

THE INFLUENCE OF A GAMES APPROACH IN PHYSICAL EDUCATION ON SENIOR HIGH SCHOOL STUDENTS' CREATIVITY LEVEL AND SPATIAL INTELLIGENCE

Beltasar Tarigan^{*}, Tjetjep Habibudin^{*} and Ikbal Gentar Alam^{*}

Abstract: This research aims to gain empirical evidence regarding the influence of a games approach in physical education and sports towards senior high school students' creativity, concentration span, and spatial intelligence level. Research methodology used an experimental approach, using a control group pre-test and post-test design. Research subjects were 40 Senior High School 1 Lembang students, who were picked randomly from a total of 300 students. Subjects were divided into two groups; the first group was given physical education lessons that applied a games approach, while the second group received a conventional approach. Instruments used to collect data were creativity and spatial intelligence tests. Data was then processed using SPSS v.16 software to show the influence of physical education on creativity level and spatial intelligence, using Paired Sample *t* test statistics test, and to discover the most appropriate approach Mann-Whitney U was applied. The data analysis results showed the average difference between group pre-test and post-test results of Sig.(2-tailed) was 0.000, therefore H_0 was declined and H_1 was accepted. The results of the conventional approach on creativity level and spatial intelligence showed the average difference between group pre-test and post-test results of Sig.(2-tailed) was 0.000, therefore H_0 was declined and H_1 was accepted. The test results regarding which approach was the most appropriate for creativity level and spatial intelligence showed the average difference test result value of N-gain, both groups had Sig.(1-tailed) of 0.000. These results showed that H_0 was declined and H_1 was accepted. Conclusions: Physical education that utilizes either a games approach or a conventional approach influences students' creativity and spatial intelligence. However, physical education that utilizes games is more effective in developing students' creativity level and spatial intelligence in comparison with the conventional approach.

Keywords: *Game sports, Physical education, Creativity, Concentration, Spatial Intelligence.*

INTRODUCTION

Student awareness of the importance of physical education and sports at schools has not been as high as expected. This is caused by limited knowledge on the importance of sports students can gain by doing exercise at school. Sports can have a positive impact on students' affectivity, psychomotor ability, and cognitive values, including their intelligence. The fact is, many students still think that physical education is monotonous and not interesting, resulting in students avoiding taking part in the physical education class. One of the most prominent factors that causes this is the teachers' tendency to be authoritative and use a conventional approach which means teachers dominate the class and students are not encouraged to be creative because they only have to follow instructions given. To motivate students and increase their interest and creativity in taking part in physical education, physical education teachers will have to innovate and make changes regarding the teaching

^{*} Faculty Sports and Health Education, Universitas Pendidikan Indonesia

approaches that motivate and challenge students by doing a series of moves in class. Conventional approaches restrict students to instructions given by teachers, and when they have to carry out the tasks they are afraid, or too embarrassed, to try and make mistakes. This situation has had negative impacts on students' behaviour, creativity level, and spatial intelligence. Regarding conventional approaches to physical education and sports Méndez Giménez et.al (2010:16) stated that games sporting education that applies a conventional approach is not the most effective to increase skills, because students behave passively, following orders to carry out the tasks without understanding the reasons, explanations and demonstrations given by the physical education teacher.

To overcome this, a breakthrough approach is necessary, especially regarding the application of an appropriate teaching model and approach to develop students' creativity, concentration, and intelligence. One possible approach that can develop students' creativity, concentration, and spatial intelligence is a games approach in which a variety of games are used in physical education lessons, along with questions given by teachers regarding some problems and solutions in every session. In this type of learning, students are encouraged to do a series of moves depending on the situations. This approach is also known as the tactical approach, and is different from the conventional approach that does not encourage students to think critically, as they are only told to carry out some moves demonstrated by teachers without any opportunities to develop their creativity and intelligence. Students' ability to think critically in dealing with different situations is a distinctive factor that the conventional approach does not possess.

Therefore, physical education teaching at schools is ideally designed by applying a motivating learning approach. Motivating physical education learning process is expected to develop students' creativity, concentration, and intelligence. Suryanti (2009) in www.ibudanbalita.com explained that "Children who like to ride their bicycles to school are smarter." This statement is in accordance with the research carried out by Niel Egelund who believed that "Sports carried out on the way to schools whether walking or cycling can result in students being able to maintain 4 hours of concentration afterwards.." Morales, et. al. (2009) concluded that a group with *situational-global method (SG)* approach or tactical approach leads to a better convergent tactical parameter. His research also included a conventional approach group that demonstrated its influence towards creativity level which was far lower compared to the *situational-global method (SG)* group or the game approach group. Thus, regular and monitored physical education and sports can maintain physical stamina, prolong concentration span and increase intelligence. Hence, students are encouraged to exercise regularly by applying the games approach which can increase brain performance steadily, resulting in students who are creative, smart, and have good academic performance.

RESEARCH METHOD

The research method applied was an experimental method, which was chosen to compare the results of the impact of physical education approaches, applying a games approach and conventional approach towards students' creativity level and spatial intelligence. To test the results, Paired T-Test and Mann-Whitney U were utilized. Randomized Control-Group Pre-test and Post-test Design was employed because there were two free variables which are physical education that applies a games approach and a conventional approach.

Research Design using Randomized Control-Group Pre-test and Post test Design Suryabrata, S. (1983:195).

<i>Group</i>	<i>Pre-test</i>	<i>Treatment</i>	<i>Post-test</i>
Exp. Group (R)*	T ₁	X	T ₂
Contr. Group (R)*	T ₁		T ₂

There were two instruments used in this research, creativity level and spatial intelligence, as elaborated below:

- Creativity survey, which was modified from Juliantine's creativity survey (2010:153) to discover students' creativity level in physical education learning.
- Spatial intelligence instrument used was a Picture Test (Spatial) taken from *Psikotes Terlengkap Sepanjang Masa* by Nano Sunartyo (2013:153-161).

Population and Research Sample

The population of this research was year eleven pupils, studying at Senior High School 1 Lembang, which consists of 10 classes with 390 students in total. 10% of the population was sampled, by employing a Simple Random Sampling technique. As a result, 40 students were chosen to be the research samples; 20 students were treated using the games approach physical education and 20 other students were treated using conventional approach physical education.

Research Analysis

The process and analysis technique employed used SPSS v.16 software. To provide students' responses based on Likert scale and decide on creativity development score and interest score in playing basketball by utilizing normalized N-gain formula (Hake, 1999) of:

$$\text{Normalized gain} = \frac{\text{post test score-pre test score}}{\text{maximum possible score-pre test score}}$$

Gain results calculation was interpreted by using a classification technique presented below (Table 4.1).

Normalized Gain Classifications

<i>Gain Value (g)</i>	<i>Classifications</i>
$g \geq 0,70$	High
$0,30 \leq g < 0,70$	Medium
$g < 0,30$	Low

- To provide descriptive statistics of the pre-test score and N-Gain score that cover average score (\bar{x}) and fixed deviation value (S).
- To conduct a normality test to discover the normality of pre-test score data, post-test score data, creativity and learning interest gain value in playing basketball using *Shapiro-Wilk* statistic test. Below is the hypothesis formulation:

H_0 : populations with normal distribution

H_1 : populations without normal distribution

Criteria tests are as follows:

If Sig. (*p*-value) is $< \alpha$ ($\alpha = 0.05$), H_0 will be declined

If Sig. (*p*-value) is $\geq \alpha$ ($\alpha = 0.05$), H_0 will be accepted

- To test homogeneity variant of pre-test score, post-test score, gain creativity and interest level in playing basketball using *Levene* test. The hypotheses which will be tested are as follows:

H_0 : Both populations have homogenous variant

H_1 : Both populations do not have homogenous variant

Criteria tests are as follows:

If Sig. (*p*-value) is $< \alpha$ ($\alpha = 0.05$), H_0 will be declined

If Sig. (*p*-value) is $\geq \alpha$ ($\alpha = 0.05$), H_0 will be accepted

- After the data has completed normal and homogeneous conditions, identical tests of the average scores of pre-test, post-test, and difference test of the average gain score using Mann-Whitney U I technique.

RESEARCH FINDINGS AND ANALYSIS

Analysis

Physical education learning that employs a games approach influences students' creativity level. Students become skilful, show ability to understand the materials given and gain skills in playing basketball. Additionally, students are more motivated to solve problems occurring during the game, which will not happen

without students' creativity. Creative students feel more challenged after every failed attempt and will try to perform better by evaluating attempts and showing respect to other teammates. Conventional teaching begins with students having technical mastery before the actual games. Each student is expected to evaluate within repeated lessons by keeping respect towards other teammates. This situation requires teachers to apply an appropriate strategy to motivate students to think, have curiosity, show flexibility in observing and enriching game strategies, have imaginative skills and originality in repeating the basic skills, and help students to have better skills and ability in their games. Games approach learning has more positive influence compared to conventional approach because games approach learning encourages students to manage their tempo in playing basketball, make good ball passes, make a series of moves, or score in very crucial position. This is in accordance with what Morales, et. at. (2009) illustrated in their research, that groups treated with a conventional approach shows impacts on students' creativity. But it is still minor compared to the situational-global method (SG) group or games approach. The applications of games approach in physical education results in the ability to think, have curiosity and flexibility in making use of the opportunities which occur, ability to be imaginative or original in making a decision, accuracy in playing a game, and ability to make a sudden decision during the game. This is in accordance with what Tarigan (2001: 7) elaborated regarding the objectives of tactical approaches as follows:

1. To increase the ability to play the game by combining games strategies and improved skills.
2. To give students enjoyable time during practice.
3. To develop students' skills in solving the problems which arise in the game.
4. To develop students' ability in dealing with the actual and constantly changing conditions.
5. To give opportunities for students to enjoy the interesting practice sessions, enthusiastically and excitedly.

Games approach learning is able to encourage students to be more active because the learning sessions are more interesting, varied, not boring, and have stages adjusted to their development, in order to promote students' ability to think regarding spatial intelligence. In this model, students are guided to solve problems and teachers give them support in the form of suggestions, clues, or other approaches to enable students to solve problems, as described by Tarigan (2001; 13), who states that the advantages of a tactical approach are as follows:

The advantages of a tactical approach are the stages of learning that flow naturally and have been adjusted to students' development phases. Additionally, a tactical approach motivates students and teachers to learn actively as students are more aware of the learning objectives and the activities carried out are quite appealing.

Conventional approach learning process encourages students to be disciplined in carrying out instructions given by the teachers. This approach stresses the importance of technique mastery before the real basketball games, that result in very limited time, which normally happens when students are waiting for their turn. That spare time is used to give inputs to strengthen their skills by observing their friends' strengths and weaknesses in carrying out the tasks and it can also be utilized to train or ask their friends about difficulties they have. The ability to analyze and correct is applied. Smart and active students will be able to make information deductions from observing their friends and teachers. Games approach learning has more positive influence because it is fun, joyful, and has no pressure that leads to students being able to interpret a series of suggestions, clues, strategies, and inputs from their teachers to be applied in the games. Contrary to that, conventional approach learning demotivates students because they are bored and not motivated to learn. Therefore, games approach learning is both fun and can train and develop students' spatial intelligence. Kaufeldt (2008) explained that most students spend a lot of time learning using certain learning styles; verbal-linguistic, logic-mathematic, and intrapersonal. Students who have good spatial intelligence will easily understand game strategies, rules in a basketball game, and be able to carry out the instructions given. Games approach learning trains students to be able to simplify problems and organize knowledge, making it easier to be conveyed. Other benefits will be a balanced condition between cognitive, affective, and psychomotor skills as described by Gardner (in Armstrong, 2009; Suparno 2004), below:

Intelligence is not something fixed and it can be developed. Schools or environment can help children to optimize their intelligences.

CONCLUSION

Physical education that applies a games approach influences students' creativity level. While that which applies, a conventional approach influences students' creativity level. In addition, physical education can also influence students' spatial intelligence. Physical education that applies a games approach has more positive influence on students' creativity level compared to a conventional approach. Physical education that applies a games approach has more positive influence on students' spatial intelligence compared to a conventional approach.

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