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Development of a task-oriented physical education model to enhance students' intrinsic motivation and motor skills

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ABSTRACT

Physical education serves as a medium to foster the development of motor skills, physical fitness, cognitive abilities, and value appreciation—including attitudes, emotional, spiritual, and social dimensions. This study aimed to examine whether task involvement influences students' intrinsic motivation and motor learning outcomes in physical education. The participants in this research included educational psychology experts, physical education specialists, junior high school physical education teachers in Surabaya, and junior high school students enrolled in Physical Education, Sports, and Health classes. The study involved two classes comprising a total of 70 students. Data were collected through a needs assessment using Focus Group Discussions (FGDs) with experts to explore the importance of innovation in physical education for enhancing intrinsic motivation and motor skill development. The instruments used included an intrinsic motivation questionnaire adapted from the Sport Motivation Scale and a motor ability test administered using the Barrow Motor Ability Test (BMAT), which includes six items. The results yielded a significance value of $p = 0.000$, indicating a statistically significant difference between pre- and post-test intrinsic motivation scores. In conclusion, the task-oriented physical education learning model was effective in increasing students' intrinsic motivation, making them more satisfied, engaged, and joyful when participating in physical activities at school.

KEYWORDS

Physical Education; Task Orientation; Intrinsic Motivation; Motor Skills

1. INTRODUCTION

Physical education is an integral part of the overall education system, which focuses on developing aspects of physical fitness, movement skills, critical thinking skills, emotional stability, social skills, reasoning and moral actions through physical activity. The teaching and learning process of physical education emphasizes a motivating climate which is closely related to students' perceptions of their abilities (perceived competence). Alea et al. (2020) state that the perception of the learning objective situation created by the teacher or sports coach is perceived as a motivational climate. Students who are task-oriented or mastery orientation focus on effort, cooperation and mastery of tasks as a form of self-development or what is called self-motivated (intrinsic motivation). Meanwhile, students who are ego-oriented or performance-oriented prioritize results over process. They always use performance comparisons with other people as an achievement goal (external motivation) where the goal is the same, namely to achieve effective and efficient learning which is oriented towards performance processes which always give rise to competition within groups of students, individuals and teachers with a motivational approach.

Motivation can come from inside (intrinsic) and also from outside (extrinsic). Motivation and self-discipline are significant predictive factors in successful academic achievement and sports practice (Aliriad et al., 2024). Several studies show that intrinsic motivation can be fostered by giving assignments that are appropriate to students' abilities and in the process, teachers and parents give the highest possible appreciation to individuals without comparing them with other people. In general, there are two learning climates (motivational climate) created by teachers, namely task involvement and ego involvement.

Research by Ntoumanis & Biddle (1999); Wu et al. (2021) explain that task-oriented instruction with the provision of motivation carried out by teachers when students carry out learning has a significant impact on individual students' abilities tend to show adaptive cognitive, active and behavioral patterns. So that students are able to complete the teacher's movement assignments as well as possible. This tends to happen in educational patterns that prioritize students who are more active than teachers or are called student centers. So if motivation is good, then performance is good and cognitive, affective/skill and psychomotor results are good, viewed from the results of the four types of motivation in leisure-time physical activity (interest, competence, health, and social relatedness). Low-intensity leisure -time physical activity and Motivational regulations in Physical education were assessed with the revised version of Perceived Locus of Causality Scale for Physical education .

Physical education learning uses a lot of competition and comparison approaches between students in assessing student competence. For students who do not have strengths or interest in movement activities (sports), this condition has a negative impact in the form of anxiety, decreased self-confidence, interest in sports, etc (Ardha et al., 2018). Task-oriented learning (task involvement) contains elements of rewarding individuals according to their abilities, individuals are given choices in mastering the material and each has different targets in learning.

The learning process in physical education learning focuses more on mastering competitive sports skills, this has an impact on the acquisition of values that build students' positive character (Indahwati & Maksum, 2023). So that with the physical education learning process, positive beliefs will be created in forming character values such as discipline, self-confidence, honesty, responsibility, cooperation and so on. Likewise, Ahmed et al. (2021); Hayati et al. (2017); Jagacinski et al. (2008); Lutsenko et al. (2024); Yakubjonov (2021) state that students who are not active in sports and lack physical activity will find it difficult to adapt to a modern learning environment where the task-oriented learning process will be stricter so that students will easily feel tired in carrying out the learning process. The physical fitness will decrease, thus, having an impact on good learning motivation by regulating students' emotional intelligence to be positive and better motor skills which will influence daily physical activity actions such as writing, walking, sitting, running in daily life at school and at home. It t is clear that developing skills/competition and encouraging a positive student learning atmosphere will support the quality of student learning. In this research design, a learning model will be developed with a learning climate that is oriented towards student tasks to foster intrinsic motivation. With the growth of intrinsic motivation, it is hoped that physical education learning outcomes in the form of motor skills can also increase.

The aim of this research activity is to see whether task involvement will influence intrinsic motivation and student learning outcomes in terms of the results of motor development in participating in the physical education learning process at school.

2. METHODS

2.1. Participants

This study was a development research. The final result to be achieved in the first year is the design of a task-oriented physical education learning model. After the learning model design was prepared, a limited scale trial was carried out in 2 physical education learning classes for 3 months. The subjects of this research were educational psychology experts, physical education experts,

physical education teachers at junior high school level in Surabaya and junior high school students in Surabaya in the subjects of Physical Education, Sports and Health in 2 classes with a total of 70 students. After coordinating with the chairman of the Physical Education Subject Teachers' Conference (MGMP), it was suggested to use Junior High School 34 Surabaya as a trial school.

After the task-oriented physical education learning scenarios contained in the teacher's guidebook and student journals have been validated, this learning model is ready to be tested in the field. This learning trial was carried out on class VIII students at Junior High School 34 Surabaya. Initially the trial will be carried out on class VII students, but related to the implementation of the 2013 curriculum, of course in class VII there were several changes in learning, both time allocation, learning strategies and so on, so it was decided to apply this to class VIII students.

To equalize perceptions, Training of Trainers (TOT) was carried out for physical education teachers at Junior High School 34 Surabaya. Then a pre-test of intrinsic motivation and motor skills was carried out. After initial data was obtained, learning was tested during ten face-to-face meetings. After conducting field trials with ten lessons, the following are the results of descriptive statistics based on the results of the pretest and posttest from 25 students tried in two groups, namely the experimental group and the control group. Table 1 shows the design used:

Table 1. Research design

Group	**Pre-Test**	**Integration**	**Post Test**
R_1	O_1	X_1	O_2
R_2	O_1	C	O_2

2.2. Instruments and procedures

The test instrument used in this research was an intrinsic motivation questionnaire adapted from the Sport Motivation Scale (Rubio-Castillo & Gómez-Mármol, 2016). This questionnaire consists of intrinsic motivation, extrinsic motivation and amotivation. However, in this study, the motivation aspect was not used, whereas in extrinsic motivation several sentences were revised and the assessment technique was reversed so that this questionnaire focused more on measuring intrinsic motivation. To obtain an adequate level of validity and reliability, expert testing and instrument testing were carried out in the field. The results of this trial were processed using statistical techniques to determine the validity and reliability of the instrument. Furthermore, students' motor skills were measured using the Barrow Motor Ability Test (BMAT), namely a test of motor skills

with the items long jump without a start (standing broad jump), throwing a softball ball, running zig-zag, throwing the ball against a wall (wall pass), sprinting 50 m, and Medicine Ball Throw.

2.3. Data analysis

Research data analysis used the statistical technique of difference test (T test) to see differences in students' intrinsic motivation and motor skills before and after learning. Qualitative data analysis was carried out based on logical thinking analysis from the results of observations and interviews that had been conducted.

In this research, the validation test used content validity ratio (CVR). In the CVR approach, a number of subject-matter experts (panel) are asked to indicate whether a measurement item on a scale is important as a form of operationalization of theory building. Input from the panel is then used to calculate the CVR for each item. Scoring for each item consists of three alternative answers, namely 0 = not suitable, 1 = quite suitable, 2 = suitable. Based on the panel scoring, it is then calculated using the following formula:

$$CVR = (Ne-N/2)/(N/2)$$

Information:

CVR = *content validity ratio*
Ne = Number of panelists who gave a rating of 3 (relevant/important)
N = Number of all panelists

The CVR score for each item can range from 1 to -1. A high score indicates high content validity for that item. An item that has a CVR = 0 indicates that half of the panel rated the item as relevant to the domain being measured. Each positive value indicates that more than half of the panel scored that the item is a good enough item to be included in the measurement instrument. Conversely, items that have a low CVR indicate that the item in question does not represent the measurement domain (Chen & Ennis, 2004).

3. RESULTS

After conducting a field trial with ten lessons, descriptive statistical results were presented based on the results of the initial test (pre test) and final test (post test) from 25 students who tried it in two groups, namely the experimental group and the control group. The results of this research will explain the description, normality test, paired T test and T test for two different groups using the SPSS 20 application.

Table 2 explains that the pre-test data for the Barrow Motor Ability Test variable showed that the average score from the experimental group was higher than the control group, namely 3936.57 with a standard deviation of 1481.41. Meanwhile, the average in the control group was 3538.99 with a standard deviation of 1066.04. Then, in the pre-test data for the Intrinsic Motivation variable, the average score from the experimental group was slightly higher than the control group, namely 74.92 with a standard deviation of 3.12. Meanwhile, the average in the control group was 74.24 with a standard deviation of 4.18.

Table 2. Descriptive statistics results

Variable	**N**	**Mean**	**Median**	**SD**	**Min**	**Max**
Barrow Motor Ability test						
Experiment	25	3936.57	3922.37	1481.41	1778.36	6944.20
Control	25	3538.99	3383.89	1066.04	2213.98	5948.25
Intrinsic Motivation						
Experiment	25	74.92	77.00	3.12	69	80
Control	25	74.24	73.00	4.18	68	81

Table 3 explains that the results of the post test data for the Barrow Motor Ability Test variable showed that the average score from the experimental group was higher than the control group, namely 4211.63 with a standard deviation of 1253.18. Meanwhile, the average in the control group was 3873.55 with a standard deviation of 1439.61. Then, in the post test data for the intrinsic motivation variable, it was found that the average score from the experimental group was higher than the control group, namely 92.16 with a standard deviation of 5.90. Meanwhile, the average in the control group was 83.12 with a standard deviation of 6.08.

Table 3. Descriptive statistics results

Variable	**N**	**Mean**	**Median**	**SD**	**Min**	**Max**
Barrow Motor Ability test						
Experiment	25	4211.63	4370.71	1253.18	2487.02	7150.81
Control	25	3873.55	3530.17	1439.61	1940.16	7084.83
Intrinsic Motivation						
Experiment	25	92.16	91.00	5.90	84	109
Control	25	83.12	83.00	6.08	72	93

Table 4 explains that regarding the results of the normality test using the Kolmogorov-Smirnov test, a p value > 0.05 was obtained for all variables. Based on this, it can be concluded that all variables are normally distributed.

Table 4. Assessment of normality for pre-test data

Variable	N	Mean	SD	Kolmogorov-Smirnov Z	p
Barrow Motor Ability test					
Experiment	25	3936.57	1481.41	0.564	0.908
Control	25	3538.99	1066.04	0,608	0,854
Intrinsic Motivation					
Experiment	25	74.92	3.12	1,337	0,056
Control	25	74.24	4.18	0,721	0,676

Table 5 shows that the p-values from the normality test are all greater than 0.05, which indicates that the data do not significantly deviate from a normal distribution.

Table 5. Assessment of normality for post-test data

Variable	N	Mean	Sd	Kolmogorov-Smirnov Z	p
Barrow Motor Ability test					
Experiment	25	4211.63	1253.18	0,518	0,952
Control	25	3873.55	1439.61	0,669	0,762
Intrinsic Motivation					
Experiment	25	92.16	5.90	0,690	0,728
Control	25	83.12	6.08	0,691	0,727

Table 6 shows the results of an independent samples t-test comparing the pre-test scores between the experimental and control groups.

Table 6. Independent samples t-test results for pre-test scores between experiment and control groups

Variable		N	Mean	Sd	T	df	p
Barrow Motor Ability test	Experiment	25	3538.99	1066.04	-1.089	48	0.282
	Control	25	3936.57	1481.41			
Intrinsic Motivation	Experiment	25	74.92	3.121	.652	48	0.517
	Control	25	74.24	4.176			

Based on the t-test results for the two groups on pre-test data, the average Barrow Motor Ability Test score in the experimental group was 3538.99 with a standard deviation of 1066.04, while in the control group, the average score was 3936.57 with a standard deviation of 1481.41. The statistical test results obtained a sig = 0.282, meaning that at an alpha of 5% there was no significant difference in the results of the Barrow Motor Ability test between the experimental group and the control group. These results indicate that the initial conditions of the two groups were the same, so they are in accordance with the principles of experimental research design.

The average intrinsic motivation result in the experimental group was 74.92 with a standard deviation of 3.121, while in the control group the average intrinsic motivation result was 74.24 with a standard deviation of 4.176. The statistical test results obtained a value of sig = 0.517, meaning that at alpha 5% there was no significant difference in the results of intrinsic motivation between the experimental group and the control group. These results indicate that the initial conditions of the two groups were the same, so they are in accordance with the principles of experimental research design.

Table 7 shows the results of a paired samples t-test that compares the pre-test and post-test scores within the experimental group to determine whether there was a statistically significant change after the intervention.

Table 7. Paired samples t-test results for pre- and post-test scores in the experimental group

Variable		N	Mean	sd	T	df	Sig
Barrow Motor Ability test	Pre	25	3538.99	1066.04	-5.635	24	.000
	Post	25	4211.63	1253.18			
Intrinsic Motivation	Pre	25	74.92	3.121	-11.594	24	.000
	Post	25	92.16	5.900			

The average Barrow Motor Ability test score in the first measurement was 3538.99 with a standard deviation of 1066.04. In the second measurement, the average Barrow Motor Ability test score was 4211.63 with a standard deviation of 1253.18. The statistical test results obtained a value of 0.000, so it can be concluded that there is a significant difference between the Barrow Motor Ability test scores for the first and second measurements.

The average intrinsic motivation score in the first measurement was 74.92 with a standard deviation of 3.121. In the second measurement, the average intrinsic motivation score was 92.16 with a standard deviation of 5.90. The statistical test results obtained a value of 0.000, so it can be concluded that there is a significant difference between the intrinsic motivation scores of the first and second measurements.

Table 8 shows the results of a paired samples t-test comparing the pre-test and post-test scores within the control group.

Table 8. Paired samples t-test results for pre- and post-test scores in the control group

Variable		N	Mean	sd	T	df	p
Barrow Motor Ability test	Pre	3936.57	25	1481.41	.614	24	.545
	Post	3873.55	25	1439.61			
Intrinsic Motivation	Pre	74.24	25	4.176	-6.083	24	.000
	Post	83.12	25	6.085			

Table 8 explained that the results of the paired T test, pre test - post test, the control group had an average Barrow Motor Ability test score in the first measurement of 3936.57 with a standard deviation of 1481.41. In the second measurement, the average Barrow Motor Ability test score was 3873.55 with a standard deviation of 1439.61. The statistical test results obtained a value of 0.545, so it can be concluded that there is no significant difference between the Barrow Motor ability test scores for the first and second measurements.

The average intrinsic motivation score in the first measurement was 74.24 with a standard deviation of 4.176. In the second measurement, the average intrinsic motivation score was 83.12 with a standard deviation of 6.085. The statistical test results obtained a value of 0.000, so it can be concluded that there is a significant difference between the intrinsic motivation scores of the first and second measurements.

Table 9 shows the results of an independent samples t-test comparing the post-test scores between the experimental and control groups. It was found that the average Barrow Motor Ability test result in the experimental group was 4211.63 with a standard deviation of 1253.18, while in the control group the average Barrow Motor Ability test result was 3873.55 with a standard deviation of 1439.61. The statistical test results obtained a sig = 0.380, meaning that at an alpha of 5% there was no significant difference in the results of the Barrow Motor Ability test between the experimental group and the control group, although in the average value there was a relatively large difference.

The average intrinsic motivation result in the experimental group was 92.16 with a standard deviation of 5.90, while in the control group the average intrinsic motivation result was 83.12 with a standard deviation of 6.08. The statistical test results obtained a value of sig=0.000, meaning that at alpha 5% there was a significant difference in the results of intrinsic motivation between the experimental group and the control group.

Table 9. Independent samples t-test results comparing post-test scores between experimental and control groups

Variable		**N**	**Mean**	**Sd**	**t**	**df**	**p**
Barrow Motor Ability test	Experiment	25	4211.63	1253.18	0.886	48	0.380
	Control	25	3873.55	1439.61			
Intrinsic Motivation	Experiment	25	92.16	5.90	5.33	48	0.000
	Control	25	83.12	6.08			

4. DISCUSSION

Based on the results of field trials, several things can be identified that need to be discussed in discussions regarding the development of a task-oriented physical education learning model. Below are some discussions that need to be known that the results of statistical analysis show that there are no significant differences between the experimental group and the control group in aspects of motor skills. As is known, changes in physical skills certainly cannot be achieved through just a few training activities, but will be obtained through intense movement activities. However, the existence of a student journal that motivates each student to carry out exercise activities outside of learning hours also certainly influences the achievement of improving student motor skills (Lutsenko et al., 2024). However, it is realized that teachers and researchers cannot exercise strict control over the activities carried out by students outside physical education learning hours. This also applies to students in the control group. Based on these conditions, there is no significant difference in motor abilities between the experimental group and the control group.

Based on the results of statistical analysis of the intrinsic motivation instrument, it can be seen that there is a significant difference between the intrinsic motivation of the experimental group and the control group. This is an encouraging result because it states that students in the experimental group were more intrinsically motivated in participating in physical education learning with a task-oriented learning model. Students also feel satisfied with task-oriented physical education learning. Having targets set in student journals also motivates students to always focus and remember the ultimate goal of the physical education learning provided (Mashkoor & Hameed, 2022). This is also in line with a study by Deng et al. (2023) which states that there is a significant influence between physical activity, learning motivation and physical fitness

This encourages students to be motivated and disciplined in carrying out various training activities. In fact, based on existing student journals, it appears that students also carry out various exercise activities outside of physical education learning hours as stated in NASPE (Rogers, 2022). This is one of the successes in instilling active lifestyle habits through physical education learning. Based on the final results of developing a task-oriented physical education learning model, several revisions are needed to perfect the learning stages, as well as setting time allocations, as well as determining activity choices that are in accordance with learning objectives. Teachers evaluate student learning outcomes based on the achievement of predetermined targets and the efforts made to achieve targets.

5. CONCLUSIONS

Based on the research results that have been obtained, it can be concluded that the task-oriented physical education learning model has learning stages (syntax) which include conveying learning objectives, setting individual learning outcome targets, presenting various choices of learning activities, selecting learning activities by students, motivating and guiding, providing individual appreciation and praise, as well as evaluating individual learning outcomes. The task-oriented physical education learning model can be used as an effective learning strategy to increase intrinsic motivation. There is a difference in the average motor ability of students with a task-oriented physical education learning model, which is higher than students in the control group, but there is no significant difference in the motor ability of students compared to the control group.

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All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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