



## Table Tennis Forehand Drive Learning Model for Application based Elementary School Students

Agus Kurniadi \*<sup>1</sup>, Hernawan <sup>2</sup>, Sri Nuraini <sup>3</sup>

<sup>123</sup>Physical Education, Faculty of Sports Science, Universitas Negeri Jakarta , Jakarta, Indonesia.

### Article Info

Article History :

Received : August 2023

Revised : September 2023

Accepted : September 2023

### Keywords:

Forehand drive,  
Learning Model,  
Table tennis,

### Abstract

This research produces a learning model for table tennis forehand drive strokes for upper elementary school students and tests the effectiveness of an application-based table tennis forehand stroke skill model for upper elementary school students. The research approach and method for this table tennis Forehand drive stroke skill learning model uses the ADDIE (Analysis, Design, Development, Implementation and Evaluation) research and development model. The subjects involved in this research were 34. The subjects of this research were upper elementary school students. The data analysis technique was created by conducting a pretest and posttest using a forehand drive stroke skill movement instrument. The results are analyzed, the point is to find out whether there is a percentage increase in skills through the learning model given to students. Based on the results of the analysis, it was found that there was an increase in the ability of table tennis forehand drive strokes for elementary school IV students after implementing the forehand drive movement learning model. The results obtained were 6.41% pre-test and 8.65% post-test.



\*Corresponding email : [aguskurniadi60@gmail.com](mailto:aguskurniadi60@gmail.com)

ISSN 2685-6514 (Online)

ISSN 2477-331X (Print)

## INTRODUCTION

Physical Education learning has an important role in shaping student health and fitness. Through physical activity applied during learning, students can improve their physical and mental condition and help maintain body balance (Kokkonen et al., 2019). In addition, Physical Education Learning also helps students understand the importance of a healthy and active lifestyle. Through learning, students can understand the benefits of exercising regularly and living a healthy lifestyle, so as to apply it in daily life (Boonsem & Chaoensupmanee, 2020). Thus, Physical Education Learning has an important role in shaping students into healthy, active, and productive individuals.

Table tennis is a popular sport that can be enjoyed by people of all ages. It is a relatively easy sport to learn, but it can be challenging to master (Kamal, 2020). One of the most important shots in table tennis is the forehand drive. The forehand drive is a shot that is used to hit the ball with a lot of power and spin. It is a very versatile shot that can be used to attack, defend, and set up other shots. There are many different ways to teach the forehand drive. Some people prefer to teach the shot using traditional methods, such as drills and demonstrations. Others prefer to use more innovative methods, such as virtual reality and augmented reality (Fitra, 2013).

This study will investigate the effectiveness of a new learning model for teaching the forehand drive to elementary school students (Faris, 2022). The learning model will use a combination of traditional and innovative methods to teach the shot. The study will compare the results of students who learn the shot using the new learning model to the results of students who learn the shot using traditional methods (Ahmadi,

2018). . The results of this study will have implications for the teaching of table tennis to elementary school students. If the new learning model is found to be effective, it could be used to improve the learning outcomes of students who are learning the sport. Small ball games are essential for the formation of motor skills, coordination, and exercise skills (Práxedes et al., 2022). Small ball games are also very popular and are often played in schools or neighborhoods as part of skill building and an active lifestyle. One of the important small ball games that students learn in physical education is the sport of table tennis. Asri (2020) in essence table tennis is a simple game by hitting the ball after bouncing to the table, the movements made are consistently hitting, directing and sticking the ball to the opponent's table which is expected by the opponent to be unable to return the ball.

Table Tennis is a sport played by hitting a plastic ball on a ping pong table and throwing the ball at an opponent (Salici, 2020). The objective of the game is to hit the ball in a way that makes the opponent unable to return the ball precisely. Table tennis learning in elementary school students aims to develop motor skills, coordination, and exercise skills (Zetou et al., 2014). It also aims to help students build confidence and independence and help them understand the rules and ethics of the game. Learning table tennis in elementary school can be done through various activities and exercises, such as ball hitting practice, ball monitoring practice, and game playing practice (Maulana, 2021).

The importance of developing a learning model carried out by teachers has a great influence on the quality of learning. A good learning model will strengthen the learning process and increase teaching effectiveness, so that

students can more easily understand the material taught (Hamad et al., 2022). A good learning model can strengthen the learning process, increase teaching effectiveness, create a pleasant learning atmosphere, and encourage student learning activities. In addition, a good learning model can also increase student learning motivation. Therefore, teachers must always strive to develop learning models that are effective and in accordance with the needs of students (Juliansyah, 2017).

Based on the results of interviews and observations of researchers and consultations with teachers in the field of physical education studies who teach upper grade IV elementary school SDN 07 Cipinang Muara that table tennis learning has never been taught because, first is the number of tables in the school is only 1 so students need to alternately play table tennis and take a long time, the second student prefers baseball and badminton because badminton is more efficient and effective and The learning process is more evenly distributed because it is not limited by facilities. The third problem is teachers who are less innovative, in making learning models, especially table tennis. The fourth problem is the limited time teachers have to develop learning media. This is because teachers are bumped into administrative affairs and activities that take a lot of time, for example making Daily Activity Units (SKH) and evaluations. So, even though teachers have the idea of wanting to develop learning media, this is constrained by teachers' busy activities in carrying out administrative activities that take a lot of time (Maulana, 2022). With these problems, researchers want to develop an effective learning model in table tennis sports games for upper grade elementary school students. The learning model developed is paid teaching materials in

forehand stroke skills with the title "Development of a Learning Model for Table Tennis Forehand Stroke Skills for Upper Class Elementary School Students"

## METHODS

This research uses the type of research and development (Research and development or R&D). This research adopts from the development stages proposed by Gall, Gall, & Borg, in Iqbal (2020). This table tennis forehand drive skill learning approach and research method uses the ADDIE research and development model (Analysis, Design, Development, Implementation, and Evaluation). The ADDIE model is schematized as a learning system design as follows (Arifin, Z. 2020):

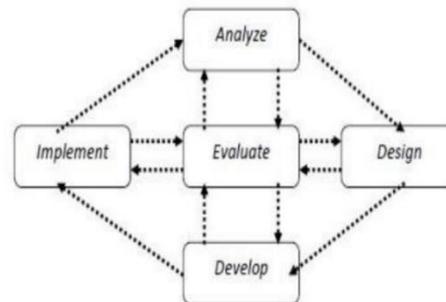


Fig 1. The ADDIE model

The steps at the pre-development stage are conducting literature reviews and relevant research as well as preliminary studies throughout the development stage, namely the preparation of a draft model (prototype), expert validation, limited-scale trials, extensive trials, effectiveness tests and the results are in the form of forehand drive stroke learning model products (Spatioti, 2022).

## Participants

The small-scale trial was carried out at SDN Keramat jati 05 with 15 grade IV

students. Large group trials were conducted at SDN Rawamangun 09 and Kramat jati 05 with 45 grade IV students. The effectiveness test was carried out at SDN Cipinang Muara as many as 34 grade IV.

### **Sampling Procedures**

The total sampling technique, also known as a "census," is a method in which all members of a population or set of relevant elements are sampled. This means that every element in the population is selected and tested or observed, without any random selection. Total sampling techniques are usually used in situations where the number of elements in a population is relatively small or when the cost and time required to sample is affordable (Ashafah, 2019).

### **Materials and Apparatus**

Research on learning models of forehand drive stroke movements in table tennis for upper grade elementary school students will require a variety of materials and equipment (Al-khattat, 2019). The following is a list of potential materials and equipment that you may need in such research such as Table Tennis Balls, Table Tennis Rackets, Table Tennis Tables, Places to conduct research, perhaps inside the school gym. Camera or Video Recorder, Equipment to record the movement of students' forehand drive strokes. Video can be used for motion analysis (Abdurohman,2022).

### **Procedures**

Model Development Steps, For this step, starting from the analysis of the need to obtain data by making initial observations (Kusrini, 2018). This initial observation method was with interviews with students of SDN 07 Cipinang Grade V Elementary School. The results of the interview obtained were the problem of the lack of variety of forehand drive

learning models, so that the way of learning was only that way and monotonous. That is what makes children's interest in learning decreased in learning table tennis forehand drive skills (Lodewyk, 2022).

To make it easier to design a learning model, we need to do the research and development steps a) The previous research stage (Mahfud, 2020). The product determined is the product resulting from the identification obtained by means of interviews and observations b) Literature Study By collecting supporting materials in the concept of developing a learning model of table tennis forehand drive skills for grade IV elementary school students. c) Field Studies By conducting direct survey activities to the field, preparing technically, and understanding existing findings. These findings are descriptive and lead to learning goals.

### **Design or Data Analysis**

Effectiveness Test This test is made by conducting pretest and post tests using motion instruments, forehand drive skills. The results are analyzed, the point is to find out whether there is a percentage of skill improvement through the learning model given to students. This effectiveness value will arise from a significant visible improvement using the calculation of the two-average test. The paired sample test of the SPSS16.0 program was used to calculate the results of this effectiveness value, with a significance level of 0.05. By using paired sample tests to determine the average difference in students' skill abilities in performing forehand drive strokes from pre-test and post-test. The criteria set for the two-mean test hypothesis test on SPSS with  $\alpha = 0.05$  determined the p-value (Sig.) produced

## RESULT

In general, the results of the study are in the form of (1) Learning model of forehand drive movement of table tennis for grade IV elementary school students. (2) Android application as a guideline for learning models of table tennis forehand drive movements for grade IV elementary school students that presents 18 learning models of table tennis forehand drive movements. This basic motion learning model is implemented in 3 public elementary schools, namely SDN Cipinang 07, SDN Kramat jati 05 and SDN Rawamangun 09 using the ADDIE development method (Analysis, Design, Development, Implementation, evaluation). a. The learning model of table tennis forehand drive stroke movement can be done and developed for grade IV elementary school students. b. This basic motion learning model is made by looking at the characteristics of growth and development of grade IV (four) elementary school students, so that variations in forehand drive stroke learning movements are made more interesting, challenging and efficient.

This first draft model is the second part of the ADDIE model, namely at the design stage The target of this second stage is the design of a table tennis forehand drive forehand drive movement learning model for grade IV (four) elementary school students who are ready to be validated by experts. The table tennis forehand drive motion learning model that has been designed by researchers has as many as 20 models with various variations. Based on the results of the needs analysis data that researchers have obtained through observation and interviews with physical education teachers, it can be seen that: 1). The process of learning table tennis for forehand drives is still monotonous so that it makes students not enthusiastic

about participating in learning. 2) Physical education teachers need creativity and innovation in supporting the learning of table tennis forehand drive movements.

At this stage, the motion learning model prepared by the researcher has gone through the improvement stage with input from the supervisor with the inclusion of images for the table tennis forehand drive motion learning model for upper grade elementary school students. From the results of the feasibility test conducted by experts, it was concluded from the draft model that the variety of table tennis forehand drive learning models for grade IV (four) elementary school students consisting of 18 models was declared feasible to continue. The results of the effectiveness test of the forehand drive motion learning model conducted in this study were by applying 18 basic throwing motion learning models for grade IV (four) elementary school students, namely SDN Cipinang 07 students as many as 34 experimental group subjects who were given treatment using variations of forehand stroke motion learning models.

### Tables & Figures

This test is done to determine the results before and after treatment. After data collection was carried out in the pre-test, namely with the number of 218, then data collection was carried out again in the post-test and had a number of 299. Based on the description above, there is a difference in results between pretest and post-test, thus it can be concluded based on pretest and posttest values that the forehand drive movement learning model for grade IV (four) elementary school students is developed effectively and can improve the ability of forehand drive movement of table tennis students.

**Table 1.** Paired Sample Statistic Results (Pre-test) and after treatment (Post-test)

	Mean	N	Std. Deviation	Std. Error Deviation
Pre-test	6.41	34	1.258	0.216
Post-test	8.65	34	1.276	0.219

The average score of the Pretest was 6.41 and the average score of the post-test after the distribution of the table tennis forehand drive movement learning model was 8.56 which means that there was an increase resulting from the pre-test against the post-test.



**Fig 2.** Graphic

The graph above produces record data before and after the treatment of the table tennis forehand drive motion learning model for grade iv elementary school students. With the results obtained, namely pre-test 6.41 and post-test 8.65. From the graph above, it can be concluded that there are changes from pre-test and post after treatment so that it can be said that there are effective and significant changes.

## DISCUSSION

From the results of small group trials, large group tests and model effectiveness tests that have been described, it is known that the basic forehand drive movement learning model

in grade IV (four) elementary school students developed in this study is effective and qualified to be applied in the physical education learning process in grade IV (four) elementary school students. The test results obtained before and after the treatment of the forehand drive stroke learning model in grade IV (four) students, in its significant test conducted using SPSS 20 in a mean of -2.235 which showed the difference in pre-test and post-test results, t-count results -7.201 df 33 p-value = 0.000 < 0.05 which showed that there was a significant difference between before and after the forehand drive stroke learning model treatment in students grade IV (four) elementary school.

Based on the results obtained from the study, it can be concluded that the forehand drive learning model in grade IV (four) elementary school students developed has a significant level of effectiveness. The results of the product that has been made by the researcher are the forehand drive motion learning model in grade IV (four) elementary school students, from the disadvantages and advantages of the resulting product there are several inputs that the researcher will explain in order to achieve the improvement of this resulting product. Then the input in question is as follows: a. Hopefully the learning process of PE by applying this table tennis forehand drive motion learning model can be applied in learning PE for grade IV (four) elementary school students more effectively. b. In learning, it is expected to further improve the atmosphere of students who are more enthusiastic and challenged in the learning process. This forehand stroke learning model for grade IV (four) elementary school students is made so that it can be used as a reference or reference in the physical education learning process and can help physical education teachers in the field. This basic

Forehand drive movement learning model is prepared based on the analysis of needs in the field. Products that have been evaluated with several existing weaknesses and have been revised products to become better final products, then some of the advantages of this product can be conveyed as follows: a. This product provides a wide variety of learning motion forehand drive table tennis b. This model is arranged by level, from easy to difficult c. Can provide references for physical education teachers as physical education learning materials in elementary schools.

## CONCLUSION

This should clearly Based on the acquisition of numbers in the table above, it can be concluded that the learning model of table tennis forehand drive motion for grade IV (four) elementary school students can and is feasible to be used in learning physical education. There is a comparison of numbers that show that the results of the initial test test and the final test of the experimental group with the treatment of the forehand drive motion learning model have increased significantly. So it can be concluded that the forehand drive learning model in grade IV (four) elementary school students is effective to be used in learning.

## ACKNOWLEDGEMENT

This simple thesis will not be completed without the role and assistance and input from various parties. Therefore, the author should express his infinite gratitude to: 1. Director of Jakarta State University Prof. Dr. Dedi Purwana E.S., M. 2. Mr. Koorprodi Master of Physical Education Postgraduate State University

## REFERENCES

- Abdurohman, D., Hasyim, A. H., & Juniarto, M. (2022). Riyadhoh : Journal of Sports Education Open Wicket Keeping Skill-Based Cricket Training Model On Popb Cricket Athletes Dki Jakarta Wicket Keeping Cricket Training Model Based On Open Skill On Popb Cricket Athletes In Dki Jakarta Upt Publications and Management. 5, 91-98.
- Ahmadi, D. (2018). Peningkatan Hasil Belajar Forehand Dalam Permainan Tenis Meja Dalam Penerapan Media Audio Visual Pada Siswa Smkn 1 Bangkinang Kota. *Jurnal Bola*, 1(2).
- Aka, K. A. (2019). Integration Borg & Gall (1983) and Lee & Owen (2004) models as an alternative model of design-based research of interactive multimedia in elementary school. *Journal of Physics: Conference Series*, 1318(1).  
<https://doi.org/10.1088/1742-6596/1318/1/012022>
- Al-khattat, S. H. K., Rwayyih, R., & Raheem, A. (2019). ASSURE Model Instructional Design Based on Active Learning Strategies and Their Effects on Higher Level Junior High Students Thinking Skills in Teaching Science Textbooks. 52, 339–349
- Arifin, Z. (2020). Educational research methodology. *Journal of Al-Hikmah*, 1(1).
- Ashafah, A. (2019). CONSIDERING THE LEARNING MODEL (Theoretical Critical Study of the Learning Model in Islamic Education). *TARBAWY : Indonesian Journal Education*, 6(1), of Islamic 19–32.

- <https://doi.org/10.17509/t.v6i1.20569>
- Asri, N. (2020). The effect of forehand exercises to the wall on the results of the forehand drive of table tennis students of Smp Negeri 1 Tanjung Batu. *Nusantara Sports Page (Journal of Sports Science)*, 3(1), 30.  
<https://doi.org/10.31851/hon.v3i1.3733>
- Boonsem, A., & Chaoensupmanee, T. (2020). Determining the Factors of Teaching Effectiveness for Physical Education. *International Education Studies*, 13(3), 43.  
<https://doi.org/10.5539/ies.v13n3p4>.
- Faris, L. A., Kusmaedi, N., Ugelta, S., & Ronald, H. (2022). The effect of life kinetic training on the accuracy of table tennis forehand strokes. *MEDIKORA*, 21(1), 71-79.
- Fitra, A., & Andrijanto, D. (2013). The Influence of Forehand and Backhand Service Learning Audiovisual Media on Service Learning Outcomes in Table Tennis Games (Studies in Class X-1 and X-5 of SMA Negeri 3 Pamekasan). *Journal of Physical Education*, 1(3), 1-10.
- Hamad, A. L., Abouelnaga, H. M., & Baz, A. (2022). JOURNAL OF LANGUAGE The Importance Of E-Learning To The Students And Teachers. 18(2), 952-968.
- Iqbal Assyauqi, M. (2020). MODEL PENGEMBANGAN BORG AND GALL.
- Juliansyah, M. A., Iyakrus, I., & Destriana, D. (2017). The Effect of Training Using a Tennis Racket on the Results of Badminton Overhead Lobs. *Altius: Journal of Sports and Health Sciences*, 6(2).
- Kamal, M. (2020). Backhand Smash Structure In Table Tennis (Experimental Study Of Athletes In Makassar City) (Doctoral Dissertation, Jakarta State University).
- Kokkonen, J., Yli-Piipari, S., Kokkonen, M., & Quay, J. (2019). Effectiveness of a creative physical education intervention on elementary school students' leisure-time physical activity motivation and overall physical activity in Finland. *European Physical Education Review*, 25(3), 796-815.  
<https://doi.org/10.1177/1356336X1877500>
- Kusrini, N. A. R. (2018). Comparative Theory on Three Instructional Design Models: Dick and Carey, Kemp, and Three-Phase Design models. 1(1).  
<https://doi.org/https://doi.org/10.31219/osf.io/wkv6c>
- Lodewyk, K. R., & Robertson, S. (2022). Prospective Physical Educators' Preferences for Using Sport Education, Teaching Games for Understanding, and Direct Teaching when Instructing Games. 16-24.
- Mahfud, I., & Yuliandra, R. (2020). Pengembangan Model Gerak Dasar Keterampilan Motorik Untuk Kelompok Usia 6-8 Tahun. *SPORT-Mu: Jurnal Pendidikan Olahraga*, 1(01), 54-66.  
<https://doi.org/10.32528/sport-mu.v1i01.3055>
- Maulana, M. H. (2021). The influence of self regulated learning and motor ability approaches on topspin strikes in table tennis (Experimental Study of Athletes Assisted by PTMSI Cirebon Regency) (Doctoral dissertation, Indonesian University of Education).

- Maulana, M. I., & Junianto, E. (2022). Application of the addie model in making english educational games. 4(1), 12–22.
- Práxedes, A., Pizarro, D., Travassos, B., Domínguez, M., & Moreno, A. (2022). Level of opposition constraints offensive performance in consecutive game situations. An analysis according to game principles. *Physical Education and Sport Pedagogy*, 27(3), 291–303. <https://doi.org/10.1080/17408989.2021.1877269>
- Práxedes, A., Pizarro, D., Travassos, B., Domínguez, M., & Moreno, A. (2022). Level of opposition constraints offensive performance in consecutive game situations. An analysis according to game principles. *Physical Education and Sport Pedagogy*, 27(3), 291–303. <https://doi.org/10.1080/17408989.2021.1877269>
- Salici, O. (2020). Investigation of the effects of six-weeks of regular table tennis education on attention levels of primary school children. *African Educational Research Journal*, 8(3), 449–452. <https://doi.org/10.30918/aerj.83.20.087>
- Spatioti, A. G., Kazanidis, I., & Pange, J. (2022). A Comparative Study of the ADDIE Instructional Design Model in Distance Education. (Switzerland), 13(9), 1–20.
- Zetou, E., Vernadakis, N., Derri, V., Bebetos, E., & Filippou, F. (2014). The Effect of Game for Understanding on Backhand Tennis Skill Learning and Self-efficacy Improvement in Elementary Students. *Procedia - Social and Behavioral Sciences*, 152, 765–771. <https://doi.org/10.1016/j.sbspro.2014.09.318>