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Discovery-Inquiry Learning Model Improves Physical Activity Learning Outcomes in View of Learning Motivation

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Abstract

This study aimed at identifying and analyzing the effect of the discovery-inquiry learning model and learning motivation on the learning outcomes of physical activity. This study was an experimental research using the posttest only control group design. The population in this study were the eleventh grade of SMA Negeri 1 Tabanan in the academic year of 2021/2022 consisting of eleven classes. The study used simple random sampling. By using this sampling technique two classes were used as the experiment group and the other two classes as the control group. The data obtained was analyzed with two-way variance analysis, continued with the Tukey test to determine which groups were better than the other. Based on the results of the analysis and discussion, it can be concluded: (1) the physical activity learning outcomes of students who follow the discovery-inquiry learning model are better than students who follow the direct learning model; (2) there is an interaction between learning models and learning motivation on physical activity learning outcomes; (3) the physical activity learning outcomes of students who follow the discovery-inquiry learning model are better than students who follow the direct learning model in students with high learning motivation, and (4) the physical activity learning outcomes of students who follow the discovery-inquiry learning model are lower than students who follow the direct learning model in students with low learning motivation.

Keywords: discovery-inquiry, physical activity, learning outcomes, learning motivation

INTRODUCTION

Physical Education learning functions as a process of fostering students to be directly involved in various learning experiences both in the realm of attitudes, knowledge and skills through physical activity, play and exercise carried out systematically, habituation of healthy lifestyles, and internalization of values. In the learning process, a didactic-methodic touch must be given by the physical education teacher so that the activities can achieve the learning objectives. Teachers should make the best efforts to cultivate and develop the awareness, motivation and potential of students in an optimal way in the learning process. Every lesson designed by the teacher will certainly use the right model, approach, method, strategy or technique, and learning tactics according to the circumstances and needs so that the learning atmosphere of students becomes more creative, innovative, and conducive.

The efforts made by teachers to increase the potential of students as a whole often encounter various problems in their implementation. The problem that is often encountered is the lack of effectiveness of the teaching learning process. In carrying out their duties, not all teachers are able to overcome this problem. As a result, students do not gain sufficient learning knowledge and the lack of development of the potential of students, this can be seen from the gap between the learning outcomes achieved by students and the targets set by the curriculum. If this problem is allowed to continue and is not resolved immediately, it will have an impact on the quality of the next learning process. From observations of physical activity learning in eleventh grade SMA Negeri 1 Tabanan which includes submaterials of physical activity, diet, rest patterns and diseases related to personal health shows a lack of knowledge of students in the submaterial of physical activity regarding the levels and benefits of physical activity, the impact of irregular physical activity, principles in physical activity, and guidelines in physical activity, this could be seen that many students were still unable to provide detailed, logical, and systematic explanations when given a problem in learning physical activity. The learning process still tended to use a direct learning model. The concept that students received, was dominated by the

teacher's explanation. Therefore, students' learning activities were less than optimal, because they were limited to listening to the teacher's description, taking notes, and occasionally asking the teacher. The results of this observation were in line with the results of the analysis of the assessment of physical activity knowledge on the physical activity submaterial, the completeness reached 54.71% and the average value on the physical activity submaterial was 65.44, this average value is below the completeness of physical education subjects set by the school of 70.

Inappropriate and lack of variety in the selection of learning models that involve students in the physical education learning process causes the low learning process. The lack of knowledge of students about physical activity also has an impact on the physical activity activities carried out. Learners do a lot of physical activity in light intensity or less than 30 minutes a day, while moderate and heavy intensity physical activity or more than 30 minutes is usually only done less than three times a week. This situation is in line with the WHO (2020) statement which states that in 2016 globally 81% of adolescents aged 11-17 years were physically inactive. 85% of adolescent girls and 78% of adolescent boys do not meet WHO recommendations of at least moderate to vigorous intensity physical activity per day for 60 minutes with mostly aerobic, physical activity, throughout the week and should do aerobic activity with high intensity, as well as activities that can strengthen muscles and bones, at least three days a week, and should limit time not to move, especially recreation time on the screen. The characteristics of students who have different learning motivations also affect the learning process. This situation is exacerbated by the COVID-19 pandemic as a cause of not being able to freely do physical activities as before. The learning process is also carried out online so that students are more exposed to devices and reduce time for physical activity.

P2PTM Kemenkes RI (2019) states that physical activity is a movement of the body caused by muscle and skeletal work to increase energy expenditure. Regular, measurable and sustainable physical activity has an effect on improving body fitness. This is in accordance with Wicaksono and Handoko (2020: 22) who state that health and fitness can be improved through regular physical activity based on the recommended intensity according to ability and age. In order to be able to do physical activity regularly, measured and sustainable, knowledge about the levels and benefits of physical activity, the impact of irregular physical activity, the principles of physical activity, and guidelines for physical activity are very important to note.

Considering that the root of the problem of physical activity learning is the lack of knowledge of learners, the discovery-inquiry model can be applied in physical activity learning. Discovery-inquiry is designed to facilitate learners to develop problem-solving, critical thinking, creative thinking, argumentation, and decision-making skills. The application of discovery-inquiry is in line with Mustafa and Djoko Dwiyoogo (2020) who stated that in the 21st century, physical education learning does not only prioritize students to have physical health and movement skills, but also have the competence to think critically, collaboratively, creatively, and master technology. Discovery-inquiry is a learning model designed for the knowledge concepts studied can be discovered by students themselves so that it would be easier to understand and remember. In addition, students' learning motivation can be grown from the sense of satisfaction that arises from the results of their discovery of knowledge concepts. The application of appropriate learning models accompanied by learning motivation will influence learning outcomes. Discovery-inquiry directly involves students' activeness in learning so that students with high learning motivation tend to have more optimal learning results because they are actively involved in learning. Students who have low motivation to learn tend to dislike personal challenges and give up easily in learning. If the discovery-inquiry model is carried out correctly in physical activity learning, the knowledge competence of students can develop so that students become independent learners, have motivation to learn and are able to improve their learning outcomes. The development of learners' knowledge competence is expected to have an impact on increasing the level of physical activity activities carried out by learners so that they can meet the recommendations for physical activity levels suggested by WHO.

Bramastia and Trisnawati (2023) and Koesnandar (2020) state that the discovery-inquiry model is a combination of the discovery model with inquiry. The essence of the discovery-inquiry learning process is to condition the active and dominant participation of students in interpreting learning concepts. Santosa (2020: 4) states that discovery-inquiry is a cognitive activity through cross-opinion,

discussion, literacy, trying yourself which aims to get your own concepts. This is in line with the opinion of Nasution et al. (2021) who state that discovery-inquiry is learning that emphasizes the process of solving a problem by exploring various information to define its own concepts by following the teacher's instructions in the form of questions oriented towards achieving the objectives of learning.

The application of the discovery-inquiry learning model has been studied by Bramastia and Trisnawati (2023) who found discovery-inquiry based on information and communication technology significantly affects learning outcomes. Suryawan et al. (2020) found that discovery-inquiry learning has an effect on reducing Physics misconceptions and has an effect on learning achievement. Indriyati (2019) found that there was an increase in conceptual understanding and an increase in critical thinking skills using discovery-inquiry with illustrated student worksheet media. Nurdin et al. (2019) found that inquiry-discovery learning can improve learning achievement, build critical attitudes, help students' development in the scientific process, concept understanding, critical thinking, and positive behavior. Fatmasari et al. (2021) found that discovery-inquiry can improve students' creative thinking skills in physics learning.

Starting from the description above, the researcher sees that the ineffectiveness of the learning process for physical activity material is thought to be the main cause due to the application of learning models that are less appropriate and less varied. From the problems described above, researchers suspect that there is a relationship between learning models and learning motivation on student learning outcomes. Because of this, researchers are encouraged to conduct research with the title "Discovery-Inquiry Learning Model Improves Physical Activity Learning Outcomes in View of Learning Motivation".

METHODS

This study used a type of true experimental research with a treatment by level 2x2 design and a posttest only control group design. This research was conducted in the even semester of the 2021/2022 academic year which began in June 2022 and ended in July 2022 at SMA Negeri 1 Tabanan. The population used in this study were eleventh grade students of SMA Negeri 1 Tabanan consisting of eleven classes with a total of 393 students. The sample selection was carried out randomly using simple random sampling technique and randomly selected XI MIPA 5 and XI MIPA 6 classes as experimental classes and XI MIPA 4 and XI MIPA 7 classes as control classes. In the experimental group and control group, an equality test was conducted to prove that both groups had equal abilities. This research involves learning model as independent variable, learning motivation as moderator variable, and physical activity learning outcome as dependent variable.

The method of collecting data on students' learning motivation uses a learning motivation questionnaire that had been tested for validity and reliability. Data on physical activity learning outcomes in the knowledge domain were collected through multiple choice tests that have undergone standardization. The data analysis method used is the Two Way Anova Treatment by Level 2x2 test with the requirements test first, namely the normality test of data distribution and the homogeneity test of variance. Further test using Tukey test to find out which group is better in significance.

RESULTS AND DISCUSSION

The research hypothesis was tested using Two Way Anova by first conducting a requirement test, namely the normality test of data distribution using the Shapiro-Wilk test and the homogeneity test of variance using Levene's test. The Shapiro-Wilk test in each group showed a value above 0.05 so that the research data could be said to be normally distributed. The Levene's test showed a value of 0.688 above 0.05 so that the research data obtained came from a homogeneous group. After the results of the two requirements tests are met, hypothesis testing with Two Way Anova can be carried out for the first hypothesis and the second hypothesis. For the third and fourth hypotheses, further tests (post hoc) were carried out using the Tukey test.

1. First Hypothesis

The results of hypothesis testing show that students who follow the discovery-inquiry learning model get an average score of better learning outcomes than those who follow the direct learning model (35.188 versus 34.250) with $F = 4.469$ and Sig value. $0.037 < 0.05$, so that in the first

hypothesis, H_0 is rejected and H_1 is accepted. This means that the physical activity learning outcomes of students who follow the discovery-inquiry learning model are better than students who follow the direct learning model.

The discovery-inquiry learning model is a learning model designed so that the concept of knowledge learned can be discovered by students themselves so that it is easier to understand and remember, besides that the learning motivation of students can be grown from the sense of satisfaction that arises from the discovery of the concept of knowledge they do. Learners can optimize their potential to grow and develop thinking skills in exploring various information, solving problems and building their own knowledge concepts so that in the end it can improve learning outcomes.

The direct learning model is a learning model that is commonly applied in the classroom where the teacher still dominates the learning process so that students tend to be passive and do not try to build their own knowledge concepts so that it will affect learning outcomes. The teacher fully controls the subject matter and delivery methods which results in the learning process in the classroom becoming a process of following the steps, rules and examples given by the teacher.

Starting from the results of this study, the discovery-inquiry learning model optimizes students actively in finding their own knowledge concepts. Kementerian Pendidikan dan Kebudayaan (2020: 9) states that the discovery-inquiry model can be applied if the teacher wants to familiarize students to think at a high level, independently, think scientifically, not just optimize their reasoning skills for solving a problem.

2. Second Hypothesis

The results of the hypothesis test show that the interaction line between the learning model and learning motivation shows that $F = 36.728$ and the value of $\text{Sig. } 0.000 < 0.05$, so in the second hypothesis, H_0 is rejected and H_1 is accepted. This means that there is an interaction between the learning model and learning motivation on physical activity learning outcomes.

Between motivation and learning have a very close relationship. Motivation will encourage learning outcomes to be more optimal. Ajhuri (2021: 98) states that motivation plays a very important role in learning, motivation as a driver of students, and motivation affects learning intensity. To succeed in learning, students must have high learning motivation which encourages students to be independent, creative, innovative and responsible for the learning process so that the objectives of learning can be achieved.

In the learning process, not all students showed the same motivation towards the lessons taught by the teacher. The application of the right learning model coupled with learning motivation would affect learning outcomes. The discovery-inquiry learning model directly involved students' activeness in learning so that students with high learning motivation tend to have more optimal learning outcomes because they were actively involved in learning. Learners with low learning motivation tend to dislike personal challenges, and gave up easily in learning. They felt less suited to the various independent learning activities provided through discovery-inquiry learning and tend to accept the material delivered by the teacher directly.

3. Third Hypothesis

Statistical calculations on students with high learning motivation show that students who follow the discovery-inquiry learning model obtain a better average learning outcome score than those who follow the direct learning model (38.83 versus 35.21) and the Tukey test results show a comparison these two groups have Sig values. $0.000 < 0.05$, so in the third hypothesis, H_0 is rejected and H_1 is accepted. This means that the physical activity learning outcomes of students who follow the discovery-inquiry learning model are better than students who follow the direct learning model in students with high learning motivation.

Learning motivation is one of the determining factors for success in learning. Learning motivation is a psychological drive, either internal or external, that makes a person try to acquire knowledge and achieve learning goals in the learning process. Learners who have high learning motivation tend to engage, persist, and expend effort to complete tasks in learning and build their own knowledge concepts. The characteristics of learners who have high learning motivation are in accordance with the discovery-inquiry learning model which helps learners develop thinking skills in exploring various information, solving problems and building their own knowledge concepts. The

application of discovery-inquiry learning which directly involves students' activeness in learning and is accompanied by high learning motivation tends to optimize learning outcomes. On the other hand, the high learning motivation of students who are still learning with a direct learning model where learning is still dominated by the teacher tends to have less optimal learning outcomes because students are passively involved in learning.

4. Fourth Hypothesis

Statistical calculations on students with low learning motivation show that students who follow the discovery-inquiry learning model get a lower average score of learning outcomes than those who follow the direct learning model (31.54 versus 33.29) and the Tukey test results show that the comparison of these two groups has a Sig value. $0.032 < 0.05$, so in the fourth hypothesis, H₀ is rejected and H₁ is accepted. This means that the physical activity learning outcomes of students who follow the discovery-inquiry learning model are lower than students who follow the direct learning model in students with low learning motivation.

Discovery-inquiry learning is a learning model designed so that the concept of knowledge learned can be discovered by students themselves. Students with low learning motivation tend to dislike personal challenges, and give up easily in learning. This situation is in line with Khan et al. (2019) which states that motivation plays an important role in the learning process, learners who are not academically motivated tend not to engage, do not persist, and do not expend effort to complete tasks. They feel less suited to the various self-learning activities provided through discovery-inquiry learning and tend to accept the material delivered by the teacher directly. The application of the discovery-inquiry learning model to learners whose learning motivation is low tends to have lower learning outcomes compared to the direct learning model usually followed by learners.

CONCLUSIONS

Based on the results of the analysis and discussion, it can be concluded:

1. the physical activity learning outcomes of students who follow the discovery-inquiry learning model are better than students who follow the direct learning model,
2. there is an interaction between learning models and learning motivation on physical activity learning outcomes,
3. the physical activity learning outcomes of students who follow the discovery-inquiry learning model are better than students who follow the direct learning model in students with high learning motivation, and
4. the physical activity learning outcomes of students who follow the discovery-inquiry learning model are lower than students who follow the direct learning model in students with low learning motivation.

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