

The Influence of Contextual Teaching-Learning Approach on Biology Toward Students' Motivation, Thinking Skills and Learning Outcomes at Class SMPN 2 Parigi

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Abstract— The research aims to: (1) describe the effectiveness of the implementation of Contextual Teaching and Learning (CTL) approach to motivation, thinking skill and learning outcome of biology subject for eighth grade students of SMP Negeri 2 Parigi; (2) describe the relationship between motivation, thinking skill, and learning outcome of Biology subject for eighth-grade students of SMP Negeri 2 Parigi. Fifty nine students of grade eighth were selected as the purposive sample, class D as the control group and class C as the experiment one. Data were analyzed by a two-tailed t-test and Product Moment Correlation. The results of the study show that: (1) for motivation, the result of test t_{count} was -5.603 and t_{table} was 1.96. This means that t_{count} was outside of the critical region. Hence H_0 was accepted. The difference in learning motivation was affected by CTL. This means that learning motivation was affected by CTL; (2) for thinking skill, the result of test displayed that t_{count} was -7.124 and t_{table} was 1.96. It means t_{count} was outside of the critical region. So that H_0 was accepted. That difference in thinking skill was affected by CTL. It means, thinking skill was affected by CTL; (3) for learning outcome, the result of the test revealed that t_{count} was -4.451 and t_{table} were 1.96. It means t_{count} was outside of the critical region denoting that H_0 is accepted. The difference in learning outcome was affected by CTL; (4) the relationship between learning motivation (X_1) with learning outcome (Y) was 0.417. It was a positive direction. The relationship was in "enough" category. Both variables were significant because of the value of p or sig. = 0.00 was smaller than $\alpha = 0.05$ (5%); (5) the relationship between thinking skill (X_2) with learning outcome (Y) was equal to 0.578. It is a positive direction. The relationship was in "enough" category. Both variables were significant because the value of p or Sig. = 0.00 was smaller than $\alpha = 0.05$ (5%); and; (6) the correlation coefficient (R) was 0.733. This can be explained that learning motivation and thinking skill respectively had a close relation with learning outcome.

Keywords— CTL, Motivation, Thinking Skills, and Learning Outcomes

I. INTRODUCTION

The success of the learning process essentially rests on how teachers provide learning that allows students to learn effectively in order to achieve the learning outcomes that correspond to the learning objectives. Teachers should be able to develop a good learning system, which is teachers should be able to develop a learning system, can provide opportunities for the development of students' creativity in digging more information and are able to manage appropriate learning systems and to ensure the process of learning all the time. Biology learning process is an active process that emphasizes the student is doing something, through the provision of direct experience and not something that is done to the students. Learning should be able to improve and develop the motivation of students, who are able to improve the process and creative thinking and ultimately to improve the learning outcomes of students.

Motivation is a necessity in the teaching of science, especially biology to maintain the curiosity of students. It was intended to encourage students to ask a variety of questions that cover what, why, and how toward objects and events in nature. It is therefore critical because students are known to have the speed, motivation, and interest in learning different from each other. The motivation gives the effect of a different student thinking skill and student learning outcomes[1].

A form of learning which refers to the increase in internal capabilities of students, in designing learning strategies or implementing learning so that learners can achieve the goal of learning as much as possible is very important. For that in

the learning needs to have a strategy, method or approach that can create conditions and conducive classroom so that teaching and learning can take place in accordance with what is expected. Teachers as educators are one of the important and critical success factors of learners. The ability of teachers to create quality learning will determine the overall educational success. The quality of learning of which depends on the ability of teachers, especially in providing ease of learning to students effectively and efficiently.

The reality in the classroom shows the implementation of conventional learning process during the learning process, there are several problems were found, among them the learning activities of students are mostly passive, just sat staring blankly, reflect, passively listening to a presentation. These problems lead to poor value daily and semester test that has not reached the standard of completeness individually or classical, and even has an impact on results of National Examination.

The above fact allegedly because of the high children's curiosity is not supported by a condition that can allow them to be more developed. Class centered on the teacher as the main source of knowledge. Learning in middle school tends to textbook oriented and unrelated to everyday life. Thus, learners have difficulty understanding academic concepts that have been taught, because these concepts are taught using methods which abstract and theoretical so that the learning is less interesting to them. As a result, the motivation to learn is hard grown and they tend to memorize patterns of learning and mechanistic, which eventually becomes a low learning outcome. To provide a special experience interesting and understandable by learners, should the teaching given in accordance with the structure of knowledge / science so that students are better prepared to absorb them, the composition of the presentation that more effective to be considered by creating activities and a learning environment that enables the development of all the dimensions in education, such as: character, personality, intellectual, emotional and social [2].

Facts show various phenomena that learning interesting, effective and efficient can improve motivation, creative thinking skill and student learning outcomes. That becomes a question that needs to be answered is whether such conditions apply to all students at every level of education. Therefore, a wide variety of learning is to answer the question. But a new question arises whether any learning model that is used to achieve the expected learning goals, such as the case with the use of Contextual Teaching and Learning (CTL) in the learning of biology. The selection and implementation appropriate learning models will have an impact on improving the quality of learning process and encouraging the increased of confidence in students, including interest, motivation, and attention in learning[3].

Application of CTL is expected to solve the problem so that the learning process becomes interesting, motivated students with active learning and teachers are skilled in optimizing the ability to teach and educate students. Efforts to improve the motivation, thinking skills and student learning outcomes are becoming increasingly necessary. This

can be done through the application of learning models which fit and proper.

II. METHODS

This study is a quasi-experimental research. The study was divided into two groups of students, the experimental group through learning with CTL approach through study group and control group with conventional approaches.

This study was conducted at SMP Negeri 2 Parigi. The population in this study was students of class VIII SMP Negeri 2 Parigi totaled 168 people. Class VIII C as sample experimental class consisted of 30 students and class VIII D as a sample of the control class consisted of 29 students.

The variable in this study is the independent variable (X) in this research is the application of CTL in the subjects of biology. While the dependent variable (Y) consists of motivation as (Y₁), thinking skills as (Y₂) and learning outcomes as (Y₃). Effect of the application of CTL to motivation, thinking skills and learning outcomes can be measured through the application of CTL in the experimental class compared to the control class that implements conventional learning.

The types of data in this study are primary data and secondary data. Primary data were obtained from the application of CTL approach (X) observation, motivation questionnaires (Y₁) and observation sheets of thinking skills (Y₂), while the data of learning outcomes (Y₃) obtained from the results of the written test. In addition, it will also be accompanied by secondary data in the form of documents and education reports obtained from the students' evaluation reports were distributed and student portfolio on the student's homeroom teacher. The technique of taking and collecting data in this research is by using questionnaires, observations, and tests. The research instrument used first tested the validity of the instrument.

Data were analyzed using quantitative analysis techniques. Before the hypothesis was tested, data were analyzed by the prerequisites in the form of normality and homogeneity test; t-test was then performed based on the formula proposed [4], as follows:

$$t_{count} = \frac{\bar{X}_1 - \bar{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (1)$$

$$S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}} \quad (2)$$

where:

\bar{X}_1 = the average score of the experimental class

\bar{X}_2 = the average score of control class

n_1 = the number of students experimental class

n_2 = the number of control class

S = standard deviation

Criteria testing which received H_0 if $-t_{(1-0.5 \alpha)} < t < t_{(1-0.5 \alpha)}$ in the real level $\alpha = 0.05$ and $dk = n_1 + n_2 - 2$ as well as for other t prices H_0 is rejected. To examine the relationship between motivation and thinking skills learning outcomes, an analysis of multiple correlation ($R_{YX_1X_2}$) with the formula as argued by [5] as follows:

$$R_{YX_1X_2} = \sqrt{\frac{r^2_{YX_1} + r^2_{YX_2} + 2r_{YX_1}r_{YX_2}r_{X_1X_2}}{1 - r^2_{X_1X_2}}} \quad (3)$$

- $R_{YX_1X_2}$ = the correlation between X_1 and X_2 together with Y.
- r_{YX_1} = Product Moment Correlation between X_1 and Y.
- r_{YX_2} = Product Moment Correlation between X_2 and Y.
- $r_{X_1X_2}$ = Product Moment Correlation between X_1 and X_2 .

III. RESULTS AND DISCUSSION

Data from research on learning motivation, thinking skills and student learning outcomes test for normality and homogeneity as presented in Table 1 and Table 2.

TABLE I. NORMALITY TEST RESULT DATA

Variable	Treatment	Asymp. Sig. (2-tailed) Score	Significance Level	Decision
Learning Motivation	Conventional	0.625	0.05	Normal
	CTL	0.444	0.05	Normal
Thinking Skills	Conventional	0.263	0.05	Normal
	CTL	0.425	0.05	Normal
Learning Outcomes	Conventional	0.365	0.05	Normal
	CTL	0.715	0.05	Normal

Table 1 shows the value of *Asymp. Sig. (2-tailed)* or a probability figure (ρ). This value is compared with a significance level (0.05). Based on the results of the analysis, the value of the probability (ρ) for all data > 0.05 , means all data normally distributed. The data is normally distributed is to know whether empirical data in accordance with certain theory distribution.

TABLE II. HOMOGENEITY TEST RESULT DATA

Variable	Levene Statistic	df1	df2	Sig. (ρ)
Learning Motivation	0.030	1	116	0.862
Thinking Skills	3.726	1	116	0.056
Learning Outcomes	3.230	1	116	0.075

The results of this analysis, the value of the probability (ρ) for all data $> 0,05$, means all the data homogeneous. Based on the results of tests of normality and homogeneity, it can be concluded that such data can be tested further (hypothesis test) quantitatively by t-test. Therefore, the

assumptions of normality and homogeneity have been met, then the determination of an effect of the implementation of CTL transactions are carried out test average difference of motivation, thinking skills and learning outcomes that apply conventionally and CTL. In this case, use t-test two parties. Criteria testing which received H_0 if $-t_{(1-0.5 \alpha)} < t < t_{(1-0.5 \alpha)}$ in the real level $\alpha = 0.05$ and $dk = n_1 + n_2 - 2$ as well as for other t prices H_0 is rejected.

The test results for motivation to learn $t_{count} = -5.603$ and $t_{table} = 1,96$, shows t_{count} is outside the reception area H_0 so that H_0 is rejected. It can be concluded that there is no significant difference in students' motivation to follow the conventional learning and CTL. Results were in line with the opinions which states that student motivation will be evolve based learning model used by the teacher [6]. A similar statement was expressed that the learning model affect on student achievement motivation [7].

The test results of thinking skills are $t_{count} = -7.124$ and $t_{table} = 1.96$, shows that t_{count} is outside the reception area H_0 so that H_0 is accepted. Thus it can be concluded that there are differences in of thinking skills students who take the conventional learning and CTL. The findings are consistent with the results of research which states that the student's thinking ability is determined by the learning model used by teachers [8]. Reference [9] states that thinking skills of students is determined by many factors, such as models or applied learning approach by teachers.

The test results of learning outcomes are $t_{count} = -4.451$ and $t_{table} = 1.96$, shows t_{count} is outside the reception area H_0 , so that H_0 is accepted. Thus it can be concluded that there are differences in learning outcomes of students which followed the conventional learning and CTL. These findings support the results of the study [6] which states that the CTL approach can improve the achievement of learners.

The relationship between learning motivation and learning outcome is equal to 0.417 with positive direction and be in a relationship level sufficient category. This means that changes in student motivation will be followed positively by learning results. In line with the reference that there is an interaction between motivation and learning outcomes of students [10]. After having tested the significance, the relationship between the two variables is significant, that motivation is related and has a positive effect on student learning outcomes because the value ρ or *Sig.* was 0.000 or smaller from the error rate 0.05 (5%). The details data can be seen in Table 3.

The relationship between thinking skills and learning outcomes is equal to 0.578 with positive direction and be in a relationship level category enough. After having tested the significance, the relationship between the two variables is significant because the value ρ or *Sig.* was 0.000 or smaller from the error rate 0.05 (5%). This means that changes in thinking skills students will be followed positively by learning results. These results concur that the change

thinking skills will enhance the learning outcomes of students [11].

The relationship between learning motivation and learning outcome is equal to 0.417 with positive direction and be in a relationship level sufficient category. After having tested the significance, the relationship between the two variables is significant because of the value 0.000 or smaller from the error rate 0.05 (5%). This means that changes in student motivation will be followed positively by learning results. These findings support the results of research which state that a good motivation to improve learning outcomes of students [6], [12].

TABLE III. ANALYSIS THINKING SKILLS RELATIONSHIP WITH STUDENT RESULTS

Control Variable		Thinking Skills	Learning Outcomes	
Learning Motivation	Thinking Skills	Correlation	1.000	0.578
		Significance (2-party)	.	0.000
		dk	0	56
	Learning Outcomes	Correlation	0.578	1.000
		Significance (2-party)	0.000	.
		dk	56	0

The relationship between learning motivation and thinking skills together with learning outcomes, linear regression analysis, as presented in Table 4.

TABLE IV. THE RELATIONSHIP ANALYSIS RESULTS MOTIVATION, THINKING SKILLS AND LEARNING OUTCOMES

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.733 ^a	.537	.521	7.14442
a. Predictors: (Constant), Thinking Skills, Learning Motivation				

The correlation coefficient (R) shows 0.733. This can be explained that the motivation of learning and thinking skills together have a high level of relationship to the learning outcomes. The amount of influence is shown by the value of R square, for 0.537. These results indicate that the contribution of the effect of the CTL learning model on motivation to learn, thinking skills and learning outcomes 53.7%, while the influence of other factors that are not included in the model for 46.3%.

This study discusses the effects of the CTL approach to the motivation of learning, thinking skills and learning outcomes. The effect can be measured by means of a comparison of conventional learning and CTL. Based on the results of data analysis is apparently a difference good learning motivation, thinking skills and learning outcomes among students who take the conventional approach to learning through CTL. This can be seen on the acquisition of the average score is different. The difference indicates the CTL approach can affect motivation, thinking skills and

learning outcomes. The results of these studies support the notion that the motivation of learning, thinking skills and different learning outcomes of each learner, it is dependent upon the approach, models, strategies, and methods used by the teacher [1], [7], [10].

The result showed that the students' motivation and thinking skills either partially or jointly have a high level of relationship with student learning outcomes. Motivation is very involved in the study, with the motivation of these students be diligent in learning, motivation also the quality of student learning outcomes likely to be realized. Students which in the process of learning have a strong and clear motivation, tend to will be diligent and successful learning [13], [14], [15].

Motivation can also serve as a driver of effort and achievement because it is conceptually related to achievement motivation and learning outcomes. The existence of a good motivation in learning will show good results. In other words, their diligent effort and especially the merit are good. The intensity of motivation a student will determine the level of achievement of learning. The ability to think someone is indicated by the person's tendency to understand the meaning of things and events around them [16]. The existence of a good motivation in learning will show good results. With the diligent effort and mainly based on their motivation, then someone who learned it will be able to bring forth a good performance. The intensity of motivation a student will determine the level of achievement of learning.

The ability to think can be improved by showing the way of thinking, giving examples of cases think good, give a problem that requires students to take advantage of the processes of problem solving and apply the skills of students to make a decision. Thinking is a process in response to external stimuli, and if thinking is done effectively will result in a change or strengthening of a world view, beliefs, opinions, attitudes, behaviors, skills, understanding, and knowledge. Thinking and learning are linked activities, because of thinking and learning to have the same results [17].

The results of this study indicate a new fact that is different from other research results. This is because this research integrates CTL, motivation, and thinking skills in giving a more comprehensive effect to student learning outcomes, while other research results only relate between CTL with motivation [6], [12], CTL with thinking skills [15], or CTL with learning outcomes [2].

Learning outcomes are manifestations from thinking skills. Thinking is a learning center for learning is the process whereby an individual to modify or reinforce a worldview, beliefs, opinions, attitudes, behaviors, skills, understanding and knowledge [1]. The better the skill level of a person's thinking, and the better the learning results. Thus it can be argued that if a teacher wants to improve student learning outcomes it is necessary to empower the

students thinking skills through the application of appropriate learning model [18].

IV. CONCLUSION

Learning by applying an effective CTL approach affects the motivation of learning, thinking skills, and student learning outcomes at SMP Negeri 2 Parigi in Biology. The relationship between learning motivation, thinking skills and student learning outcomes occur either partially or together. Motivation plays an important role in learning. High student motivation improves students' thinking skills in the learning process so as to increase the persistence and quality of their learning process and ultimately improve student learning outcomes.

The CTL effect has increased students' motivation and thinking skills. On the other hand, improving students' motivation gives effect to the improvement of students' thinking skill and with the improvement of students' thinking skills causes student learning outcomes to increase.

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