Journal of Educational Sciences
Journal homepage: https://jes.ejournal.unri.ac.id/index.php/JES

P-ISSN 2581-1657
E-ISSN 2581-2203

The Effectiveness of the Direct Instruction Learning Model on the Ability of Badminton Basic Techniques at Sma Negeri 1 Citeureup

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ARTICLE INFO

Article history:

Received: 12 Oct 2023
Revised: 03 Jan 2024
Accepted: 04 Jan 2024
Published online: 24 Jan 2024

Keywords:

Direct Instruction Model;
Basic Badminton Techniques

A B S T R A C T

The education process is a system consisting of input, process and output. Input is students who will carry out learning activities, the process is an activity of teaching and learning while output is the result of the process carried out. From the implementation of the educational process, it is expected to produce high quality and competitive human resources to face competition in this era of globalization. The purpose of this study was to determine the effectiveness of the direct instruction model in improving the ability of basic badminton techniques in students at SMAN 1 Citeureup, This research approach is a quantitative approach with experimental methods, for the population itself is 10th grade students at SMA Negeri 1 Citeureup, this study used a one group pretest posttest design. the results showed a significant increase in the average before and after treatment, increasing from 5.5 to 9.7 with an N_Gain value of 64.29%. Furthermore, the significance value calculated from the test of the significance value calculated from the test of the pretest posttest design. Furthermore, the calculated significance value of hypothesis testing is smaller than the significant level (α), which is 0.000 <0.05. The calculation of descriptive statistics of the average pretest and Posttest shows that the direct learning model has a positive effect on improving the basic badminton skills of students at SMAN 1 Citeureup.

1. Introduction

Education is a basic need of every human being to ensure their survival to be more useful according to Dimyati (2019). Physical education is part of the overall education system. Setiyawan (2017) states that physical education is a medium that helps develop motor skills physical abilities knowledge and behavior and is

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Doi: https://doi.org/10.31258/jes.8.1.p.36-46

part of a comprehensive education system that aims to develop and improve aspects of health fitness and thinking abilities and develop emotional stability social abilities, physical education is a learning process activity by utilizing physical activities that have been systematically arranged which have the aim of developing and improving individuals cognitively, organically, perceptually, neuromuscularly, and emotionally within the framework of the national education system. (Melyza & Agus, 2021)The Physical Education learning process is expected to be able to teach various basic movement skills, techniques and strategies of games and sports internalizing values such as honest cooperation and so on and getting used to a healthy lifestyle. The scope of physical education according to Samsudin in Wibowo (2018) consists of several aspects, namely: (1) Sports and games (2) Development activities (3) Gymnastics (4) Rhythmic activity (5) Activities (6) Out-of-class education (7) Health.

Meanwhile, Iyakrus (2018) states that "Physical education is a tool to achieve educational goals, or an education through the process of adapting physical activities such as organs, neuromuscular, intellectual, social, cultural, emotional, and ethical activities." Meanwhile, the education process should not be carried out with origin, therefore there needs to be a planning process, one of which is by determining the learning model to be used in the learning process. Education is a learning process that includes an information network from educators to students and vice versa from participants to educators (Hanum, 2023). Learning activities are designed to provide learning experiences that involve mental and physical processes through interaction in order to achieve basic competencies (Bella, 2023).

A learning model is a plan or a pattern that is used as a guideline for planning classroom learning. When the chosen learning model is ineffective, students can lose interest in the learning process, leading to poor learning outcomes. (Wowiling, 2020) “It is important to ensure that the model is aligned with the learning material and student characteristics to prevent such ineffectiveness”. Budi & Listiandi (2021) explained that physical education learning can use Cooperative learning models, Peer Teaching, Inquiry, Teaching Game for Understanding (TGFU), Play Teach Play and Direct teaching. One of the learning models that can be used is Direct teaching or direct learning model.

Badminton is a very popular sport around the world, including in Indonesia, where many schools include it in their extracurricular activities. However, the author observed that during training at one of the schools in Bogor, some students were still struggling with basic badminton techniques. According to Syafruddin, quoted from Astri & Zarwan, (2018) "the ability of a person or athlete in a match or competition is basically determined by four factors, namely: (1) physical condition, (2) technique, (3) tactics, (4) mental", these four factors are the elements that determine sports achievement. Meanwhile, according to Ardyanto (2018) "Knowledge of techniques is needed regarding specific skills and abilities that are closely related to the fluency of playing badminton and mastery of basic techniques". To achieve the learning objectives of PJOK, one of them is by improving the quality of process standards, because process standards are an

important part of the world of education for the achievement of national education goals (Pambudi, 2019) .“Designed to support the student learning process related to structured procedural knowledge and declarative knowledge that can be taught with gradual, step-by-step activities, the direct instruction learning model (called direct learning) is a specialized learning model” conveyed by (Ulfah, 2021).

On several occasions when researchers visited the SMAN 1 Citeureup school, researchers observed that during the physical education process at school many students carried out learning activities ineffectively, this was reinforced by the PE teacher himself who stated "after the pandemic period many students were reluctant to do physical activities, one of which was in PE activities".whereas in fact the ability to play badminton requires practical training, in badminton games it really requires the ability to master the basic techniques of the game such as how to hold a racket, footwork and basic stroke techniques as conveyed by (Sutiyawan, 2015).

Therefore, the author's interest lies in conducting research using the direct learning model, the direct instruction learning model (direct learning) is a learning model specifically designed to support the learning process of students related to declarative knowledge and well-structured procedural knowledge that can be taught with a gradual, step-by-step activity pattern (Suriyani, 2020; Ulfah et al., 2021; Yusnema, 2022; Sari, 2023). Because determining the right method in the physical learning process is one of the obligations of the teacher to help students achieve learning objectives more easily, as stated by Gall, and Borg (2013) cited by Lardika & Tulyakul (2020) explained that using the right strategy or approach will allow the various objectives of the learning process to be easier.

Therefore, as illustrated by the exposure of the research background above, the researcher wants to conduct further research on "The Effectiveness of the Direct Instruction Learning Model on the ability of Badminton Basic Techniques at SMAN 1 Citeureup".

2. Methodology

The approach used for this research is known as quantitative research according to Mukhid (2021) Quantitative research relies on numerical data to make predictions about population trends and future conditions. The research method used in this study is the pre-experiment method, which is a method that aims to test the effect of one variable on another, or also to find the causal relationship between one variable and another. "Pre-experiment design is a design that includes only one group or class for before-after testing" Sugiyono (2014). Thus this research was conducted to determine the level of effectiveness of the direct instruction learning model in improving the ability of basic badminton techniques of SMAN 1 Citeureup students.

This design also involves only one group and the research sample will consist of a total of 36 students, 13 of whom are male and 23 female. This design is often used

in research activities. The steps of this design are: 1) conducting pretest to measure the dependent variable, 2) conducting treatment or experiment, and 3) conducting post-test to measure the result or impact on the dependent variable. Data analysis was carried out to determine the results of the research that had been carried out in the form of using the direct instruction model as a treatment to be able to determine the effectiveness and improvement through treatment using the basic badminton techniques provided.

research variables as follows in Figure 1.

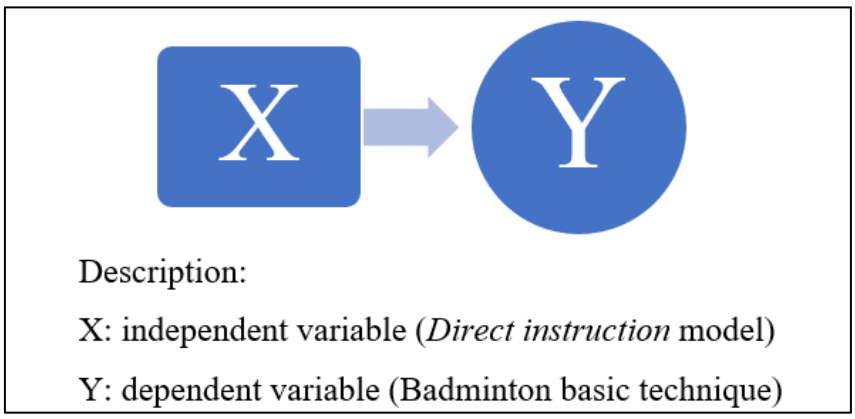

Figure 1. Research Variables

The systematics of data analysis include:

The activities carried out in analyzing and processing data are as follows Fajar (2020):

1) The editing process involves a thorough check of all the data collected.
2) Tabulation involves creating tables, entering data into them, and assigning values to relevant items.
3) The predetermined scale is used to classify the scores obtained by students.
4) Displays information that has been calculated per category using a specific formula.

$$DP = \frac{n}{N} \text{ X } 100\%$$

Dp = descriptive percentage
n = number of values obtained
N = total number of points

5) The results of the study can be summarized to get a picture of how well individuals are able to hit basic techniques during the badminton learning process.
6) Furthermore, the data will be processed using SPSS software.

The tests performed, namely:

1) Conduct a data normality test with the Kolmogorov-Smirnov test

The normality test is intended to test whether the data obtained is normally distributed or not. In the normality test there are two testing methods, namely the Kolmogorov-Smirnov test and the Shapiro Wilk test. This study uses the Kolmogorov-Smirnov test with the help of the SPSS 25 program.

The normality output explains the results of the analysis that the data will be normally distributed or not with a significant level of 5% through determining the hypothesis as follows:

a. If the p value > 0.05, then Ho is accepted and Ha is rejected, which means that the population is normally distributed.
b. If the p value is <0.05, then Ho is rejected and Ha is accepted, which means that the population is not normally distributed.

2) Conduct data homogeneity test

This homogeneity test is carried out to determine whether the data variance of the classes used as samples is homogeneous or not. Homogeneity is taken if the significant value of $\alpha > 0.05$ then it is declared homogeneous, but if the significant value of $\alpha < 0.05$ the data is said to be inhomogeneous.

3) Conduct Hypothesis Test (paired sample t-test)

Hypothesis testing is carried out to determine whether or not there is an increase in *pre-test* and *post-test* data. With the fulfillment of the prerequisite test, it can be continued with hypothesis testing, hypothesis testing is carried out using the paired samples t-test test and assisted by using the spss version 25 program.

The basis for decision making used in hypothesis testing is as follows:

a) If the sig. value is> 0.05, then Ho is accepted while Ha is rejected.

b) If the sig. value is <0.05, then Ha is accepted while Ho is rejected.

4) Ngain-Score

After the hypothesis test was continued by looking for the *N-Gain* score to determine the level of change from the *pre-test* and *post-test* results, the researchers used the N-Gain score calculation developed by Hake in 1999 cited by Asyhari (2015) with the following formula (Table 1).

$$N\text{-}Gain = \frac{Post\ test - pre\ test}{100 - pre\ test}$$

Table 1. N_Gain Criteria

Criteria	Percentage
Ineffective	< 40
Less effective	40-55
Effective enough	56-75
Effective	>76

3. Results and Discussion

This research was conducted at SMAN 1 Citeureup, Bogor Regency with the population being 10th grade students at SMAN 1 Citeureup, taken as many as one class to be used as research samples. This researcher used research instruments to obtain descriptive data of pre-test and post-test results to determine whether there was a significant difference or not. Badminton ability tests are made by researchers. Utilizing the right techniques and tools for data collection allows researchers to obtain objective research data Mukhid (2021). There is also a test that is used as a measuring tool is a basic technique test in badminton which consists of a short backhand serve, long serve and Overhead Lob.

While the activities carried out during the research process are divided into eight meetings where every two meetings will discuss one basic technique and at the last meeting a post-test activity is carried out. and in the learning process includes several games that are in accordance with the sport to be studied in this case badminton. Figure 2 shows students playing a game where the game has a rule that each player is prohibited from using the smash technique in the game.

Figure 2. 1st Mini Game

Figure 2 shows a student playing a game where the student maintains the balance of the racket so that the shuttlecock above it does not fall. The game has the aim of familiarizing the rest in holding the racket handle correctly.

Figure 3. 2nd Mini-Game

Research Data

This research data was obtained through the results of the Pre-test and Post-test tests using the badminton basic technique ability test instrument, the data was processed using the IBM SPSS 25 program and used to determine the effectiveness of the learning model used, as for the results of data analysis listed in Table 2.

Table 2. Improvement in Basic Badminton Technique Skills

Basic Techniques	**Mean *pretest***	**Mean *Posttest***	**Increase (%)**
Backhand serve	5,50	9,56	73,8%
Long service	5,53	9,69	75,2%
Overhead Lob	5,61	9,75	73,8%

Source: IBM SPSS 25

Based on the table above, it can be concluded that there was an increase in the score on the basic backhand service technique of 73.8% from the initial score (pretest), while for the long service technique there was an increase of 75.2% from the initial score (pretest). And for the Overhead Lob technique there was an increase of 73.8% from the initial score (pretest).

Normality Test

After the results of descriptive statistical calculations are obtained, the next step is to conduct a normality test as a standard procedure, before conducting a t-test, certain prerequisites for data analysis must be met as suggested by the author. The use of the t-test as a research hypothesis is common. If the significance value of the research data is found to be greater than 0.05 or >0.05, it can be concluded that the data is normally distributed, but if the significant value is smaller than 0.05 or <0.05, it indicates otherwise.

for more information, refer to the Table 3.

Table 3. Kolmogorov-Smirnov Normality Test

Badminton Basic Technique Ability Test	**Statistic**	***(2-tailed)***	**Conclusion**
Pretest	0.126	0.161	Normal
*Posttes*t	0.130	0.126	Normal

Source: IBM SPSS 25

The results are evident from table 3 located above. After assessing the normality of the initial test (*pretest*) of badminton basic technical skills at SMAN 1 Citeureup, a *sig* score of 0.161 was obtained for the *pretest* data with a sample size of 36. By testing the significance level at $\alpha = 0.05$, the *sig* value is greater than 0.05 so it is concluded that the data is normally distributed. Similarly, the data of the final test (*Posttest*) of badminton basic technical skills at SMAN 1 Citeureup was evaluated with a *sig* score of 0.126, and a sample size of 36. After testing the level of significance at $\alpha = 0.05$, it was found that the *sig* value was higher than 0.05, concluding that the data was also normally distributed.

Homogeneity Test

After conducting a normality test on the distribution of pretest and posttest data, it is known that both sets of data are normally distributed. The next step is the homogeneity test. The significance value, or sig., is used as the basis for decision making: if sig. < 0.05, then the data distribution is not homogeneous; if sig. > 0.05, then the data distribution is homogeneous. Table 4 shows the output display of the Levene Test homogeneous test analysis after data processing.

Table 4. Hypothesis Test Results

Levene Statistic	**df1**	**df2**	**Sig**
0.842	1	70	0.362

Source: IBM SPSS 25

After analyzing the homogeneity test results displayed in Table 4. above, it can be concluded that. The significance value obtained for the data is 0.376. This value indicates that the significance level is greater than 0.05. Therefore, it can be concluded that the data is homogeneous.

Hypothesis Test

The next step is to test student learning outcomes both pretest and posttest. This analysis involves a paired sample t-test, which aims to show significant differences between the initial and final variables. paired sample t-test can be done at this time because the data is normally distributed. The test was assisted by using IBM SPSS Statistics software version 25 for Windows. Table 5 below shows the output display of the paired sample t-test analysis results after data processing.

Table 5. *Paired Sample T-Test*

Variable	**t-count**	***Sig. (2-tailed)***	***Level of Significiant***
pretest - Posttest	-24.133	0.000	0.05

Source: IBM SPSS 25

After analyzing the *Paired Sample T-Test* table, it can be concluded that the significance value of 0.000 is smaller than the significance level (α) of 0.05. Therefore, H0 is rejected and Ha is accepted, which means there is a significant difference between the mean scores before and after treatment. In addition, a negative t-count of -24.133 was obtained in the t-Tabet, which indicates that the average value before treatment is lower than the average value after treatment. Thus it can be concluded that the utilization of direct learning models can improve the ability of basic badminton techniques at SMAN 1 Citeureup. N_gain testing is assisted by using IBM SPSS Statistics software version 25 for windows. N_gain analysis results data are listed in the Table 6.

Table 6. N_Gain Score

Description	**Score**
Mean	64.2985
Percentage	64.29 %

Source: IBM SPSS 25

From Table 6 above obtained a mean of 64.2985 which was converted into a percentage and rounded up to 64.29%, based on decision making, this value is listed in the moderately effective category with a percentage range of 56%-75% in the moderately effective category.

4. Conclusion

After data analysis and hypothesis testing, the results showed a significant increase in the average before and after treatment, descriptive statistical calculations of the average pretest and Posttest showed that the direct learning model had a positive effect on improving the basic technical skills of badminton students at SMAN 1 Citeureup. Specifically, the model is effective in improving the basic technical skills of students with the concept of providing direct direction to students so that students can understand what is conveyed, as evidenced by the results of students' posttests on the basic badminton techniques of SMAN 1 Citeureup.

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How to cite this article:

Rahman, F., Purnamaningsih, I. R., & Dimyati, A. (2024). The Effectiveness of the Direct Instruction Learning Model on the Ability of Badminton Basic Techniques at Sma Negeri 1 Citeureup. *Journal of Educational Sciences*, *8(1)*, 36-46.