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The Influence of Instructional Models on Badminton Skills Performance base on Motor Educability Levels

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Abstract

This study aimed to investigate the effect of cooperative and conventional instructional models on badminton skills performance based on motor educability levels. The research method used in this study is an experimental method using a 2 X 2 factorial design. The population in this study was 270 junior high school students of 9 classes. The samples used were two classes with a total of 60 people. The sampling technique used is cluster random sampling. The instrument used is Badminton Skills Performance. The statistical analysis technique used is the two-way analysis of variance (ANAVA) at a significance level of 0.05. This study concludes that the instructional models significantly influence the performance of badminton skills; this study also shows no interaction between the instructional models and motor educability. The Teachers suggest using both instructional models for games activities characteristics to help achieve learning indicators.

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INTRODUCTION

Physical fitness, critical thinking abilities, mental stability, social skills, logic, and parts of physical activity are all things that physical education is meant to develop in addition to the discipline of physical education (Hasianna TS, Ivone J, Chritianti Y, 2022). Physical education's primary objective is to develop physically fit individuals with the knowledge, skills, and confidence needed to engage in lifetime healthful physical activity. The second consideration is how well students can demonstrate their ability to apply the learning process as evidenced by their learning outcomes. Learning outcomes are a component of a student's abilities following a learning experience; they take an external shape and are visible since they are referred to as skills. In physical education, where students demonstrate basic motor techniques and various movement skills according to particular materials or sports, student learning outcomes will be evident. Naturally, this will be closely related to the students' psychomotor development.

In the learning process, students will also interact with their friends, showing how students behave towards their friends. Students also learn how to comprehend the content in class, which is related to their cognitive abilities in addition to their fieldwork studies. On the other side, the ability to learn new motor skills is influenced by the motor educability factor (Sumarson & Anisa, 2019). Numerous studies show that students with higher motor educability perform better on tests of essential technical skills and play abilities than students with lower motor educability (Sujana et al., 2014). Another study showed that students with higher levels of motor educability had better learning outcomes in Pencak silat than those with lower levels (Syaukani, Subekti, & Fatoni, 2020).

Motor educability is the capacity to acquire new motor abilities (Juniar, 2019; Gustian, 2021). Quality motor skills provide insight into how capable someone can acquire sports movement techniques in a shorter time (Pradana. O. V., 2019). The learning outcomes for students will be impacted by a student's mastery of motor educability because physical education and psychomotor elements are closely intertwined. The ability to carry out movement activities will depend on a person's motor capabilities. For instance, in the context of the capacity for movement such as walking, running, jumping, or manipulating actions like throwing, kicking, catching, and so forth. Learning one's movements also makes it easier to master the complex movements of a sport (Pradana. O. V., 2019; Agustina, et al., 2019). Other research shows that motor educability is correlated with learning motivation and body mass index (Akbari, 2014). In addition, training techniques and motor educability skills have an impact on the outcomes of basic soccer technical training and physical education learning outcomes (Candra, 2015; Setiawan, Yudiana, Ugelta, Oktriani, & Budi, 2020).

Boys' motor skills develop between preteen and adolescence. 2019 (Chat et al.). Their motor skills can predict adolescent students' academic performance, so mastering motor skill acquisition will promote academic achievement (Hands, Mcintyre, & Parker, 2018). For this reason, motor educability is crucial for students in their adolescence.

One way for supporting teachers in the teaching and learning process is by utilizing the instructional model (Aran, 2021). The selection of the instructional model is one of the crucial aspects of the success of the learning process. A conventional instructional model is still often used by sports teachers, where the success of a sports group relies on the success of all the members. A group has not declared successful until all its members have achieved the target (Hasianna T S, Ivone J, Chritianti Y, 2022).

The STAD teaching approach was used in this study since it is the most basic kind of cooperative learning for beginners (Lamusu, 2019). Since there was no competition between groups in STAD, all group members' evaluations were combined to produce the overall group score (Ginanjar & Effendy, 2021). Previous research revealed the utilization of cooperative models on student learning outcomes. The application of the jigsaw cooperative model and the teams game tournament has an effect on social skills and volleyball skills (Suherman, 2016) and affects learning outcomes for Taekwondo Poomsae skills (Hidayat & Juniar, 2017) and learning outcomes (Sriyatin, Sucipto. A., 2018). The impact of cooperative models on students' learning outcomes was previously studied. The use of the cooperative jigsaw model and the teams game tournament affect learning outcomes for Taekwondo Poomsae skills (Hidayat & Juniar, 2017) and learning outcomes (Sriyatin, Sucipto. A., 2018) as well as social skills and volleyball skills (Suherman, 2016). The findings of this research provide data that can be utilized as evidence that using a learning model that aligns with the anticipated learning objectives will positively impact students.

Based on the explanation above, the researchers are eager to explore more empirical data on the implementation of the STAD cooperative instructional model and conventional model, with the attribute variable, motor educability, on the performance of badminton skills in junior high school.

METHODS

According to this study's research methodology, an experimental approach using a 2 X 2 factorial design was applied (Fraenkel, 2015).

Participants

The population of this study was 270 seventh-grade students of SMP Taruna Bakti divided into nine classes that consisted of 30 students, respectively. Cluster random sampling was administered since the cited institution did not allow the students to be divided into separate classes to conduct research. In addition, the researchers wished to preserve the natural classroom environment since it was one of the study's key areas of interest. The group's natural environment would change if sampling was set on individual participants.

Sampling Procedures

Authors employed cluster random sampling as a sampling approach in this study. The reason for taking this sample was because the school in question did not allow its students to be divided into new classes as research classes. Additionally, the researcher wished to preserve the natural classroom environment since it was one of the study's key areas of interest. As a result, the researchers randomly selected two classes as the research sample by first choosing even classes (A = 1, B = 2, etc.) and then selecting classes VII B, VII D, VII F, and VII G as the research sample. The selected classes were then rearranged to be odd-even, starting with VII B = 1, followed by VII D = 2, and so on. The researchers then enrolled in two classes, namely classes VII B and VII F, each with 30 pupils.

Further, the researchers separated the subjects into four groups by classifying them into high and low motor educability groups. The first 15 higher skill students for each class were in the high motor educability group, while the rest (listed as 16-30) were included in the low motor educability group. The distribution of the research sample is as table 1.

Table 1. The Research Sampling Groups

Class	N	Group	Treatment
VII B Group A1	15	Experimental	STAD Cooperative model + High motor educability
VII B Group B1	15	Experimental	STAD Cooperative model + Low motor educability
VII F Group A2	15	Control	Conventional model + High motor educability
VII F Group B2	15	Control	Conventional model + Low motor educability

The authors randomly selected two classes to serve as research samples, and eventually, classes VII B, VII D, VII F, and VII G were selected. First, the chosen classes were sorted into odd-even groups, with VII B = 1, VII D = 2, and so forth. The researchers enrolled in two odd classes, VII B and VII F, each with 30 students. The researchers separated the subjects into four groups by first classifying them into high and low motor educability. Grades 1 through 15 were assigned to the high motor educability group, while grades 16–30 were assigned to the low motor educability group, both class VII B and class VII F.

Instrument

The quality of the data obtained is determined by the data collection and instrument used. The caliber of the tools used for data collection or measurement determines the caliber of the data obtained. The researcher should consider the instrument's validity and reliability when selecting it. Later, a questionnaire was administered to assess social abilities. In this study, the instruments used are as follows:

Motor educability

Motor educability data was collected using the IOWA BRACE TEST: One Foot-Touch Head, Side Learning Rest, Grapevine, One-Knee Balance, Stork Stand, Cross-Leg Squat, Full Left Turn, Three Dips, Knee Jump To Feet, Single Squat Balance. The value of validity of this instrument was 0.92, and the reliability was 0.96 (Nováková, 2007).

Badminton skills performance

The instrument to measure the badminton skill was adapted from the test (Hidayat, 2016; Supriyatna, 2019) with a validity index of 0,74 and the test-retest reliability of 0,90.

Procedure

The data collection techniques in this study were carried out correctly to obtain valid and relevant data. The technique applied to collect data in this study consisted of three steps: pretest, treatment, and posttest.

Pretest

Before the treatment, the research subjects were examined for their motor educability to identify and separate the groups of students into high and low motor educability groups. First, the IOWA BRACE Test was employed to acquire data on motor educability and included: One Foot-Touch Head, Side Learning Rest, Grapevine, One-Knee Balance, Stork Stand, Cross-Leg Squat, Full Left Turn, Three Dips, Knee Jump To Feet, Single Squat Balance. Later, the initial test was conducted on the experimental and control groups to identify the students' badminton skills before the treatment.

Treatment

The treatment given in this research was to apply the inquiry learning model for the experimental group and the STAD cooperative learning model for the control group. The treatment was carried out for one semester.

Posttest

After providing treatment to the experimental and control groups, the posttest/final test was administered to evaluate badminton skills using previously prepared study instruments.

Data Analysis

The calculation of data analysis was conducted by calculating the mean value and standard deviation. Then, the normality and homogeneity tests were performed using the Lilliefors test and the Bartlett test. Furthermore, the hypothesis testing was carried out using the factorial analysis of variance (ANOVA) technique with a significance level of $\alpha = 0.05$. Finally, if there was an interaction, it would be followed by the Tukey Test. SPSS 18 for Windows was used in this study's data processing.

RESULT

Based on the calculation of the normality test using the Kolmogorov-Smirnova test, the significance probability value for the pretest of the dependent variable and the dependent variable on badminton skills was 0.200, more significant than 0.05, which designated that the data were normally distributed. The next step was to test the homogeneity of the data to determine whether the data obtained came from a homogeneous population. With the help of the SPSS 18 for the windows program, the Levene Statistic test was performed to determine the data homogeneity. Based on the results of the homogeneity test with the Levene Statistic test for the Learning Outcome variable, a significant value of 0.284 was obtained, which was greater than 0.05 and indicated that the research data was homogeneous. The following test was hypothesis testing to determine whether the inquiry learning model and the STAD type cooperative learning model vary in improving learning outcomes. Using Two Way Anova, the results of the hypothesis testing are provided in table 2.

Table 2. Calculation Results for All Groups of Badminton Skills Performance Variables

Variable	F-count	F-table	Result
Inquiry & STAD Cooperative Instructional Model	38,21	4,02	Significant

Table 3. The Interaction of Instructional Models and Motor Educability on Improving Badminton Skills Performance

Variable	F-count	F-Table	Result
Instructional Model*Motor Educability	6,8	4,02	Significant

Table 4. Calculation Results in the Instructional Model and High Motor Educability Group on Badminton Skills Performance

Variable	F-count	F-table	Result
Instructional Model + High Motor Educability	8,88	3,74	Significant

Table 5. Calculation Results in the Instructional Model and Low Motor Educability Group on Badminton Skills Performance

Variable	F-count	F-table	Result
Instructional Model + Low Motor Educability	4,64	3,74	Significant

Table 2 reveals that the F Count is 38.21 and F Table is 4.02, respectively. It demonstrates that H0 was rejected because the probability value was 38.21 > 4.02. This indicates the difference between the STAD cooperative instructional and inquiry models in improving learning outcomes.

Table 3 shows the interaction between instructional models and motor educability in enhancing badminton skills. To find out whether there was an interaction between the instructional model and motor educability in improving badminton skills, the researchers used the Two Way Anova test. The calculation results are shown in Table 4. Based on the table, the value for JKA (Rows and Columns) is 6.8 and F table 4.02. The JKA (BK) value was taken to determine whether there was an interaction between the learning model and motor educability to increase students' learning motivation. H0 is rejected because the probability value is 37.58 > 4.02. This means an interaction between the learning model and motor education to improve learning outcomes.

Data on table 4 show the difference in the badminton skills improvement between the inquiry learning model and the STAD type cooperative learning model groups, who have high motor educability. According to Table 4, the F-count was 8.88 and the F-table was 3.74; therefore, H0 was rejected since the probability value was 8.88 > 3.74. This indicates no difference in the improvement of learning outcomes between the inquiry learning model and the STAD cooperative learning model for students with high motor educability.

Further, the data on the difference in the learning outcomes between the inquiry learning model and the STAD cooperative learning model for the low motor educability group are presented in table 5. Table 5 shows that the F-count was 4.64, and the F table was 3.74. Therefore, H0 was accepted since the probability value was 3.64 3.74. This indicates that for students with low motor educability, there is a difference in the improvement of learning outcomes between the inquiry learning model and the STAD cooperative learning model.

DISCUSSION

From the results of data analysis, it was found that there were differences in learning outcomes between the instructional inquiry model and the STAD cooperative instructional model. Learning outcomes as an indicator of the achievement of learning objectives in schools can not be separated from the factors that influence them. Factors that affect learning achievement could be internal (factors that arise from within the individual himself) and external (experiences, family circumstances, the surrounding environment, and so on) (Setiawan et al., 2020). Accordingly, the researcher concludes that students' badminton skills would be closely related to their level of motivation and how well they absorb lessons from implementing the teacher's offered teaching and learning activities (Breivik, 2016). Implementing the appropriate learning model can improve students' motivation to finish assignments, increase their enjoyment of the lesson, and make the course easier to understand to achieve more excellent learning outcomes (Harmono, 2017).

The priority objectives of the main domain differ between the instructional inquiry model and the STAD cooperative model; for the inquiry model, the primary domain focus is the cognitive domain, while for the STAD cooperative model, the primary domain focus is the affective domain (Hands et al., 2018; Juliantine & Arifin, 2019). The inquiry model is heavily grounded in the cognitive domain, even for physical education instruction. The teacher's challenges to the class require students to think at several levels, from cognitive to movement answer modes (Peev, 2019). In the cooperative instructional model, while the affective domain is the primary focus, the domain's attention can also alternate between the affective and cognitive domains. However, the primary objective of any particular learning activity will always share the highest priority with the affective domain (Afonshin, Drandrov, Burtsev, & Polevchikov, 2020). For instance, if a task has a major cognitive learning focus, affective and cognitive domains will be given first (shared) priority, followed by psychomotor domains.

The findings demonstrate that the interaction between the instructional model and motor educability improves learning outcomes. According to the data processing results, the average gain value for the group using the inquiry model with high motor educability is 2.09, which is lower than the average gain value for the group using the STAD cooperative model with high motor educability, which is 2.84. The average value for the group with low motor educability, which is 0.58 for the inquiry learning model group and 3.64 for the STAD cooperative learning model group, is, therefore, lower than the average gain for the group with high motor educability.

Motor educability is one internal student component that may have an impact on learning results. A person's ability to engage in physical activity is generally described by their motor educability, which is a fundamental movement ability. The willingness of students to acquire basic movement skills for sports will therefore be impacted by this variation in motor educability, which will, of course, result in learning outcomes. According to research by (Zapaa, Zabielska-mendyk, Cudo, & Ja, 2021), adolescent students who exhibit high levels of motor educability perform academically significantly better than those who exhibit low levels of motor educability. Additionally, it was shown that adolescents with average levels of motor educability performed much better academically than adolescents with low levels of motor educability. Therefore, it is determined that one of the significant factors influencing adolescent students' academic success is their motor educability. The study's findings led the researchers to conclude that students' learning will be impacted by their motor educability.

Calculations and data analysis revealed that for students with high motor educability, there is no difference in learning outcomes between the inquiry learning model and the STAD-type cooperative learning model. The cooperative learning model focuses heavily on the group learning process, wherein a group is considered successful if all of its members are successful. Therefore, every group students must understand how their contributions directly affect the group's success (Prasetyo, Amung, & Budiana, 2018). Positive interdependence is formed in groups when students understand that they are each responsible for completing a part of the task, which, in turn, must all be achieved for the group to complete its objectives (Falcous & Booth, 2016). On the other hand, the inquiry model focuses more on students' critical thinking to solve a problem. The application of the inquiry model is expected to encourage students to construct their knowledge based on the results of investigations, discuss and analyze syntax in presenting problems, collecting data, conducting experiments, organizing data, and formulating explanations so that they can solve problems based on the data collected (Cope, Harvey, & Kirk, 2015). This obviously relates to the physical exercise that students engage in.

Calculations and data analysis revealed that the instructional inquiry and STAD cooperative instructional models provide different learning outcomes for students with low motor educability. Naturally, it will be essential for teachers to select the appropriate learning model while working with students that have limited motor educability. The adoption of effective learning models can improve students' motivation to complete assignments, increase their appreciation of the lessons, and make the lesson easier to understand so that they can obtain better learning outcomes (Ginanjar, 2019; Dupri & Nazirun, 2019; Dupri et al., 2020; Stiadi et al., 2020;).

CONCLUSION

Based on the research findings, it can be concluded that the inquiry learning model and the STAD cooperative learning model have a significant effect on badminton skills performance in the sample that has high motor educability and low motor educability.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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