

The Effect of Self-Regulated Learning Model in Table Tennis Learning on Self-Esteem

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Abstract: Self-regulated learning is the process of how a student regulates his own learning by activating his cognitive, affective and behavioral skills so that learning goals are achieved. Self-esteem is an evaluation made by the individual and the habit of seeing himself, especially regarding the attitude of accepting or rejecting, and an indication of the amount of individual belief in his ability, significance, success and worth. This study aims to determine whether the self-regulated learning model in table tennis learning can develop self-esteem. This research method uses experiments. The design of this study uses Posttest Only Control Group Design. The population in this study were 80 students of the Sport Sciences of Elementary School Study Program in the first semester. The sample of this study amounted to 40 people with the taking technique purposive sampling. The instrument used to measure self-esteem uses the Rosenberg instrument self-esteem scale. Based on the results of the study, the model of self-regulated learning in table tennis game learning influences the self-esteem of FPOK UPI Sport Sciences of Elementary School study program students in the first semester.

Keywords: Self-Regulated Learning, Self-Esteem, Table Tennis

INTRODUCTION

The main goal in the world of education is the optimal learning outcomes that students achieve. A learning outcome is a skill that a student has after gaining a learning experience. It is used as a standard or measure of an educator's success in the learning process. In other words, the success or failure and effectiveness of educators' provision of teaching materials can be seen from the learning outcomes of students. Also, educators can improve the quality of teaching by providing teaching materials, so they should pay attention to the problem of achieving learning outcomes for students, especially students. It is true that high potential students are more likely to achieve the expected learning outcomes at the level of education they seek (Mappeasse, 2010). Because this problem is aimed at students aged 18 to 20, the age of transition from adolescence to adulthood, meeting these learning goals is challenging. Sports students are students who study sports majors, be it education or non-education, sports students will never be separated from sports, lecture activities will always be focused on sports, all sports must be mastered by students who choose that major, both sports pursued or new sports that are known and known in the course. One of them is table tennis. Not all sports students master the game of table tennis or maybe there are even students who are new to the game of table tennis. In fact, table tennis is a sport that can improve coordination between the eyes, hands, and brain performance, this sport can also be used as a means to train confidence when taking action and making decisions. Sports students are required to have broad expertise, not only physical strength or psychomotor aspects, but cognitive and affective aspects must also develop. Based on this, the researcher wants to examine the effect of *self-regulated learning* in table tennis learning on *self-esteem*. It is hoped that with this research new students majoring in sports education will be ready to face lectures, especially in table tennis courses. This is related to previous research that was researched by Winarno (2021) entitled "The Effect of Applying the Self-Regulated Learning Model Approach on Student Learning Motivation in Physical Education Learning

in elementary school” Which is where this study explains that the *self-regulated learning model* can be applied as a learning model in an effort to increase students' motivation in learning physical education, the result of which is that the SRL model can increase learning motivation in learning physical education students in elementary schools. Additionally, by Toering, et al. (2012) about “improving the performance of young football players at the elite level through the application of self-regulated learning models” show that the self-regulated learning model can improve the performance of young soccer players in the Netherlands. Based on the results of this study, the authors assume that if the *self-regulated learning model* is applied to a sample of students in learning table tennis games, it can increase *the self-esteem* of these students. The author applies a *self-regulated learning strategy* in learning because most of the strategies used still use conventional strategies so that students get bored easily and are not interested in learning. According to Zimmerman (2002), independent learning influences a student's ability to self-regulate in the learning process. Self-regulation plays an important role in successful learning in higher education. According to Mukhid (2008), self-regulated learning is the ability to actively participate in metacognition, motivation, and behavior (behavior) in the learning process. Metacognitively, self-regulated learners plan, organize, direct, monitor, and assess learning content on multiple levels. Zimmerman (2002) states that self-regulation occurs when students systematically direct behavior and cognition by following instructions and tasks, processing and interpreting knowledge, repeatedly memorizing information, and developing and maintaining it. He says that learning occurs. Positive beliefs about learning ability and ability to predict learning outcomes. Based on the above background information, the authors hypothesize that self-regulated learning strategies in table tennis learning have a significant impact on the self-esteem of Sport Sciences of Elementary School FPOK UPI Student.

METHOD

This study is a quantitative study using experimental research methods. The study design used a posttest-only control group design. In this design, there are two groups, an experimental group and a control group, each of which is randomly selected (R). The first group received treatment (X), the intended treatment was her use of SRL, and the other group received no treatment. The treated group was called the experimental group and the untreated group was called the control group. Authors can divide gists into subchapters without numbering. Example:

Research Design

This study is a quantitative study using experimental research methods. The format of the selected study designs was a post-test-only control group design. In this design, there are two groups, an experimental group and a control group, each of which is randomly selected (R). The first group received treatment (X), the intended treatment was her use of SRL, and the other group received no treatment. The treated group was called the experimental group and the untreated group was called the control group.

Population, Sample and Sampling

Participants in this study were a total of 80 students aged 18 to 20 from the Sport Sciences of Elementary School 2018 study program in the first semester. This is seen in researchers' observations of students who often ignore or avoid tasks they find difficult, so their self-esteem tends to be poor. In the first semester students Sport Sciences of Elementary School FPOK UPI, there were 80 in total. The sampling technique used in this study is non-probabilistic sampling, or directed sampling. Sugishirono (2016, p. 125) “Nonprobabilistic sampling is a sampling technique that does not provide equal opportunity for each member of the population to be selected as a member of the sample. One sampling technique is direct sampling.” It is convenient because the sampling of members from a population is done under a constant aspect” (Sugishirono, 2016, p.126). Of all her Sport Sciences of Elementary School students, 40 will be taken as a research sample. When determining samples, researchers randomly select according to research criteria, including: 1st grade b. I have never booked table tennis course c. Minimum participation of the 80th random selection. The researchers randomly assigned the experimental group distribution to match the control group (Ali, 2011, p. 263). After performing these steps, 20 individuals were divided into an experimental group, 20 individuals into a control group, and 0 individuals were selected to be used as samples. Intervention Procedures A researcher conducted a survey on her freshman year of her Sport Sciences of Elementary School study program in her 2018 class at her FPOK UPI Padasuka campus in Bandung. This research

involves several stages, including a preparatory stage, a research implementation stage, and a final stage. Instrument Evaluation (Expert Jury) b. Determine Observation Component c. Determine Evaluation Criteria d. Determining Performance Indicators e. Decide which scale to use. 2. Implementation Phase This implementation phase is the core phase of research in data collection and consists of 16 sessions. Treatment began at the meeting, and at the final meeting, a table tennis skills test was administered using a self-directed learning model and completion of a self-esteem questionnaire. 3. Completion Phase After receiving the raw data from the test results, in this phase researchers can process the data into study results and draw conclusions from the study results.

Instruments

The instruments used in this study consisted of 502 juniors and seniors from 10 randomly selected schools in New York State, with an estimated efficacy of 0.9 and a reliability of 0.9, developed It was an adaptation of Rosenberg's instrument that measures self-esteem on a scale. It consists of 10 questions. This instrument has been retested for content adequacy and dial adequacy by Panel Expert Judgment (PEJ) namely Dian Budiana, Dr. Andi Suntoda, Dr. Yusuf Hidayat. All expert judgments indicate that this instrument is valid and is permitted for use in student rehearsals. The instrument used in this study was the Rosenberg Self-Esteem Scale instrument converted into a closed-ended questionnaire containing statements on self-esteem levels. There are 10 elements in the instrument statement content. The survey uses two types of his questions: positive and negative. A positive question is an idea or a question that supports an idea, and a negative question is an idea or a question that does not support an idea. In addition, the question was given four alternative answers: strongly agree (SS), agree (S), disagree (TS), and strongly disagree (STS).

RESULTS AND DISCUSSION

To find the measured results of the study variables Self-Regulated Learning (SRL) and Self Esteem, we processed them using statistical approaches so that we could confirm whether the responses were accepted or rejected according to our hypotheses. need to do it. Suggested significance level. This section presents the results of the calculations following the procedure described in the previous chapter. The results of the SRL and self-esteem assessment data processing were then analyzed using the SPSS (Software Statistical and Service Solution) Series 2 computer software. Evaluation of student classes in the Sport Sciences of Elementary School degree program for the first semester of 2018.

Self-esteem data for the control class group and the experimental class received the following data:

Table 1
Descriptive Statistics of experimental class & control class *self-esteem data*

<i>Descriptive Statistics</i>			
Sample Group	N	Means	std. Deviation
<i>Experiment</i>	20	32.6500	1.42441
<i>control</i>	20	28.3000	1.71985
<i>Valid N (listwise)</i>	20		

According to the statistical descriptive analysis presented in Table 1, there were 20 people in the sample of the experimental group. The results of the self-esteem survey had a mean of 32.65 and a standard deviation of 1.42441.

There were 20 people in the control group of the sample. The results of the self-esteem survey averaged 28.3 and the standard deviation was 1.71985. Before analyzing the data with a t-test, some data analysis requirements were first tested. This is done so that the research received can be considered. The post-test performed includes a normality test and a homogeneity test. The normality test assumes that the data for each variable must be normally distributed, if the data is normally distributed, then the next step is a parametric test, but if the data is not normally distributed, then the next step. is a nonparametric test. Therefore, to find out whether the scores of the studied variables come from normally distributed populations or not. To determine this, a normality test is used at a significance level of $\alpha = 0.05$. For more details, see Table 4.2 below for the full results of the data normality test.

Table 2

Calculation results of the normality test *self-esteem* and control class

Group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Experiment	.176	20	.106	.907	20	.057
control	.181	20	.086	.940	20	.244

Based on the normality test analysis results shown in Table 2, the output generated by the SPSS 24 program has the data normality analysis tests, namely Kolmogorov-Smirnov, Shapiro-Wilk, whose probability or significance is and Shapiro-Wilk, and the variable data for each group study, which was not normally distributed. It is based on. From the table above, the results for the experimental and control classes for the Kolmogorov-Smirnov test are:

Decision criteria:

1. Sig. Value or probability < 0.05 (Distribution is not normal)
2. Sig. Value or probability > 0.05 (Normal distribution)
 - a. Experimental class normality test
Kolmogorov Smirnov normality test:
Sig. 0.106 > 0.05 (Normal Distribution)
Shapiro Wilk test for normality
Sig. 0.086 > 0.57 (Normal Distribution)
 - b. Control class normality test
Kolmogorov Smirnov normality test
Sig. 0.086 > 0.05 (Normal Distribution)
Shapiro Wilk normality test
Sig. 0.244 > 0.05 (normal distribution)

These results prove that the data for all groups can be assumed to be normally distributed. This is evidenced by the acquisition of a *p_value obtained* that exceeds an alpha of 0.05.

Table 3

Result of Homogeneity Test *self-esteem* using Levene

Test of Homogeneity of Variance		Levene	df1	df2	Sig.
		Statistic			
Self Esteem	Based on Mean	.248	1	38	.621
	Based on Median	.239	1	38	.628
	Based on Median and with adjusted df	.239	1	34.903	.628
	Based on trimmed mean	.245	1	38	.623

Testing this research is only done based on the mean and median.

The criteria used in this study were "if the significance value is < 0.05 then the data is not homogeneous, if the significance is > 0.05 then the data is declared homogeneous.

1. *Based on Means*

The significance value is 0.621 > 0.05, so it can be concluded that the sample data for the experimental group and the control group are homogeneous.

2. *Based on Median*

The significance value is 0.628 > 0.05, so it can be concluded that the sample data for the experimental group and the control group are homogeneous.

Based on the results of the homogeneity test presented in table 4.3, the results of this analysis prove that the data for all groups can come from the same (homogeneous) variant. This is evidenced by the acquisition of a *p_value* obtained exceeding alpha 0.05.

Self-Esteem Hypothesis Test Analysis

After the normality test and homogeneity test, the next step is to test the research hypothesis. The test was carried out by comparing the experimental class *self-esteem score data* with the author's control class using the two average test or t-test. the condition of the t-test is that it must be known whether it has the same variance or not. Therefore the resulting SPSS output consists of two tests, namely the f-test and t-test. Based on the f-test, the data have the same variance (*equal variance assumed*), whereas if the variance is not the same (*equal variance not assumed*). The f-test is not a test of the hypothesis but only to find out which t-value will be used to test the research hypothesis. The following is a summary description of the *self-esteem data test*:

Table 4
t-Test Calculation Result of Self Esteem

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.248	.621	8.711	38	.000	4.35000	.49934
Equal Variances not assumed			8.711	36.72	.000	4.35000	.49934

The independent sample t-test analysis with the aim of testing the comparison between the experimental group and the control group is presented in Table 4. The results of the analysis prove that in the *self-esteem variable* there is a difference between the experimental group and the control group, this is evidenced by the t value (t_{38}) of 8.711 and the significance at $p_value = 0.000 < 0.05$, this proves that there is a significant difference between groups experiments with a control group on the development of *self-esteem*.

It is known that the calculated F-value for the same variance assumption is 0.248 with a probability (Sig.) 0.621. The decision-making provisions are based on several provisions as follows:

Test the similarity of the two variances (F-Test)

1. H_0 : the *self-esteem data* for the experimental group and the control class have the same variance.
2. H_1 : the *self-esteem data* for the experimental class group and the control class group have unequal variances

Decision criteria:

1. If the probability (sig) > 0.05 then H_0 is accepted
2. If the probability (sig) < 0.05 then H_0 is rejected

It is known that the calculated F-value for the same variance assumption is 0.248 with a probability (Sig.) 0.621 > 0.05 , so H_0 is accepted. This means that the experimental class group data and the control class group have the same variance assumption. Thus, it can be determined that the average data test (t-test) refers to different values in the same variance assumption column.

Test the difference between the two means

In this case, the t-test is used in this case. t-test is used to determine whether there is a difference in the average *self-esteem score* between the experimental class group and the control class group. Following are the provisions for the self-esteem t-test between the experimental class and the control class.

Hypothesis:

1. H_0 : There is no significant difference between the average *self-esteem* scores of the experimental group and the control group.
2. H_1 : there is a significant difference between the average *self-esteem* scores of the experimental group and the control group.

Decision criteria:

- A. If the probability (Sig). > 0.05 then H_0 is accepted
- B. If the probability (Sig). < 0.05 then H_0 is rejected

It is known that the t-count for the *self-esteem* score is 8,711 with probability (Sig). $0.00 < 0.05$ then H_0 is rejected. This means that there is a significant difference between the *self-esteem* of the experimental class group and the control class group. That, it can be concluded that the *self-regulated learning* model has an effect on student *self-esteem* in student table tennis games, and there is a significant difference when compared to the control class.

Based on the Independent Test t-test through the SPSS 24 output software program, the results show the same significance between *Levene's Test for Equality of Variances* and a homogeneity test of 0.621, so what is next seen is the 2-tailed significance column. The 2-tailed significance column shows $0.000 < 0.05$, so the research hypothesis is accepted.

hypothesis :

- H_0 : Model of *self-regulated learning* in game learning
Table tennis has no effect on the *self-esteem* of first semester Sport Sciences of Elementary School study program students.
- H_1 : Model of *self-regulated learning* in learning the game of tennis
the table has an influence on the *self-esteem* of first semester Sport Sciences of Elementary School study program students.

2-tailed significance:

$0.000 < 0.05$ then H_0 is rejected

From this, we can conclude that the self-regulated learning model when learning to play table tennis has a significant impact on the self-esteem of first semester students of the Sport Sciences of Elementary School program. Statistical calculations have shown that SRL has a significant impact on self-esteem. With regard to self-esteem, the results are consistent with research by Nicol and Macfarlane-Dick (2006), who found that combining SRL with his 7 feedbacks was highly effective when used at low stakes and conducting medium stakes assessments. concluded that it is effective for High-risk assessments have a demotivating effect, as students feel pressured by the level of difficulty they face. In the context of physical education, self-esteem plays an important role as it involves such important things as self-determination and self-autonomy. This is confirmed by a study by Hein and Hagger (2007) published in the Journal of Sport Sciences of Elementary School. The results of the research conducted by the authors revealed several findings and are described. From the computational results described in the previous discussion, it can be concluded that there was a significant effect on self-esteem in the experimental class group self-esteem data using the self-regulating learning model when learning table tennis. Atwater (in Dariuszky, 2004, p. 13) argues that self-esteem is actually the way a person feels, how they judge themselves and influence their behavior. in his daily life. Loud (Budiana, 2017, p. 858) emphasized that SRL (Self-Regulated Learning) is a learning or training activity involving metacognitive, motivational, and behavioral aspects. Including metacognitive aspects takes the form of planning goals and strategies for learning activities, monitoring learning activities, and evaluating learning activities performed. Research results show that table tennis learning using informal methods (self-regulated learning model) develops students' self-esteem more effectively than formal methods (traditional/direct methods). (Budiana, 2017, p. 859). From the results of the computations described in the previous discussion, it can be concluded that the self-esteem data of the experimental group treated with the self-adjusting learning model during learning had an effect on the job test data. In the SRL (Self-Regulated Learning) model, the treated class experienced an increase, whereas in the control class or the no-treatment group the results were lower or no increase than the treated group According to Coopersmith (1967), self-esteem is an individual's evaluation, usually associated with respect for oneself. It expresses a positive or negative attitude and reflects the degree to which an individual considers himself or herself to be competent, important, successful and valuable. Zimmerman (1998) found that students pay attention to task assignments, carry out processes, integrate knowledge, repeat information, retain and develop information, and maintain positive beliefs about

learning. Self-regulated learning occurs when students systematically direct behavior and cognition by ability (self-efficacy) and the ability to predict learning outcomes. The Self-Regulated Learning (SRL) approach model is an alternative model PE teachers can use to conduct the learning process. Its application should consider three key elements of SRL: learning strategies, management strategies, and learning knowledge (Budiana, 2017, p. 859).

From the preceding computational results, we can conclude that the experimental group's self-esteem data treated with the self-adjusting learning model during learning had an effect on the post-test data. In the SRL (Self-Regulated Learning) model, the treated class experienced an increase, whereas in the control class or the no-treatment group the results were lower or no increase than the treated group. According to Coopersmith (1967), self-esteem is an individual's evaluation, usually associated with respect for oneself. It describes a positive or negative attitude and indicates the degree to which an individual considers himself or herself to be competent, important, successful and valuable. Zimmerman (1998) found that students pay attention to task assignments, carry out processes, integrate knowledge, repeat information, retain and develop information, and maintain positive beliefs about learning. self-regulated learning occurs when students systematically direct their behavior and cognition by ability (self-efficacy) and the ability to predict learning outcomes. The Self-Regulated Learning (SRL) approach model is an alternative model PE teachers can use to conduct the learning process. Its application should consider her three key components of SRL: learning strategies, management strategies, and learning knowledge (Budiana, 2017, p. 859).

CONCLUSION

From the research hypotheses and data processing results mentioned in the previous discussion, we concluded that "applying the SRL (Self-Regulated Learning) model when learning a table tennis game can have a significant impact on students' self-esteem". can conclude. First semester of Sport Sciences of Elementary School Study Program Class 2018 FPOK UPI.

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