Journal of Education and Culture
Vol. 4, No. 3, Oktober 2024 ISSN: 2797-8052

Learning Outcomes: The Effect of Learning Model Between High Motor Group and Low Motor Group

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Abstract

This research is motivated based on the author's observations, during field practice at SMAN Teluk Kuantan, showing that students who have the skills to play volleyball tend to be less serious in the lessons they are following, inversely proportional to students who are less proficient in playing volleyball are more serious and pay attention to the teacher. The purpose of this study is to determine how much influence the tactical approach has on the learning outcomes of volleyball games for groups of students who have high motor skills. 2. Want to know how much influence the tactical approach has on the learning outcomes of volleyball games for groups of students who have low motor skills. The instruments used in this research are initial test, treatment and final test. The sample in this study were Teluk Kuantan State Senior High School students who participated in volleyball extracurricular activities. Based on the data processing of the volleyball game learning outcomes test, the high motor group shows tcount = 1.900 = ttable = 1.720, thus the null hypothesis (Ho) is rejected. The low motor group shows thitung = 3.653 = ttabel = 1.720 thus the null hypothesis (Ho) is rejected. So it can be concluded that the tactical learning model has a significant effect on the results of learning volleyball games for high motor groups and low motor groups. Data processing and analysis show tcount = 0.511 < ttable = 0.61 so there is no difference, but from the results of data processing the difference test shows that the high motor group has a smaller average value than the low motor group, so it can be concluded that the low motor group has a higher increase in learning outcomes compared to the high motor group.

Keywords:

Learning Model
Motor
Learning Outcome
Volleyball

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1. INTRODUCTION

Physical Education is basically education through physical activity to achieve overall individual development both physically and psychologically(Knijnik et al., 2019). Through physical activity students are introduced to a number of physical activities in which there is learning of movement skills or sports(Faizrakhmanov et al., 2017; Marszałek et al., 2018; M. Smith et al., 2021). By learning various physical education activities, it is hoped that students' motor, cognitive and affective abilities will be of higher quality(Belogianni et al., 2019; Escamilla-Fajardo et al., 2021; Lardika & Tulyakul, 2020). This expectation is in accordance with what was expressed by Goyena & Fallis, (2019), namely: Physical education is a medium to encourage the development of motor skills, physical abilities, knowledge, reasoning and habituation of healthy lifestyles which leads to stimulating balanced growth and development(Hall et al., 2016; Ritter et al., 2018; Salvador-Garcia et al., 2023; L. Smith et al., 2015). Every school, especially

physical education teachers in the process of delivering physical education activity material is very diverse, especially in the use of the model used by the teacher. In this case, a learning model is a very important component for a physical education teacher in delivering material to his students. This model is used to be able to help and clarify procedures, relationships, and the overall state of what is designed (Händel et al., 2023).

Mwivanda & Kingi, (2019) suggest the meaning of the learning model is: "A conceptual framework that describes systematic procedures in organizing learning experiences to achieve specific learning objectives, and serves as a guide for learning designers and teachers in planning teaching and learning activities". The learning model is basically a form of learning that is illustrated from start to finish which is presented characteristically by the teacher. In other words, the learning model is a wrapper or frame of the application of an approach, method, and learning technique. Currently there are many learning models that are often applied by a Physical Education teacher in delivering the material, but in this case the author specializes in one learning model, namely the tactical approach learning model(Lin et al., 2022; Pérez et al., 2021; Uemura et al., 2021). In this case the tactical approach learning model provides more game activities that lead to the subject matter to be given(Gimenez-Egido et al., 2020). For example, in learning volleyball, the teacher will not provide volleyball playing techniques directly but with a playing approach such as cat balls, throwing catch balls, etc. The tactical approach to play helps teachers to re-examine their philosophical views on play education. This teaching model allows students to realize the link between play and the improvement of their playing performance in the game. Alfonso et al., (2010) explained about the purpose of the tactical approach specifically is to increase students' awareness of the concept of play through the application of appropriate techniques according to the problem or situation in the game. One example of a tactical learning model that is often applied at SMAN Teluk Kuantan is in the learning material of volleyball games. Volleyball is a ball game played indoors by two teams with the aim of putting as many balls into the opponent's goal and defending their own goal from conceding the ball. This is in accordance with the statement of Özgül, (2018) which states that: "Volleyball sport is a game sport that is carried out indoors with a minimum size of a basketball court. Volleyball is a ball game played by two teams, each of which consists of six people. This sport shapes a player to always be ready to receive and pass the ball quickly under pressure from opposing players.

When teachers use one of the learning models, there will always be differences in the learning outcomes received by students. Learning outcomes are the abilities that students have after receiving their learning experience (Yoon et al., 2021). Learning outcomes are the abilities of skills, attitudes and skills that students acquire after they receive treatment provided by the teacher so that they can construct that knowledge in their daily lives(Kok et al., 2021, 2022; Uemura et al., 2021). There are several factors that can affect student learning outcomes in volleyball learning material both in terms of the learning model applied and the motor abilities of each student. Motor ability or basic movement ability is basically the underlying ability of motion carried from birth which is general or fundamental in nature which plays a role in performing both sports and non-sports movements. Motor ability according to Cona et al., (2015) that, "Motor ability is more accurately referred to as the capacity of a person related to the implementation and demonstration of a skill that is relatively inherent after childhood. From this explanation, the author can conclude that motor ability is a basic movement ability that a person has since childhood, which means that everyone must have motor skills. In this case, what distinguishes is how a person hones his basic movement skills. Based on the author's observations, students who have the skills to play volleyball tend to be less serious in the lessons they are participating in, inversely proportional to students who are less adept at playing volleyball are more serious and pay attention to the teacher(Galasso & Umapathi, 2009; Yoon et al., 2021).

In the realm of education, the implementation of diverse learning models by teachers invariably leads to variations in student learning outcomes(Al-Thani et al., 2014; Li et al., 2019; Matthews et al., 2017). These outcomes, as defined by recent research, encompass the abilities, skills, attitudes, and competencies that students acquire through their educational experiences. The multifaceted nature of learning outcomes extends beyond mere academic knowledge, incorporating the capacity to apply and construct this knowledge in real-world scenarios. This holistic approach to education emphasizes the importance of developing well-rounded individuals capable of navigating the complexities of daily life(Chiva-Bartoll et al., 2021; Lin et al., 2022; Salvador-Garcia et al., 2023).

The factors influencing student learning outcomes in volleyball instruction are numerous and intricate, encompassing both the chosen learning model and the individual motor abilities of each student(Vasileva, 2021). Motor ability, a fundamental aspect of human development, refers to the innate capacity for movement that individuals possess from birth. This foundational skill set plays a crucial role in both athletic and non-athletic pursuits, serving as the bedrock upon which more complex movements are built. Recent studies have further elucidated the nature of motor ability, describing it as an inherent capacity

that manifests and evolves throughout childhood, ultimately shaping an individual's proficiency in various physical activities(Aadland et al., 2020; Cale & Harris, 2022).

Interestingly, observations have revealed a paradoxical relationship between volleyball proficiency and student engagement in physical education classes. Students who exhibit advanced volleyball skills often display a tendency towards complacency or reduced attentiveness during lessons(Mbhatsani et al., 2017; Yoon et al., 2021). Conversely, those with less developed volleyball abilities typically demonstrate higher levels of engagement and attentiveness to instructional content. This phenomenon underscores the complex interplay between skill level, motivation, and learning outcomes in physical education settings. It challenges educators to develop strategies that effectively engage students across all skill levels, fostering an environment where both proficient and novice players can continue to grow and develop their abilities.

2. RESEARCH METHODS

The research method used in this study is experimental research. According to J.R. Fraenkel, Norman Wallen, (2011) "The experimental research method can be interpreted as a research method used to seek the effect of certain treatments on others under controlled conditions. Based on this explanation, it can be concluded that experimental research is a study that aims to determine the cause and effect of the variables to be studied. This method is a series of experimental activities to investigate a matter or problem so that the appropriate results are obtained. More specifically, experimental research in this study aims to determine how much influence the tactical approach learning model and students who have high motor skills and who have low motor skills on the learning outcomes of volleyball games at SMAN Teluk Kuantan. Due to the number of students who take part in extracurricular volleyball at SMAN Teluk Kuantan is less than one hundred, which is 20 people, this research is a population study. Therefore, the sample taken is a number of the population, namely 20 students. In determining the sample, the researcher used the Proportionate Stratified Random Sampling technique. J. R. Fraenkel, (2008) explains that: "this technique is used when the population has members / elements that are not homogeneous and stratified proportionally". Researchers use this sampling technique because, in determining the sample, researchers divide into two groups / sample strata, namely 10 students who have high motor skills and 10 students who have low motor skills by conducting a motor ability test for high school level which we know as the Borrow Motor ability test.

In measuring student motor ability tests, researchers use a type of general motor ability test, namely the Borrow motor ability test. Borrow motor ability test is a test battery consisting of 6 test items, to measure motor ability several aspects that must be tested such as: The motor ability test consists of several types of test items that measure aspects of speed, power, agility, eye and hand coordination, and balance. To measure volleyball learning outcomes, researchers use a test of basic techniques for playing volleyball. The test was adopted and modified from the volleyball sports skills test to further test the validity and reliability of the test. After the data from the final test is collected, the next step is to process and analyze the data statistically. 1). Calculating the average score of each sample group, 2). Calculating Standard Deviation, 3). Testing Homogeneity, 4). Testing the normality of data using nonparametric tests, 5). Determine whether or not the hypothesis is accepted. The test criteria use a two-average similarity test (two parties) and a one-average similarity test (one party).

3. RESULT AND DISCUSSION

The study examines the impact of motor skills on volleyball learning outcomes, comparing pre-test and post-test results for two groups: one with high motor skills and another with low motor skills. This analysis aims to determine whether there are significant differences in learning outcomes between the initial and final tests for each group, as well as to compare the progress made by both groups.

Volleyball is a complex sport that requires a combination of physical abilities, coordination, and strategic thinking. Motor skills play a crucial role in an athlete's ability to perform various techniques effectively, such as serving, passing, setting, and spiking. By analyzing the learning outcomes of groups with different motor skill levels, we can gain insights into the relationship between motor abilities and volleyball performance improvement.

The study design involves two groups of 10 participants each, categorized based on their motor skill levels (high and low). Both groups underwent initial testing (pre-test) and final testing (post-test) to measure their volleyball learning outcomes. The results were then statistically analyzed to determine if significant differences existed between the pre-test and post-test scores for each group.

Table 1. Testing the Gain of Learning Outcomes of Volleyball between Initial test and final test High Motor Group

Statistics	High Motor Group initial test	High Motor Group final test
Number of Samples	10	10
Mean	75,70	85,80
Standard Deviation	10,09	09,35
t_{count}	1,900	
t_{table}	1,720	
Conclusion	There is a difference	

The results indicate a noticeable improvement in the mean score from the pre-test (75.70) to the post-test (85.80) for the high motor skills group. This represents an increase of 10.1 points or approximately 13.34% improvement in performance. The calculated t-value (1.900) is greater than the table t-value (1.720) at a significance level of 0.05. This suggests that there is a statistically significant difference between the pre-test and post-test scores for the high motor skills group. The conclusion drawn from the data states that "There is a difference," which aligns with the statistical findings. It's worth noting that the standard deviation decreased slightly from the pre-test (10.09) to the post-test (9.35). This indicates that the scores became somewhat more consistent across the group after the learning period, suggesting that the training may have helped to reduce performance variability among participants with high motor skills.

Table 2. Testing the Gain of Learning Outcomes of Volleyball between Initial test and final test Low Motoric Group

Statistics	Low Motor Group initial test	Low Motor Group final test
Number of Samples	10	10
Mean	76,90	87,83
Standard Deviation	11,43	7,58
t_{count}	3,653	
t_{table}	1,720	
Conclusion	There is a difference	

The low motor skills group showed a substantial improvement in mean score from the pre-test (76.90) to the post-test (87.83). This represents an increase of 10.93 points or approximately 14.21% improvement in performance. The calculated t-value (3.653) is considerably higher than the table t-value (1.720) at a significance level of 0.05. This indicates a statistically significant difference between the pre-test and post-test scores for the low motor skills group. The conclusion drawn from the data also states that "There is a difference," which is strongly supported by the statistical analysis. Interestingly, the standard deviation decreased markedly from the pre-test (11.43) to the post-test (7.58). This substantial reduction in variability suggests that the training program had a more pronounced effect on normalizing performance across the low motor skills group, potentially bringing the participants closer to a similar skill level.

Based on the data processing of the volleyball game learning outcomes test, the high motor group shows tcount = 1.900 = ttable = 1.720, thus the null hypothesis (Ho) is rejected. The low motor group shows tcount = 3.653 = ttable = 1.720 thus the null hypothesis (Ho) is rejected. So it can be concluded that the tactical learning model has a significant effect on the results of learning volleyball games for high motor groups and low motor groups. From data processing and analysis shows tcount = 0.511 < ttable = 0.61 so there is no difference, but from the results of data processing the t-test shows that the high motor group has a smaller average value than the low motor group, so it can be concluded that the low motor group has a higher increase in learning outcomes compared to the high motor group.

The analysis of volleyball game learning outcomes reveals intriguing insights into the effectiveness of tactical learning models across different motor skill groups. This study's findings challenge some conventional assumptions about skill development and highlight the complex interplay between motor abilities and learning strategies in sports education.

For the high motor group, the statistical analysis yielded a t-count of 1.900, which exceeded the t-table value of 1.720. This result led to the rejection of the null hypothesis, indicating a significant impact of the tactical learning model on volleyball game learning outcomes for individuals with high motor skills. This

finding suggests that even athletes with well-developed motor abilities can benefit substantially from structured tactical instruction, potentially refining their decision-making processes and strategic understanding of the game.

Similarly, the low motor group demonstrated an even more pronounced effect, with a t-count of 3.653 surpassing the t-table value of 1.720. The rejection of the null hypothesis in this case points to a particularly strong influence of the tactical learning model on participants with lower initial motor skills. This outcome is especially noteworthy, as it implies that tactical instruction may serve as a powerful equalizer, enabling less physically adept individuals to enhance their overall performance through improved game understanding and decision-making. The comparative analysis between the high and low motor groups yields perhaps the most surprising result of the study. With a t-count of 0.511, which is less than the t-table value of 0.61, no statistically significant difference was found between the two groups' improvements. This lack of differentiation challenges the prevailing notion that individuals with higher motor skills would naturally demonstrate superior learning outcomes in physical education contexts.

Further examination of the data reveals an unexpected trend: the low motor group exhibited a higher average increase in learning outcomes compared to the high motor group. This finding contradicts the intuitive assumption that learners with better motor skills would show more substantial improvements in a physically demanding sport like volleyball. Instead, it suggests that the tactical learning model may have a more profound impact on individuals who initially struggle with the physical aspects of the game. This outcome raises important questions about the nature of skill development in volleyball and potentially other team sports. It implies that cognitive aspects of gameplay, such as tactical understanding and decision-making, may play a more crucial role in overall performance improvement than previously thought. The tactical learning model appears to provide a framework that allows learners to compensate for lower motor skills by enhancing their strategic approach to the game.

The results also highlight the potential limitations of categorizing learners solely based on motor skills when designing physical education programs. While motor abilities undoubtedly play a significant role in sports performance, this study suggests that other factors, such as cognitive adaptability and receptiveness to tactical instruction, may be equally important in determining learning outcomes. These findings have important implications for physical education practitioners and coaches. They underscore the value of incorporating comprehensive tactical instruction into volleyball training programs, regardless of the learners' initial motor skill levels. Moreover, they suggest that educators should be cautious about making assumptions about learning potential based solely on observed physical abilities, as cognitive factors may significantly influence overall skill development.

In conclusion, this study provides compelling evidence for the efficacy of tactical learning models in volleyball education, while also challenging conventional wisdom about the relationship between motor skills and learning outcomes. Future research could explore the long-term retention of these improvements, investigate the specific cognitive mechanisms underlying the observed effects, and examine whether similar patterns emerge in other sports or physical activities. Such investigations could further refine our understanding of effective teaching strategies in physical education and sports coaching.

4. CONCLUSION AND RECOMMENDATION

4.1 Conclusion

Based on the results of research on “The Effect of Tactical Learning Models between High Motoric Groups and Low Motoric Groups on Learning Outcomes of Volleyball Games on volleyball extracurricular students of SMAN Teluk Kuantan”, the researcher conveyed the final conclusion of the research that had been carried out, stating that: 1). There is a significant influence between the initial test and the final test of the tactical approach learning process on the learning outcomes of volleyball games for groups of students who have high motor skills. 2). There is a significant influence between the initial test and the final test of the tactical approach learning process on the learning outcomes of volleyball games for groups of students who have low motor skills.

4.2 Recommendation

Seeing the increasing number of problems that occur among adolescents and students, the tactical approach learning model using leveling system games can be used as a reference for every PE teacher because this model is proven to have a positive and significant effect on learning outcomes carried out by students. For teachers who want to implement this model, they should understand the important principles that support the success of learning outbound game activities, including: determine the target value to be achieved before learning is carried out, prepare learning stimulus media, provide questions, statements and motion tasks that arouse students' emotions, then carry out the learning stages in order; presentation of

stimulus, formulation of problems, identification of problems, determination of problems to be solved, clarification of problems, problem solving and follow-up learning activities. In the learning process, every PE teacher should know the level of motor abilities of each student. The implementation of learning should refer to the lesson plans and learning programs that have been made, with the aim that learning can run according to the scenario that has been made. In order for learning volleyball game activities using tactical learning models to run smoothly, students should actively participate during learning, develop their logical abilities in the process of determining values, making decisions and determining attitudes.

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