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## THE EFFECT OF PROBLEM BASED LEARNING APPROACH AND PLAYING METHOD AND NUTRITIONAL STATUS ON MOTOR ABILITY OF STATE ELEMENTARY SCHOOL

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**Abstract.** The problem in this study is the lack of motor skills. This study aims to determine the effect of problem based learning and playing methods and nutritional status on motor skills of Elementary School 12 Mandau, Bengkalis Regency This study uses an experimental method that uses a treatment design with a level of two x two, namely a factory experiment involving two factors. The sample in this study were 20 students of Elementary School 2 Mandau. Nutritional status data were taken by means of tests and measurements using the Body Mass Index (BMI) instrument and to measure motor ability tests using the "Scott Motor Ability" test instrument. Data were analyzed using 2 x 2 ANOVA at a significance level of  $\alpha = 0.05$  and the Kolmogorov-Smirnov sig normality test  $> 0.05$  and continued with the Tukey test. The results of the data analysis show that 1) Overall, Problem Based Learning is better than the Play Method in improving motor skills of Elementary School 12 Mandau, Bengkalis Regency. 2) There is an interaction between Problem Based Learning and Play Method with Nutritional Status on the results of motor skills of Elementary School 12 Mandau, Bengkalis Regency. 3) In the High Nutritional Status Group, Problem Based Learning and high nutritional status are better and more influential than the play method group with high nutritional status on the motor skills of Elementary School 12 Mandau, Bengkalis Regency. 4) In the Low Nutritional Status Group, Problem Based Learning and low nutritional status are better and more influential than the play method group with low nutritional status on the motor skills of Elementary School 12 Mandau, Bengkalis Regency.

**Keywords:** Motor Skills, Problem Based Learning, Play Method, Nutritional Status

### I. INTRODUCTION

Physical education is an integral part of several overall education systems (Amin, Wahyuri, Irawan, Welis, Gusni, et al., 2023a; Insani et al., 2024a; Likardo et al., 2023). Therefore, the implementation of physical education must be directed towards achieving these learning objectives (Hidayat et al., 2024; Insani et al., 2024b; Ockta et al., 2024; Rambe et al., 2024; Revalina et al., 2024). The aim of physical learning is not only to develop the physical realm but also to develop aspects of health, physical fitness, emotional stability, critical thinking skills, social skills. So what is meant by the scope of physical education is all activities carried out with the aim of physical, movement, mental and social development (Adrizal

et al., 2024; Alnedral et al., 2024; Arfi et al., 2024; Pitnawati et al., 2023; Umar et al., 2023).

Every child has different abilities. There are children who have good gross motor skills and there are also those who are still lacking. For children who are less able to perform gross motor movements such as locomotor movements, non-locomotor movements, and manipulative movements, they can be given exercises such as jumping, climbing, running, walking. While for children who are not yet able to carry out fine motor activities, they can be given exercises such as folding, forming, and so on. The general difference between gross motor skills and fine motor skills can be seen in their coordination and biomechanics (Al Zaki et al., 2023; R. R. Illahi et al., 2023; Insani et al., 2024c; Safitri et al., 2023).

Gross motor development in children trains physical movement in the form of body movement coordination in children, such as crawling, running, tiptoeing, jumping, hanging, throwing and catching, and maintaining balance (Budiman & Ockta, 2024; R. F. Illahi et al., 2024; Jamil et al., 2024; Martati et al., 2024; Purwanto & Ockta, 2024; Yuliana et al., 2023). Early childhood development is holistic in nature, namely it can develop optimally if the body is healthy, has sufficient nutrition, and is educated properly and correctly. Good motor development will have an impact on other aspects of development. Likewise, broad opportunities to move, learning experiences to discover, sensory motor activities that include the use of large and small muscles allow children to fulfill perceptual motor development (Ferdian et al., 2023; Khani et al., 2024; Safitri et al., 2024; Sari et al., 2024; Ulfani et al., 2024).

Poor or poor nutrition in children can result in impaired physical growth and motor skills. If physical growth is hampered, it will affect the level of physical fitness and motor development of students, if students are not fit then the learning outcomes of the PE subject that are to be achieved will not be optimal (Amin, Wahyuri, Irawan, Welis, Gusni, et al., 2023b; Darajat et al., 2024; Karisman et al., 2024; Noepratomo et al., 2024; Sabillah et al., 2024; Saputra et al., 2025; Triani et al., 2023). The food intake consumed by a person greatly affects their intelligence. To meet the needs of life in order to grow and develop well, students should consume nutrition that meets their needs both in terms of quantity and quality (Andica et al., 2024; Febriani et al., 2024; Febryani et al., 2024; Ramadaniaty et al., 2024; Sari et al., 2024).

One of the learning approaches is PBL, PBL is a learning method triggered by problems, which encourages students to learn and work cooperatively in groups to find solutions, think critically and analytically, and be able to determine and use appropriate learning resources (Hotimah, 2020). The learning approach is centered on the problems presented by the teacher and students solve the problems with all their knowledge and skills from various sources that can be obtained. The teacher is tasked with raising students' learning motivation, so that students actively participate in futsal learning. In increasing motivation to learn futsal, it can be done with a problem-based learning model or called problem based learning (PBL) (Hambali et al., 2024; Haris et al., 2024; Ismail et al., 2024).

The play method is directed so that learning or training goals can be achieved efficiently and effectively in a happy atmosphere even though discussing difficult or heavy things. Then it is intended to build a dynamic, enthusiastic, and enthusiastic learning/training atmosphere (Apriady et al., 2024; Atradinah & Ockta, 2024; Chinta et al., 2024; Hadinata et al., 2024; Nusri et al., 2024; Sepriani et al., 2024). The characteristics of the game are to create a fun learning/training atmosphere as well as serious but relaxed (Amin, Wahyuri, Irawan, Welis, & Ockta, 2023; Iqbal et al., 2024; Kurniawan et al., 2024; Ockta & Hardiansyah, 2023; Oktadinata et al., 2024; Pranoto et al., 2024; Sasmita et al., 2023). Games are used to create a learning or training atmosphere from passive to active, from stiff to moving, and from bored to cheerful.

The Play Method can be applied to enrich the movement experience of students, because basically the play method can provide pleasure and eliminate boredom for students in learning.

Based on the observation results of Elementary School 12 Mandau, Bengkalis Regency, children rarely play outside of school, children play more often using gadgets, this is further exacerbated by parents who limit their children's play too much on the grounds that something undesirable may happen. The observation results at Elementary School 12 Mandau, Bengkalis Regency, the KKM for the PE subject is 75. In the results of motor skills, there are several classes that have very low levels of completion. The lowest score is in class 4, which is 65, class 5 is 60 and class 6 is 65. In class IV, out of 45 students, only 21 people got a passing grade and 24 people got an incomplete grade. In class V, out of 47 students, only 19 people got a passing grade and 28 people got an incomplete grade. In class VI, out of 44 students, only 20 people got a passing grade and 24 people got an incomplete grade.

In addition to the above problems, there are also several factors that affect motor skills, including; Children look weak and are susceptible to various diseases, such as fainting during the flag ceremony. Lack of concentration in children when participating in learning because most children do not have breakfast before going to school. There are still some students whose PE learning outcomes are below the KKM. There are several students who look weak and tired easily when participating in PE practice, suspected of low physical fitness and poor nutritional status. Lack of teacher competence in PE learning. Completeness of facilities and infrastructure is still lacking, such as the absence of mats for gymnastics lessons. Lack of parental attention is indicated by students often not having breakfast before going to school.

## II. METHODS

This type of research is a Quasi Experiment which aims to obtain information that is an estimate of the information that can be obtained with a real experiment in a situation that does not allow for control and/or manipulation of all relevant variables. The variables in this study are independent variables, namely, the problem based learning model (X1) and the playing method (X2). The moderator variable is nutritional status (X3). The dependent variable is motor skills (Y) of Elementary School 12 Mandau, Bengkalis Regency.

Sample is part of the number and characteristics owned by the population, the sample taken from the population must be truly representative (Sugiyono 2012). In this study, sampling was carried out using purposive sampling technique, meaning the technique of determining the sample with certain considerations, the sample was class V.A with 20 students.

All samples were subjected to a pretest to determine the treatment group, ranked by their pretest scores, then matched with an A-B-B-A pattern in two groups with 10 students each. The sample division technique used in this study was ordinal pairing. Ordinal pairing is dividing a group into two with the aim that both have similarities or equal abilities (Sugiyono 2012). This stage This stage previously divided into 2 groups based on ranking, namely high motivation 12 people and low

motivation 10 people. Then grouped based on their learning media, namely the high nutritional status group A1 B1, namely rankings 1,4,5,8,9, then A2 B1, namely rankings 2,3,6,7,10,. While the low nutritional status group A1 B2 is ranked 11, 14,15,18,19, then A2 B2 is ranked 12,13,16,17,20,.

Descriptive statistics are also used for data presentation, central measures, and measures of dispersion. Data presentation uses frequency distribution lists and histograms. Central measures include the mean, median, and mode. Measures of dispersion include variance and standard deviation.

The data analysis technique used in this study using SPSS is by using two-way ANOVA at a significance level = 0.05. If there is a difference, then determine which treatment gives the difference using the Tukey test. Considering that the analysis of research data is carried out using ANOVA, before using two-way ANOVA, a prerequisite test needs to be carried out, namely: normality test and homogeneity test of variance and if it has been met, then continue with the hypothesis test.

### III. RESULTS AND DISCUSSION

#### a. Description of Research Data

The data of the results of motor ability measurements in this group consisting of 10 members (n=10) the highest score is 69.86, the lowest score is 49.05, the mean is 55.83 and the standard deviation is 7.65. The frequency distribution of the results of motor ability of Elementary School 12 Mandau, Bengkalis Regency can be explained in the following table.

TABEL I  
 Summary of Research Data Description

| Problem Based Learning (A1) |            |    |     |
|-----------------------------|------------|----|-----|
| Interval                    | Category   | Fr | (%) |
| >67                         | Very Good  | 1  | 10  |
| 67-60                       | Good       | 3  | 30  |
| 59-52                       | Currently  | 1  | 10  |
| 51-44                       | Not Enough | 5  | 50  |
| <44                         | Very Less  | 0  | 0   |
| Amount                      |            | 10 | 100 |

#### b. Data Normality Test

The normality test was conducted on the research variables using the Shapiro-Wilk Normality test with a significance level of  $\alpha = 0.05$  with the test criteria that H0 is rejected if the sig value obtained from the research data exceeds  $\alpha = 0.05$  and conversely H0 is accepted if the sig value is less than  $\alpha = 0.05$ , which this test can be simply stated as follows: H0 is accepted if the sig value  $< \alpha = 0.05$ , meaning the data is not normally distributed, Ha is accepted if the sig value  $> \alpha = 0.05$ , meaning the data is normally distributed.

TABEL II  
 Summary of Research Data Normality Test

#### One-Sample Kolmogorov-Smirnov Test

|                                  | Motor Skills   |       |
|----------------------------------|----------------|-------|
| N                                | 20             |       |
| Normal Parameters <sup>a,b</sup> | Mean           | 53,67 |
|                                  | Std. Deviation | 6,248 |
| Most Extreme Differences         | Absolute       | ,229  |
|                                  | Positive       | ,229  |
|                                  | Negative       | -,144 |
| Kolmogorov-Smirnov Z             |                | 1,023 |
| Asymp. Sig. (2-tailed)           |                | ,246  |

a. Test distribution is Normal.  
 b. Calculated from data.

#### c. Data Homogenitas Test

The homogeneity test of variance aims to determine whether the sample is in a homogeneous state or not. The homogeneity results for each group of athletes' inner circle kick abilities from each group using the variance and bartlett test at a significant level = 0.05. Homogeneity testing is carried out with the testing criteria being Ho is accepted if:  $p > (\alpha = 0.05)$ .

TABEL III  
 Summary of Research Data Homogenitas Test

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| ,220             | 1   | 18  | ,117 |

#### d. Data Hypothesis Testing

Hypothesis testing in this study uses two-way analysis of variance (ANOVA). Hypothesis testing is carried out based on the results of the analysis of the main influence between the independent variables, namely the Problem Based Learning training method and the Play Method and the attributive variable, namely flexibility, on the dependent variable, namely motor skills of SD Negeri 12 Mandau, Bengkalis Regency:

TABEL IV  
 Summary of Research Data Hypothesis Testing

| Comparison of Nutritional Status | Mean Difference | Std. Error | Sig.  | 95% Confidence Interval |
|----------------------------------|-----------------|------------|-------|-------------------------|
| High vs Low                      | 126,000*        | 26,498     | 0.015 | 69,828 - 182,172        |
| Low vs High                      | -126,000*       | 26,498     | 0.015 | -112,344                |

### IV. CONCLUSIONS

Based on the research findings and discussion of the research results, it can be concluded as follows: 1. Overall, Problem Based Learning is better than the Play Method in improving motor skills of Elementary School 12 Mandau, Bengkalis Regency. 2. There is an interaction between Problem Based Learning and Play Method with Nutritional

Status on the results of motor skills of Elementary School 12 Mandau, Bengkalis Regency.3. In the High Nutritional Status Group, Problem Based Learning and high nutritional status are better and more influential than the play method group with high nutritional status on motor skills of Elementary School 12 Mandau, Bengkalis Regency. 4. In the Low Nutritional Status Group, Problem Based Learning and low nutritional status are better and more influential than the play method group with low nutritional status on motor skills of Elementary School 12 Mandau, Bengkalis Regency.

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