steps of the Borg & Gall development research model was taken into consideration, As it is known that the minimum value of the experimental group''s long jump pre test is 57 while the maximum value is 67 with an average value of 61.93 and a standard deviation of 2.96 Then it can be seen that the minimum value of the experimental group''s long jump post test is 99 while the maximum value is 113 with an average of 105.73 and a standard deviation of 4.06 Based on the results of needs analysis, expert validation, field trials, effectiveness tests and discussion of research results on this game-based long jump skills learning model product, it can be concluded that: 1. This series of research processes has produced 39 product models for learning game-based long jump skills for children aged 12-14 years which are packaged in the form of textbooks. 2. A game-based learning model for long jump skills has been proven to be effective in improving long jump skills in children aged 12-14 years.

INTRODUCTION

Based on the foregoing, physical education learning should apply learning models that are appropriate between basic competencies and the characteristics of children aged 12-14 years in athletic learning with long jump material as confirmed by (Regaieg et al., 2020), namely education must be planned based on student competence. In learning physical education, sports and health, teachers often provide brief explanations and examples of movements before entering the actual practice of movements (Steenbock et al., 2019). This is done so that children are better prepared to practice certain movements (Paśko et al., 2021). In addition, physical education learning not only develops psychomotor aspects, but also cognitive, affective, spiritual and social aspects in accordance with the curriculum objectives, which include four competencies: (1) spiritual attitude competence, (2) social attitude, (3) knowledge, and skills (Cripps et al., 2020).

Children aged 12-14 years who are in the junior high school education level unit are in the Training to Train period as stated which suggests the age of 12-14 years is the Training to Train period (Zhuravleva & Aiken, 2023). Where it's time to automate skills, accuracy and quality of play (Litwiniuk et al., 2021). Girls aged 12 to 13 years are the stage of staying focused on sports as fun and providing experience (Striclavenko et al., 2019). The age of 12-14 years can be given learning with competitive situations, either in the form of training matches or games (Aiken & Becker, 2023). Furthermore, revealed that boys aged 12-16 years and girls aged 11-15 years are a transition period with a focus on speed training and strength training specifically done to support speed training programmes (Chomani et al., 2021). Likewise that the age of 12-14 is the beginning of the long jump material in Athletics (Itotani et al., 2021). Suggest that boys aged 12-16 years and girls aged 11-15 years can be introduced to plyometric training with external loads (Ke et al., 2021). Furthermore aged 12-14 years is a stage of sports formation that emphasises competitive games without prioritising at the age of 13-14 years is a transitional age between physical formation and the formative stage with an element of excitement that plays an important role in the physical formation process (Mischenko et al., 2020).

Based on the data above and the results of observations made by the authors and theoretical studies, to improve the quality of the learning process carried out and the quantity of children participating in various competition events, a solution and innovation in the learning process should be needed so that it can run optimally and long jump materials are in great demand by students (Hildebrandt & Cañal-Bruland, 2020). This is also in line with the statement of the International society for technology in education namely the 21st century teacher's skills are able to encourage, support and model discovery and creative and innovative thinking (Duncan et al., 2019). The new breakthrough that needs to be made in children aged 12-14 years who are at the Junior High School education unit level is to provide a game-based learning model for children aged 12-14 years. This is done so that children can be happier, more excited, more active and more confident in carrying out the learning process provided by the teacher. Therefore, the authors are interested in conducting a study with the title "Game-Based Learning Model of Long Jump Skills in children aged 12-14 years".
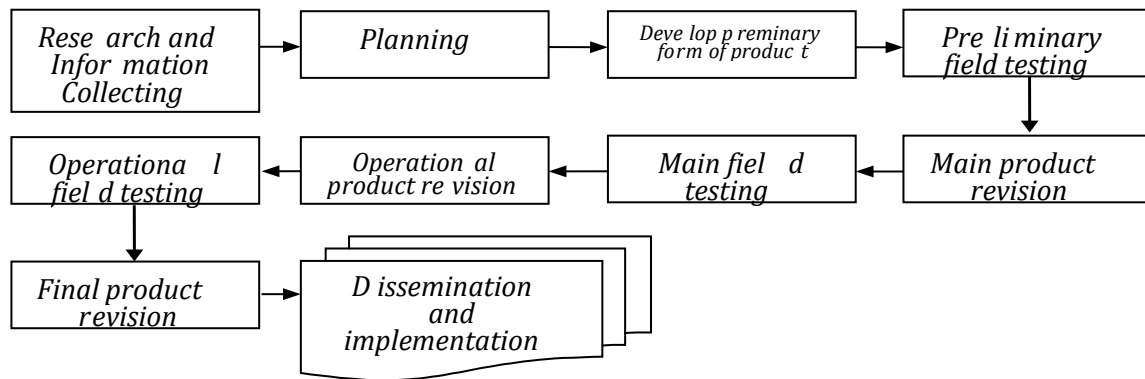
2.   METHODOLOGY

2.1. Sample and data collection

The types of data used in this research are qualitative data and quantitative data. Qualitative data is used to complete the first objective through observation sheets, while quantitative data is used to reveal the second objective through an experimental research design.

2.2. Instrument development

The model creation steps that researchers use refer to the Borg & Gall model. Here are the steps in Borg & Gall:

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┌─────────────────┐   ┌──────────────┐   ┌──────────────────┐   ┌──────────────┐
│ Rese arch and   │→  │  Planning    │→  │ Deve lop p       │→  │ Pre li minary│
│ Infor mation    │   │              │   │ reminary form    │   │ field testing│
│ Collecting      │   │              │   │ of produc t      │   │              │
└─────────────────┘   └──────────────┘   └──────────────────┘   └──────────────┘
                                                                        │
                                                                        ↓
┌─────────────────┐   ┌──────────────┐   ┌──────────────────┐   ┌──────────────┐
│ Operationa l    │←  │ Operation al │←  │ Main fiel d      │←  │ Main product │
│ fiel d testing  │   │ product re   │   │ testing          │   │ revision     │
│                 │   │ vision       │   │                  │   │              │
└─────────────────┘   └──────────────┘   └──────────────────┘   └──────────────┘
        │
        ↓
┌─────────────────┐   ┌──────────────┐
│ Final product   │→  │ D issemination│
│ revision        │   │ and          │
│                 │   │ implementation│
└─────────────────┘   └──────────────┘
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Picture 1
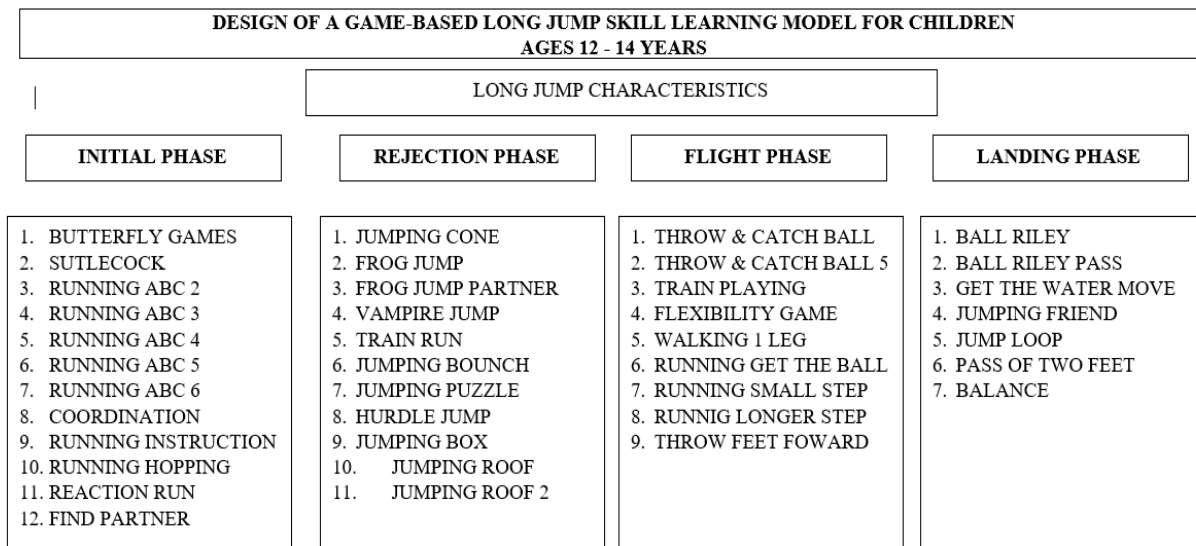Model Borg & Gall and Gal, Meredith D 4th Edition (New York; Logman Inc, 2003)

2.3. Characteristic Learning Model

In this study, the characteristics of this long jump skill learning model were for children aged 12–14 years who were at the junior high school education unit level in Hunan province, China. The determination of this age range refers to the opinion of Bompa & Haff (2019) that the age 12-14 is the beginning of the long jump training material in Athletics. This game-based model of learning long jump skills means a model of learning skills through games with various variations and fun. The skills learning model is prepared as best as possible so that later it will produce a product that can serve as guidance and guidance for Physical Education, Sports and Health teachers in Hunan in particular and China in general. Some of the characteristics of the long jump skill learning model included in the learning process are:

a. Effectiveness, meaning that the game-based long jump skill learning model can make it easier for teachers to provide teaching.

b. Efficient, meaning that the process of learning game-based long jump skills does not waste a lot of learning time.

c. Variative, meaning that the game-based long jump skill learning model has learning variations that can prevent students from getting bored in the learning process

d. Attractiveness and fun, meaning that the game-based model of learning long jump skills can motivate students in carrying out the learning process.

2.4. Long Jump Model Learning Design

DESIGN OF A GAME-BASED LONG JUMP SKILL LEARNING MODEL FOR CHILDREN AGES 12 - 14 YEARS

LONG JUMP CHARACTERISTICS

INITIAL PHASE	REJECTION PHASE	FLIGHT PHASE	LANDING PHASE
1. BUTTERFLY GAMES 2. SUTLECOCK 3. RUNNING ABC 2 4. RUNNING ABC 3 5. RUNNING ABC 4 6. RUNNING ABC 5 7. RUNNING ABC 6 8. COORDINATION 9. RUNNING INSTRUCTION 10. RUNNING HOPPING 11. REACTION RUN 12. FIND PARTNER	1. JUMPING CONE 2. FROG JUMP 3. FROG JUMP PARTNER 4. VAMPIRE JUMP 5. TRAIN RUN 6. JUMPING BOUNCH 7. JUMPING PUZZLE 8. HURDLE JUMP 9. JUMPING BOX 10. JUMPING ROOF 11. JUMPING ROOF 2	1. THROW & CATCH BALL 2. THROW & CATCH BALL 5 3. TRAIN PLAYING 4. FLEXIBILITY GAME 5. WALKING 1 LEG 6. RUNNING GET THE BALL 7. RUNNING SMALL STEP 8. RUNNIG LONGER STEP 9. THROW FEET FOWARD	1. BALL RILEY 2. BALL RILEY PASS 3. GET THE WATER MOVE 4. JUMPING FRIEND 5. JUMP LOOP 6. PASS OF TWO FEET 7. BALANCE

Picture 2.
Long Jump Model Design

3. Subject, data analysis and result

3.1. Subject

The subjects in this research were children aged 12–14 years who were at the junior high school education unit level. For the small group trial there were 24 students, for the large group trial there were 100 students, and for the effectiveness test there were 80 students with details of 40 students in the experimental group, and 40 students in the control group. The following is a table of characteristics of research subjects: Table 3.1: Characteristics of Research Subjects

Characteristics	Gender	Trials Small Group	Trials Large Group	Effectivity test	
				Exsperimen	Control
Age 12 – 14 years old	Male	12	50	20	20
	Female	12	50	20	20
Amount		24	100	40	40
Total		204			

Table.1

The data table above can be used as a reference for researchers to test the effectiveness of the designed learning model. As it is known that the minimum value of the experimental group's long jump pre test is 57 while the maximum value is 67 with an average value of 61.93 and a standard deviation of 2.96; Then it can be seen that the minimum value of the experimental group's long jump post test is 99 while the maximum value is 113 with an average of 105.73 and a standard deviation of 4.06; Furthermore, it is known that the minimum value of the control group's long jump pre test

is 58 while the maximum value is 68 with an average control group long jump pot test of 62.00 and a standard deviation of 2.49; And it is known that the minimum value of the control group's long jump post test is 75 while the maximum value is 92 with an average of 82.58 and a standard deviation of 4.56. Before determining the effectiveness test of the designed learning model, there are several analysis requirements that must be carried out, namely the data normality test and the data homogeneity test.

3.2. Data Analysis

The data table above can be used as a reference for researchers to test the effectiveness of the designed learning model. As it is known that the minimum value of the experimental group's long jump pre test is 57 while the maximum value is 67 with an average value of 61.93 and a standard deviation of 2.96; Then it can be seen that the minimum value of the experimental group's long jump post test is 99 while the maximum value is 113 with an average of 105.73 and a standard deviation of 4.06; Furthermore, it is known that the minimum value of the control group's long jump pre test is 58 while the maximum value is 68 with an average control group long jump pot test of 62.00 and a standard deviation of 2.49; And it is known that the minimum value of the control group's long jump post test is 75 while the maximum value is 92 with an average of 82.58 and a standard deviation of 4.56. Before determining the effectiveness test of the designed learning model, there are several analysis requirements that must be carried out, namely the data normality test and the data homogeneity test.

	N	Min	Max	Mean	Std. Deviation
Experimental Group Pre Test Score	40	57	67	61.93	2.96
Experimental Group Post Test Value	40	99	113	105.73	4.06
Control Group Pre Test Value	40	58	68	62.00	2.49
Control Group Post Test Value	40	75	92	82.58	4.56
Valid N (listwise)	40				

Table 2.

After conducting the data normality test, the next analysis requirement is the homogeneity of variance test. The homogeneity of variance test was carried out with the help of the IBM SPSS Statistics Version 29.0.0.0 (241) 2023 programme. Details of the data from the homogeneity of variance test results can be seen in table 3 below:

		Levene Statistic	df1	df2	Sig.
Long Jump Ages 12 - 14 Years Old	Based on Mean	.396	1	78	.531
	Based on Median	.201	1	78	.655
	Based on Median and with adjusted df	.201	1	74.261	.655
	Based on trimmed mean	.367	1	78	.546

Table 3

3.3. Result

Development research is research that will ultimately produce a product that must have clear stages. These stages will become a guide that can provide clear instructions to researchers to make it easier to carry out the research process. In this research, the researcher refers to development research developed by Borg and Gall with 10 stages or steps that must be followed. After going through the entire series of stages or steps, it can be concluded that the game-based learning model for long jump skills is effective in improving long jump skills in children aged 12-14 years. This is based on the results of effectiveness tests on models designed and applied to children aged 12-14 years.

This game-based learning model for long jump skills has been developed based on research and information collecting which includes a preliminary study of children aged 12-14 years. The study carried out included literature study and needs analysis. Literature study consists of summarizing previous research and literature or theories related to the research theme. Based on research and information collecting, an understanding was found that long jump learning can be done through games. Apart from that, the researcher also carried out research and information collecting through observations and interviews as well as the researcher's personal experience as a lecturer who teaches athletics courses. As a result, researchers found that the skills learning model used so far is still the old model, lacking variety so that children/students are bored and bored in the learning process. This is contrary to the LTAD theory by Balyi et all., (2013) where children aged 12 - 14 years as stated in the LTAD enter the training to train period with basic learning outcomes and

physical development which can be provided with 75% game quality. Even those aged 12 – 14 years can be given learning in competitive situations, either in the form of practice matches or games. This form of play for children aged 12-14 years places more emphasis on a competitive nature without placing too much emphasis on winning. Likewise, Bompa and Carrera (2015) stated that children aged 12-14 years are the starting point for children to participate in long jump athletics. Thus, there is a great need for variations in games for children aged 12-14 years, especially long jump athletics. It is hoped that the development products produced by researchers can become a reference source for children aged 12-14 years and Physical Education teachers, especially teachers at Junior High School or equivalent level.

4. DISCUSSION

The game approach in providing learning that is rich in movement activities is an interesting thing to apply to children aged 12-14 years. Games are a medium that improves children's development, and through games enable children to practice, develop their potential and necessary skills in fun ways. As stated by Santrock (2015), games are fun activities that have rules with the aim of having fun. Piaget (2014) states that play is an activity that is limited by and a medium that encourages cognitive, affective and psychomotor development. McMahon (2016) stated that playing is a spontaneous and active process where thoughts, feelings and actions can develop because often thoughts, feelings and behavior are separated from feelings of fear of failure or the consequences of problems. Frost et al., (2012) games are a tool for children to explore their world, from the unknown to the known, and from what they cannot do until they are able to do it. Ikee and Agus (2016) stated that through the application of the play method to movement material is one of the efforts made to improve children's abilities and with the play method children can receive the lesson material well and according to Zielinski (2019) states Playing games has been and continues to be a recommended way to learn. This idea aligns well with constructivism, or student-centered learning. Playing has been and continues to be a recommended way of learning. Deck et al,. (2020) revealed that the enjoyment factor will influence the quality of learning, where enjoyment in learning is associated with increased learning time and boredom is associated with short learning duration. Osgood (2015) states that boredom is an emotional state characterized by dissatisfaction with unstimulating situations and low arousal. Furthermore, Wolff et al. (2021) revealed that in the context of sports, boredom plays an important role, if what is generally done is fun it can actually eliminate boredom, but if you look specifically at learning that makes you bored it will affect the quality of the learning.

Thus, the findings of this research reveal the understanding that to avoid boredom in learning, especially long jump material for children aged 12-14 years can be given in the form of a game. The variations of games that have been designed and implemented in this research can make children aged 12-14 years happier, more enthusiastic and more active without experiencing boredom in carrying out the learning program.

Based on the findings and discussion presented above, the game-based long jump learning model is effective in supporting and developing the long jump learning process, especially in children aged 12-14 years. Therefore, these findings can be used as a reference.

5. CONCLUSSION

Based on the results of needs analysis, expert validation, field trials, effectiveness tests and discussion of research results on this game-based long jump skills learning model product, it can be concluded that:

1. This series of research processes has produced 39 product models for learning game-based long jump skills for children aged 12-14 years which are packaged in the form of textbooks.

2. A game-based learning model for long jump skills has been proven to be effective in improving long jump skills in children aged 12-14 years.

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