Teaching Games for Understanding (TGfU) Learning Model on Improving Learning Outcomes of Volleyball Material

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ABSTRACT: The purpose of the study was to determine: (1) the effect of TGfU learning model on improving volleyball learning outcomes and (2) the difference in volleyball learning outcomes between the experimental group and the control group. The method uses an experiment with a "pre-test post-test control group design". The sampling technique is simple random sampling, totaling 33 students as an experimental class with TGfU learning model treatment and 34 students as a control class. The instruments used were cognitive tests and psychomotor tests. Data analysis using t test at 5% significance level. The results of the study: (1) There is a significant effect of the TGfU learning model on improving volleyball learning outcomes, the t_{value} is 12.158 > t_{table} 1.693, and the significance is 0.000 <0.05. (2) There is a significant difference in volleyball learning outcomes between the experimental group and the control group, the t_{value} is 9.617 > t_{table} 1.668, and the significance is 0.000 < 0.05.

KEYWORDS: TgfU, learning outcomes, volleyball

INTRODUCTION

One of the subjects taught at school is Physical Education (PE). PE emphasizes on motor skills and physical activity as self-expression, with physical activity or movement activity as far as it is for goals, decision making and so on and can be modified in learning (Salian & Kumar, 2022)' (Corbin et al., 2020). PE has a comprehensive goal that includes physical, cognitive, affective, emotional, social and moral aspects (Chng & Lund, 2018) (Ciotto & Gagnon, 2018). Assessment in Physical Education Sports and Health has an important role in the learning process (Borghouts et al., 2017). One of the Physical Education Sports and Health materials at school is volleyball. Volleyball games have several basic techniques, namely service, passing, smash, and block (Junior, 2018) (Zonifa, 2020) (Jondry Hiskya, 2019) (Siva & Rajan, 2018) (Pekas et al., 2019).

When learning PE volleyball material takes place, students look less motivated when participating in learning. Students find it difficult to understand the material provided by the teacher. Teachers are required to be able to package learning materials in the form of effective and efficient learning media according to the characteristics and provisions of the applicable curriculum, so that students are interested in following the learning provided by the teacher. The success of the curriculum lies largely with the teacher. The teacher factor focuses on how the teacher makes a lesson plan which is related to the learning model and media that will be given to students. A learning approach where students are expected to think scientifically, critically, logically, and objectively in accordance with existing facts.

The interaction between educators and students that is carried out consciously, planned both inside and outside the room to improve the ability of students is determined by learning outcomes. Evaluation of learning outcomes is a process to determine the value of student learning through assessment activities and / or measurement of learning outcomes. The main objective is to determine the level of success achieved by students after participating in a learning activity, where the level of success is then marked with a value scale in the form of letters or words or symbols.

PE learning if done with a good model and approach not only contributes to the psychomotor and affective aspects but can also contribute to the cognitive aspects in critical thinking students. Learning in the 21st century requires students to have several high-level thinking skills, one of which is critical thinking skills. Critical thinking skills are skills that are focused on making decisions, analyzing, and evaluating a problem that can be accounted for. The term 21st century skills means a set of knowledge, skills, work habits, and character traits that are most important for living a perfect life in today's world, especially in academic life and future careers (Rahman, 2019).

Teachers in delivering material are very diverse, especially in the learning model and also the approach the teacher uses in delivering material so that students can accept what the teacher says well. Pedagogical competence or the teacher's teaching

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ability which is reflected in the approaches and methods also the ways owned by the teacher in this case the teacher is still not optimal. Teaching approaches and methods that are quite varied have not been fully studied by teachers to support their pedagogical abilities. Teachers' educational backgrounds and experiences vary greatly, resulting in differences that occur in the implementation in the teaching and learning process carried out by teachers. One of the learning models that can be applied is Teaching Games for Understanding (TGfU).

PE learning with TGfU approach can be used as one of the efforts to make students enthusiastic and actively participate in PE learning. TGfU has a great impact on cognitive learning, pursuing to train students who are competent, able to make decisions and solve tactical problems (García-Castejón et al., 2021), (Cocca et al., 2020). Applying TGfU actively supports teaching and motivates students towards learning (Alcalá & Garijo, 2017), and increase the exercise time of moderate and vigorous physical activity (Wang & Wang, 2018).

The study (Gil-Arias et al., 2017), found that after implementing the TGfU program for 16 sessions, an increase in motivation and intention to be physically active was observed in students. Evidence of TGfU's contribution to adolescent health as responsibility, basic psychological needs, and self-determined motivation predict intentions to be physically active and a healthy lifestyle. Scientific evidence demonstrates TGfU's ability to enhance motor, cognitive and affective learning (Bracco et al., 2019). The Study (Gaspar et al., 2021) showed that boys and girls taught through a TGfU unit with questions would report higher scores on all variables post-intervention compared to pre-intervention than boys and girls taught through a TGfU unit without questions. The TGfU unit without questions group only showed significant differences on the intention to be physically active variable after the implementation of the intervention program.

METHODS

This research is a type of quasi-experimental research. The design used in this research is "pre-test post-test control group design". In this design there are two groups that are randomly selected, then given a pretest to find out the initial state of whether there is a difference between the experimental group and the control group. The population in this study were grade XI students. Sampling in this study was done by simple random sampling. There were 33 students of XIA class as the experimental class with TGfU learning model treatment and 34 students of XIB class as the control class. The instruments used in this study were cognitive tests and psychomotor tests. Hypothesis testing using t-test with the help of SPSS 23 program.

RESULTS

The research was conducted for 4 meetings. Pretest was conducted before the application of learning, then posttest was conducted. Descriptive statistics of pretest and posttest volleyball learning outcomes between the experimental group and control group are presented in Table 1:

Table 1. Results of Descriptive Analysis of Pretest and Posttest Statistics between Experimental and Control Groups

Groups	N	Min	Max	Mean	SD
Experiment Pretest	33	33.33	46.67	40.40	4.99
Experiment Posttest	33	46.67	73.33	58.99	8.52
Control Pretest	34	33.33	46.67	40.59	5.03
Control Posttest	34	26.67	53.33	40.78	6.92

Based on Table 1 above, it shows that the pretest of the experimental group's volleyball learning outcomes was 40.00 when the posttest was 58.99 and the control group's pretest was 40.59 when the posttest was 40.78.

The data normality test used the Shapiro-Wilk method. The normality test was analyzed using SPSS version 23.0 for windows software with a significance level of 5% or 0.05. The results are in Table 2:

Table 2. Normality Test Analysis Results

Groups	Significance	Description
Experiment Pretest	0,062	Normal
Experiment Posttest	0,235	Normal
Control Pretest	0,068	Normal
Control Posttest	0,128	Normal

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Based on the statistical analysis of the normality test that has been carried out using the Shapiro-Wilk test, in all pretest and posttest data obtained from the results of the data normality test with a significance value (p) > 0.05, which means that the data is normally distributed.

The homogeneity test is carried out to test the equality of several samples that are homogeneous or not. The homogeneity test is intended to test the similarity of variance between pretest and posttest using the help of SPSS 23, the results are in Table 3:

Table 3. Homogeneity Test Analysis Results

Groups	Sig.	Description
Pretest	0,857	Homogen
Posttest	0,133	Homogen

Based on the analysis results in Table 3, it can be seen that the pretest-posttest obtained sig. p> 0.05, so the data is homogeneous.

The first hypothesis reads "There is a significant effect of the inquiry learning model on improving volleyball learning outcomes". The research conclusion is declared significant if the $t_{value} > t_{table}$ and sig value is smaller than 0.05 (Sig < 0.05). The hypothesis test results are presented in Table 4:

Table 4. T-test Results of Pretest and Posttest of Experimental Group

Groups	Mean	t count	t table	sig
Pretest	40,40	12,158	1,693	0,000
Posttest	58,99			

Based on Table 4, it can be seen that t_{count} 12.158 and t_{table} (df 32) 1.693 with a significance value (p) of 0.000. Because t_{count} 12.158 > t_{table} 1.693, and the significance value of 0.000 < 0.05, these results indicate there is a significant difference. Thus the alternative hypothesis which reads "There is a significant effect of the TGfU learning model on improving volleyball learning outcomes", is accepted.

The second hypothesis reads "There is a significant difference in volleyball learning outcomes between the experimental group and the control group". The research conclusion is declared significant if the $t_{value} > t_{table}$ and sig value is smaller than 0.05 (Sig < 0.05). The results of the hypothesis test are presented in Table 5:

Table 5. T-test Results of Experimental Group and Control Group

Groups	Mean	t count	t table	sig
Experiment Class	58,99	9,617	1,668	0,000
Control Class	40,78			

Based on Table 5, it can be seen that t count 9.617 and t table (df 65) 1.668 with a significance value (p) of 0.000. Because t count 9.617 > t table 1.668, and the significance value of 0.000 < 0.05, these results indicate that there is a significant difference. Thus the alternative hypothesis (Ha) which reads "There is a significant difference in volleyball learning outcomes between the experimental group and the control group", is accepted. This means that the experimental group with TGfU learning model treatment is better than the control group towards improving volleyball learning outcomes, with an average difference of 18.21.

DISCUSSION

Based on hypothesis testing, it is known that there is a significant effect of the TGfU learning model on the learning outcomes of PE volleyball material. The TGfU learning model group is better than the control group. Empirical studies on hybrid longitudinal programs of SE and TGfU models, developing different content, such as football, tennis, badminton, softball, and volleyball, have shown a significant increase in intention to be physically active, creating good sports adherence to improve future healthy habits (Gil-Arias et al., 2017) improve students' affective, cognitive, and physical domains.

The Study (Stephanou & Karamountzos, 2020) reported that the TGfU group of students, compared to the technical teaching group of students, reported higher metacognition in perceptual knowledge, information management, conditional knowledge,

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problem-solving strategies and evaluation, and performed better in the game. Problem solving in a changing game environment is critical to the TGfU pedagogical model (Harvey & Jarrett, 2014), and therefore one of the objectives is to direct students towards analyzing different game situations. The TGfU model encourages the simultaneous development of physical, cognitive and emotional skills and to promote social, physical and cognitive learning alongside tactics in contextual situations using the pedagogical principles of sampling, modification (representation and exaggeration) and tactical complexity (Dyson et al., 2004). Unlike technique-oriented approaches, TGfU contributes to improving students' tactical awareness and performance. (Dania et al., 2017), along with feelings of autonomy, competence, and self-efficacy in small-sided games.

TGFU is a true instructional learning model to discover how children understand sports through the essential ideas of the game. TGFU does not emphasize learning on the strategy of playing sports, so that learning is clearer and according to the child's stage of formation. TGFU learning is close to zero in addition to strategic methodology with little regard for necessary strategies, playing in all situations in the game, expanding creativity in play, speed in making choices in the game and focusing on different varieties of games. This methodology will encourage a shift in the direction of learning towards enhancing the true nature of practice with the aim that the true purpose of schooling encompassing the intellectual, soulful and psychomotor spheres can be achieved and run properly. This kind of hybridization can be useful to help teachers access a multi-model approach in their classrooms that adapts to the current educational framework (Casey & MacPhail, 2018).

The Study (Harvey et al., 2020) emphasizes the need for pedagogical models such as TGfU that aim to increase students' capacity to evaluate game situations and develop tactical thinking. (Barba-Martín et al., 2020) states that TGfU is based on four pedagogical principles. These principles are: (1) transfer, which is achieved through the use of global games, finding tactical aspects common to different sports; (2) modification-representation, consisting of adapting games to the age or skill level of the student body, maintaining tactical structure; (3) modification-overload; this principle raises the possibility of incorporating new rules or modifying them to help assimilate key tactical content; and (4) tactical complexity, where the tasks proposed should be based on a progression in tactical difficulty.

Learning outcomes are the basis for measuring and reporting student academic achievement, and are key in developing more effective subsequent learning designs that have alignment between what students will learn and how they will be assessed (Retnawati et al., 2018). As the end product of the learning process, learning outcomes are considered to show what students know and develop (Wanner & Palmer, 2018). The existence of PE in schools is not only to improve health and physical fitness for all students, but to provide experiences in the cognitive, affective and psychomotor fields for these students. Here the teacher is required to determine the appropriate learning model for students. This is because teachers must face students who have different characteristics. For this reason, teachers must have a lot of creativity in packaging a learning material so that students like and participate actively in every lesson.

CONCLUSIONS

The results showed that (1) There is a significant effect of TGfU learning model on improving volleyball learning outcomes, t value 12.158 > t table 1.693, and significance 0.000 < 0.05. (2) There is a significant difference in volleyball learning outcomes between the experimental group and the control group, the t value is 9.617 > t table 1.668, and the significance is 0.000 < 0.05. In this study, writing realizes that there are still many shortcomings, especially due to limitations in the study, to improve volleyball learning outcomes not only learning models can be applied, there are still many other factors that can support to improve it. For development related to the research that the author has done, it can be done using tools, methods, and samples with different levels.

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