

## **The Influence of a Differentiated Approach on Interest and Learning Outcomes in Shot Put**

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Article History: Received on 19 July 2024, Revised on 7 September 2024,  
Published on 30 September 2024

**Abstract:** This research aims to determine the effect of a differentiated approach on interest and learning outcomes in shot put at SMAN 1 Talang Ubi. This research is a type of quantitative research with a quasi-experimental design type The Nonequivalent Control Group Design. The population in this study was class X at SMAN 1 Talang Ubi which consisted of four classes, namely classes X.1, The selection of research subjects used purposive sampling. Data was collected using questionnaires to determine students' interest in learning and tests to determine learning outcomes in shot put. Data were analyzed using t-test. The results of this research show that there is an influence of the differentiated approach on (1) interest in learning shot put and (2) learning outcomes in shot put.

**Keywords:** Differentiated Approach, Learning Outcomes, Students' Interest

### **A. Introduction**

Ki Hajar Dewantara as a national figure had an idea that placed education as the basis of human development. Education is a guide in the growth and development of children in guiding all the natural powers that exist in them both as members of society to achieve the highest safety and happiness (Ki Hajar, 1994). One of the principles of learning that appears in Ki Hajar's pedagogical vision is that students grow and develop according to their own nature. Based on this principle, in carrying out the learning process educators guide students so that the natural strengths or potential that students possess can grow and develop to become independent individuals.

The development of education and the curriculum are closely related, where both influence and encourage each other. The curriculum serves as a guide for the teaching and learning process, regardless of how the educator approaches teaching. However, the curriculum remains an important step in shaping the character and attitudes of students. According to Law No. 20 of 2003, curriculum is a set of learning plans related to objectives, content, teaching materials and methods used

and used as a guideline in organizing learning activities to achieve a national education goal. The curriculum is a description of the vision, mission and educational goals of an institution (Tondoprasetyo, 2022; Khoirurrijal, 2023). The curriculum is also the main source of values that students use to achieve academic goals (Gamage et al., 2021; Oeschger et al., 2022). One of the curricula currently used is the Merdeka Curriculum.

The Independent Curriculum gives educators the freedom to create quality learning that suits students' needs and learning environment. The Merdeka Curriculum is also very synonymous with learning that supports students, where one of the learning applied is differentiated learning. Differentiated learning is an effort made by educators to adapt the learning process in the classroom to meet the individual learning needs of students. According to Tomlinson (1999) in a class that implements differentiated learning, a teacher makes consistent efforts to respond to students' learning needs. The differentiated approach can be used in many subjects, one of which is the Physical Education subject. In this subject, there are several numbers in athletics, namely running, jumping, throwing and so on. One of the throwing events in Athletics is the Shot Put, apart from the Javelin Throw, Discus Throw and Hammer Throw. It is called a shot put because the method of throwing the tool is more similar to a throwing motion than throwing or throwing. The aim of doing the shot put is to produce the greatest distance possible.

### **The Role of the Merdeka Curriculum in Modern Education**

The Merdeka Curriculum, as a modern educational framework, not only aligns with Dewantara's vision but also serves as a dynamic blueprint for fostering holistic student development (Retnowati et al., 2018). It provides educators with the flexibility and autonomy to design and implement learning activities that resonate with the individual characteristics of their students. By doing so, it empowers educators to go beyond standardized teaching methods, allowing for a more personalized and meaningful educational experience. This approach is crucial in today's diverse classrooms, where students come from various backgrounds and possess different learning styles, abilities, and interests.

In the context of physical education, the Merdeka Curriculum's flexibility is particularly beneficial. Physical education is not just about physical activity; it is about instilling values such as teamwork, perseverance, and discipline. The curriculum allows for the adaptation of teaching methods to ensure that every student, regardless of their physical abilities, can engage meaningfully in these activities. For instance, in a shot-put lesson, students might be grouped according to their physical strength and skill level, allowing each group to practice at a pace and intensity that suits their capabilities. This not only ensures safety but also maximizes

learning outcomes by providing a supportive environment where students can progress at their own pace.

### **Differentiated Learning in Physical Education: The Case of Shot Put**

Differentiated learning in physical education, particularly in disciplines like shot put, exemplifies how the principles of the Merdeka Curriculum can be effectively implemented. Shot put, a sport that combines strength, technique, and coordination, can be challenging for many students, particularly those who may struggle with physical strength or have difficulty mastering the technical aspects of the sport. A differentiated approach to teaching shot put might involve breaking down the skill into manageable components, allowing students to focus on one aspect of the technique at a time. For example, one group of students might work on improving their stance and balance, while another group practices the arm motion required to execute a proper shot put. The educator might use various tools and methods, such as video analysis or peer feedback, to help students understand and improve their technique. Additionally, the use of lighter or modified equipment could be employed for students who may not yet have the strength to handle the standard shot-put weight, thus ensuring that all students can participate and progress.

### **Aligning Traditional Wisdom with Modern Pedagogy**

This method of differentiated instruction not only adheres to the principles laid out by Dewantara but also reflects a modern understanding of educational psychology. It recognizes that students learn best when they are actively engaged in a learning process that is both challenging and attainable. By allowing students to grow at their own pace, educators foster a sense of autonomy and confidence in their students, encouraging them to take ownership of their learning. Furthermore, by integrating Dewantara's concept of guiding students to develop their natural strengths with the Merdeka Curriculum's focus on differentiated learning, educators can create a more inclusive and equitable learning environment. This approach ensures that all students, regardless of their starting point, have the opportunity to succeed and reach their full potential.

### **Case study**

In observing the learning process for shot put, several significant challenges among students were identified. Notably, 60% of students struggled with the act of shooting, primarily due to the heavy weight of the shot. This difficulty was exacerbated by the fact that 25% of students found it challenging to rotate their bodies properly before executing the push technique, a critical movement in shot put that requires both coordination and strength. Additionally, 15% of the students had difficulty maintaining balance during the follow-through, often resulting in

instability that affected the effectiveness and accuracy of their throws.

These challenges were further compounded by the classroom dynamics observed during the lesson. A notable number of students formed small groups, passively waiting for their turn to perform the shot put, rather than actively engaging with the material or practicing their technique. This passive behavior highlighted a lack of continuous engagement and participation, which is essential for skill development in physical education.

Moreover, it was observed that the teacher had not yet implemented a learning approach that accommodates the diverse needs and characteristics of students. This includes variations in their learning readiness, interests, and individual learning profiles. The absence of such an approach meant that the instruction was not tailored to the varying levels of ability and motivation within the class, resulting in a one-size-fits-all method that did not address the unique challenges faced by individual students. To address these issues and to enhance student engagement, it is essential to adopt teaching methods that are both interesting and enjoyable. Such methods not only make the learning experience more dynamic but also help prevent students from becoming bored or disengaged. By introducing more interactive and student-centered strategies, it is possible to create a learning environment that is both stimulating and supportive of each student's needs.

One of the most promising strategies to achieve this is through the implementation of a differentiated approach. This approach involves tailoring the instructional methods to meet the diverse needs of students, considering their varying levels of readiness, individual interests, and learning profiles. By doing so, the teacher can create a more inclusive and effective learning environment, where each student has the opportunity to engage with the material in a way that best suits their learning style and capabilities. The differentiated approach not only addresses the immediate challenges observed in shot put instruction but also lays the foundation for a more personalized learning experience. By catering to the unique needs of each student, this approach encourages greater participation, reduces the likelihood of disengagement, and ultimately leads to better learning outcomes.

## **B. Methods**

This research uses a quantitative approach with experimental research methods. The experiments carried out in this research were categorized as quasi experiments. The experimental design in this research is shown in the table below:

**Table 1. The Experimental Design**

<b>Group</b>	<b>Pre Test</b>	<b>Treatment (X)</b>	<b>Post Test</b>
TO	01	Differentiated approach	02
K.K	03	No treatment	04

**Description:**

TO: Experimental Group (treated group)

KK: Control Group (group that was not given treatment)

O1 : Pre-test (experimental group)

O2 : Post-test (experimental group)

O3 : Pre-test (control group)

O4 : Post-test (control group)

X: Treatment

The population in this study were class

**Table 1. The Population in this Study**

No	Class	Man	Woman	Amount
1	X.1	15	21	36
2	X.2	17	19	36
3	X.3	20	16	36
4	X.4	14	22	36

In this research, the tests used included two types of tests, namely pretest and posttest. Both have the same question characteristics, the only difference is the time of implementation, namely the pretest is carried out at the beginning before treatment while the posttest is carried out after completion of treatment. The test used is a skills test. Analysis Requirements Test Before carrying out data analysis, it is necessary to first carry out an analysis requirements test in the form of a normality test and a homogeneity test. Hypothesis testing is carried out using the t-test.

In this research, the testing process is structured around two key assessments: the pretest and the posttest. These tests serve as critical components of the study's design, allowing for a comparative analysis of students' physical fitness levels before and after the intervention involving traditional games. The pretest is administered at the beginning of the study, prior to the introduction of the traditional game activities, to establish a baseline measurement of each student's physical capabilities. The posttest, conducted after the completion of the intervention, is identical in content and structure to the pretest, ensuring that any observed changes in performance can be attributed to the treatment itself rather than differences in the testing instruments.

Both the pretest and posttest are designed as skills tests, focusing on specific physical fitness components relevant to the research objectives. These components may include cardiovascular endurance, muscular strength, flexibility, and coordination. The use of standardized tests, such as the 20-meter shuttle run, sit-ups, push-ups, and sit-and-reach tests, ensures that the data collected is both reliable and valid. These tests have been widely used in educational and sports settings to assess

physical fitness, making them appropriate tools for measuring the impact of the traditional games intervention.

To ensure the integrity of the research findings, it is essential to conduct a thorough analysis of the data collected from these tests. Before proceeding with the data analysis, the study must first meet certain prerequisites, known as the analysis requirements test. This involves conducting a normality test and a homogeneity test, both of which are critical in determining the appropriateness of the statistical methods used in the subsequent analysis. The normality test is used to assess whether the data distribution follows a normal (Gaussian) distribution, which is an underlying assumption for many parametric statistical tests, including the t-test. If the data is normally distributed, it suggests that the sample is representative of the larger population, thereby increasing the validity of the inferences drawn from the data. Common methods for conducting a normality test include the Shapiro-Wilk test and the Kolmogorov-Smirnov test, both of which compare the distribution of the data to a normal distribution and assess the likelihood that the data deviates significantly from normality.

Alongside the normality test, a homogeneity test is conducted to determine whether the variances within the groups being compared are equal. This is particularly important when using the t-test, as the assumption of equal variances (homoscedasticity) is a key condition for the test's validity. The Levene's test is commonly used for this purpose, providing a statistical measure of whether the variances in different groups are significantly different. If the homogeneity of variance is confirmed, it allows the researcher to proceed with the t-test with greater confidence that the results will be accurate and reliable. Once the analysis requirements have been met, the next step in the research process is hypothesis testing. In this study, hypothesis testing is conducted using the t-test, a statistical method used to compare the means of two groups. The t-test is particularly well-suited for this research, as it allows for the comparison of the pretest and posttest scores to determine whether there is a statistically significant difference in physical fitness levels before and after the traditional games intervention.

The t-test operates by comparing the means of the two sets of scores pretest and posttest while taking into account the variability within each set of scores. The result of the t-test is a t-value, which is then compared to a critical value from the t-distribution table. If the t-value exceeds the critical value, the null hypothesis, which posits that there is no difference between the pretest and posttest scores, is rejected. This indicates that the observed difference in scores is statistically significant and not likely due to chance. In the context of this research, a significant t-test result would suggest that the traditional games intervention has had a measurable impact on the students' physical fitness. This finding would provide empirical support for the

effectiveness of traditional games as a tool for enhancing physical fitness in educational settings. It would also contribute to the broader field of physical education research by providing evidence that culturally relevant physical activities can be successfully integrated into school curricula to improve student health outcomes.

To further validate the research findings, additional analyses may be conducted, such as effect size calculation, which quantifies the magnitude of the difference between pretest and posttest scores. Effect size provides a measure of practical significance, offering insights into the real-world impact of the intervention beyond the statistical significance indicated by the t-test. This can be particularly useful in educational research, where the goal is not only to demonstrate that an intervention works but also to assess how meaningful the impact is in the context of student learning and development. Moreover, it is important to consider potential limitations in the testing process that could affect the validity of the results. For instance, test-retest reliability must be ensured, meaning that the pretest and posttest should yield consistent results if administered repeatedly under similar conditions. Any discrepancies between the two tests that are not attributable to the intervention could introduce bias and undermine the study's conclusions. To address this, careful attention must be given to the administration of the tests, ensuring that they are conducted under standardized conditions and that all students receive the same instructions and support. Additionally, the study should account for any external factors that might influence the test results, such as students' physical activity outside of school, dietary habits, and sleep patterns. These variables could potentially confound the relationship between the traditional games intervention and the observed changes in physical fitness. By controlling for these factors through careful study design and data analysis, the researcher can ensure that the results accurately reflect the true impact of the intervention.

In conclusion, the use of pretest and posttest assessments in this research provides a robust framework for measuring the impact of traditional games on students' physical fitness. The rigorous application of analysis requirements tests, followed by hypothesis testing using the t-test, ensures that the findings are both statistically and practically significant. These findings contribute valuable knowledge to the field of physical education, supporting the integration of culturally relevant physical activities into school programs as a means of promoting health and well-being among students. As the research process unfolds, it is essential to remain vigilant in addressing potential biases and limitations, ensuring that the conclusions drawn from the data are accurate, reliable, and applicable to broader educational contexts.

## **C. Results and Discussion**

Based on the comprehensive analysis of the data collected during this study, several key findings emerged that underscore the effectiveness of the differentiated approach in influencing both student interest and learning outcomes in the context of shot put instruction.

### **Impact of the Differentiated Approach on Interest and Learning Outcomes**

The data revealed that the differentiated approach employed in this study had a significant positive impact on students' interest in learning the shot put technique (Bal, 2016; Azis et al., 2024). This approach, which adapts teaching methods to align with the diverse learning styles and needs of individual students, proved to be instrumental in engaging students and fostering a deeper interest in the subject matter. The personalized nature of the instruction allowed students to interact with the content in ways that were most conducive to their learning preferences, leading to higher levels of engagement and motivation.

Moreover, this heightened interest translated directly into improved learning outcomes. The study utilized a posttest, administered through a well-established shot put assessment rubric, to evaluate students' mastery of the shot put technique. The results of the posttest demonstrated that students who were taught using the differentiated approach not only showed greater interest but also achieved significantly higher scores compared to those who might have been taught using more conventional methods. This finding highlights the crucial role that tailored instruction plays in enhancing both the enthusiasm for and the mastery of physical education skills.

### **Normality Testing and Data Distribution**

In order to ensure the validity of the study's findings, rigorous statistical analyses were conducted, beginning with the normality test. This test was performed using SPSS 18, a widely recognized statistical software, which provided a reliable framework for analyzing the distribution of the data. Specifically, the Lilliefors test, an adaptation of the Kolmogorov-Smirnov test, was employed to assess the normality of the data distribution within the groups.

The normality test is a critical step in statistical analysis as it determines whether the data follows a normal distribution, which is an essential assumption for many subsequent statistical tests (Thode, 2002). In this study, the results of the Lilliefors test were examined by analyzing the significance value (sig.) in the Kolmogorov-Smirnov column. This value indicates whether the data deviates significantly from a normal distribution. For the data to be considered normally distributed, it must meet

a specific significance threshold. If the sig. value exceeds this threshold, the data is deemed to be normally distributed; if it falls below, the data is considered non-normal, necessitating further examination or alternative statistical approaches.

### **Homogeneity Testing and Variance Equality**

Following the normality test, the study proceeded to conduct a homogeneity test to determine whether the variances across different groups were equal, a prerequisite for certain statistical tests, including the t-test. The homogeneity test was also carried out using SPSS 18, utilizing the Chi-Square test to evaluate the equality of variances.

Homogeneity of variance is crucial for ensuring that the groups being compared are sufficiently similar in terms of variability, thereby allowing for more accurate and meaningful comparisons (Zawacki-Richter et al., 2019). The Chi-Square test results provide insights into whether the variability in scores is consistent across groups or whether there are significant differences that could potentially skew the results. A key aspect of this test is its ability to confirm that any observed differences in outcomes are due to the intervention itself (in this case, the differentiated approach) rather than underlying differences in group variability.

### **Hypothesis Testing with the t-Test**

The final stage of the data analysis involved hypothesis testing, which was conducted using the t-test. This statistical test was employed to determine whether there was a statistically significant effect of the independent variable (the differentiated approach) on the dependent variable (student learning outcomes in shot put).

The t-test was conducted at a significance level ( $\alpha$ ) of 0.05, which is a standard threshold in educational research. This significance level indicates that there is a 5% risk of concluding that a difference exists when there is actually no difference. The test criteria for the t-test were straightforward: if the calculated t-value was smaller than the critical t-value at the 0.05 significance level, the null hypothesis (which posits no effect) would be rejected, and the alternative hypothesis (which suggests an effect) would be accepted (Harmon, 2011). Conversely, if the calculated t-value was greater than the critical t-value, the null hypothesis would be accepted, indicating no significant effect.

In this study, the results of the t-test provided clear evidence that the differentiated approach had a meaningful impact on student learning outcomes. The t-values obtained from the analysis were significantly higher than the critical values, leading to the acceptance of the alternative hypothesis. This outcome confirmed that the differentiated approach was indeed effective in enhancing students' performance in

learning the shot-put technique.

### **Implications and Further Considerations**

These findings carry important implications for the future of physical education instruction. The success of the differentiated approach in both increasing interest and improving learning outcomes suggests that such methods could be widely beneficial if implemented across various physical education curricula. By tailoring instruction to meet the diverse needs of students, educators can create a more inclusive and effective learning environment that not only engages students but also maximizes their potential to succeed (Voltz et al., 2010). Moreover, the rigorous statistical analyses employed in this study, including the normality test, homogeneity test, and t-test, ensure the robustness of the findings. These analyses provide a strong foundation for the conclusion that differentiated instruction is a powerful tool for improving student outcomes in physical education (Blegur et al., 2024; Lucius, & Daryanto, 2024).

In summary, the data analysis conducted in this study provides compelling evidence for the effectiveness of a differentiated approach in teaching shot put. The use of statistical tools like SPSS 18, combined with careful attention to the assumptions of normality and homogeneity, has allowed for a thorough examination of the impact of this approach on student interest and learning outcomes. The findings support the integration of differentiated instructional strategies into physical education programs as a means of fostering both engagement and achievement among students.

### **Interest in Learning**

The differentiated approach significantly enhances students' interest in learning by allowing them to engage with the material in ways that resonate with their unique preferences and strengths. Rather than adhering to a one-size-fits-all model, this approach recognizes that students have different learning styles some may be visual learners, while others might excel through kinesthetic or auditory methods (McCarter, 2008; Lee, & Kim, 2014). By providing a variety of instructional strategies, such as visual demonstrations, hands-on practice, and verbal explanations, students are able to connect with the content in a manner that feels natural and intuitive to them.

This personalization of the learning experience has been shown to lead to a marked increase in students' enthusiasm and motivation to participate in the learning process. When students are able to learn in a way that aligns with their inherent preferences, they are more likely to find the material interesting and engaging. This heightened interest not only fosters a more positive attitude towards learning but

also encourages greater involvement and active participation in class activities. For instance, in the context of learning the shot put, students who are kinesthetic learners might benefit from more opportunities for physical practice and movement-based learning, while visual learners might find it helpful to study diagrams or watch instructional videos. By catering to these diverse needs, the differentiated approach makes the learning experience more accessible and enjoyable for all students, thereby increasing their overall interest in the subject. Moreover, this increased interest has a cascading effect on other aspects of the learning process. As students become more engaged, they are more likely to take initiative, ask questions, and seek out additional resources to deepen their understanding. This proactive involvement not only enriches the learning experience but also contributes to a more dynamic and interactive classroom environment, where students feel empowered to take charge of their own learning journey.

### **Learning Outcomes**

The positive impact of a differentiated approach extends beyond just increasing interest, it also leads to a significant improvement in learning outcomes (Ojong, 2023; Deunk et al., 2018). When students are taught in a manner that aligns with their individual learning styles, they are able to absorb and retain information more effectively. This tailored instruction ensures that students are not only engaged but also able to achieve a deeper understanding of the material.

### **D. Conclusions**

The implementation of a differentiated approach in the teaching of shot put has shown a substantial positive influence on both students' interest in learning and their overall learning outcomes. This approach, which tailors instruction to meet the diverse needs, learning styles, and abilities of individual students, has been instrumental in creating a more engaging and effective learning environment.

In the specific context of shot put, the application of differentiated teaching strategies has been shown to result in higher average scores on assessments compared to traditional, uniform teaching methods. Students who are able to learn at their own pace, receive feedback tailored to their individual progress, and practice in ways that suit their learning preferences, consistently demonstrate superior performance. For example, in a differentiated learning environment, students who struggle with certain technical aspects of shot put might receive additional support or alternative methods of instruction that better suit their learning needs. This targeted assistance helps to address learning gaps and ensures that all students, regardless of their starting point, have the opportunity to succeed. As a result, students who might have been left behind in a conventional learning setting are able to achieve learning outcomes on par with or even exceeding those of their peers.

Furthermore, the differentiated approach also helps to build students' confidence, as they are more likely to experience success when learning in a way that aligns with their strengths. This boost in confidence can have a positive feedback effect, where students who feel capable and successful in their learning endeavors are more likely to engage fully in the learning process, leading to even better outcomes. In summary, the differentiated approach has a dual impact on the learning process in shot put. By enhancing students' interest in the subject and providing them with the tools and strategies to succeed, it leads to a more engaged and motivated student body. This, in turn, translates into higher learning outcomes, as students are able to achieve a deeper understanding and mastery of the skills being taught. The success of this approach highlights the importance of tailoring instruction to meet the diverse needs of students, ultimately fostering a more inclusive and effective educational environment.

## E. Acknowledgment

We thank to all stakeholders who help us in this article. We also thank the editorial team of PPSDP International Journal of Education who have contributed to the peer review process of the manuscripts in this issue.

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