APPLICATION OF THE CTL (CONTEXSTUAL TEACHING AND LEARNING) METHOD TO IMPROVE THE MOTIVATION AND RESULTS OF BIOLOGY LEARNING STUDENTS IN CLASS XI IPA.1 SMA NEGERI JENGGAWAH THROUGH THE MAKING OF 3D CELL STRUCTURE MODELS

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Abstrak : The research application of CTL (contextual teaching and learning) method through making of 3D cell model aims to determine the effect on student's motivation, learning outcomes and to find out the understanding student concepts.

For this reason, it is necessary to have a PTK with 2 cycles. The subjects of this research were students of SMA Negeri Jenggawah especially class XI IPA.1 which consisted of 36 and the highest score was 98 while the lowest score was 68.

Keywords: Motivation, Learning Outcomes, Contexstual Teaching And Learning, 3D Model students with 12 male and 24 female. The data analysis used is standards descriptive statistical of data analysis. The results of this research indicate that the application of CTL method through making of 3D cell models has a significant impact on student motivation and learning outcomes. Indicated by an increase in student learning motivation, so that it affects learning outcomes from pre-cycle to cycle 2 by 69%. There were 25 students who obtained very good criteria and an increase in classical learning outcomes of 86.11% (31 students who completed) with an average score of 79.83 = 80

INTRODUCTION

National Education system, where education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble

character, capable, creative, independent, skilled, and become a democratic and responsible citizen necessary for himself, society, nation and state.

Basically planned learning can stimulate or condition students so that they can learn well optimally. Appropriate learning will form intellectual abilities, critical thinking, and the emergence of creativity as well as changes in a person's behavior or personality based on certain practices and experiences..

According to Tampubolon: 2013, that education is a process without end (education is a process without end), and education is a process of forming fundamental basic abilities both regarding thinking power, intellectual power and emotional/feelings directed to human nature and to each other. The learning process is the key to educational success. Furthermore, Sutikn: 2014 states that the 21st century learning paradigm emphasizes students' ability to think critically, be able to connect knowledge with the real world, master information technology, communicate and collaborate.

Given the importance of learning biology for students for their future, it is necessary to innovate learning methods so that they can be more effective and enjoyable. Biology lessons are part of science, which has an important role in improving the quality of education through critical thinking skills for students to prepare for their future. In addition, in learning biology there are three aspects that form the basis of science, namely processes, products and attitudes. These three aspects become characteristics in biology learning, so that in the learning process the teacher has a very important role so that students are active in the learning process and obtain satisfactory achievement or learning outcomes so that in the learning process the teacher has a very important role so that students are active in the learning process and obtaining satisfactory achievements or learning results, this cannot be separated from the motivation possessed by students. The more students' motivation increases, the more their learning outcomes/achievement will increase.

The low motivation and learning outcomes of students are due to the fact that learning is still just about presenting facts, knowledge is still usually memorized (textual) and understanding of cell material concepts tends to be lacking, so that in the learning process students appear passive, less communicative and not concentrating/lacking focus. lack of understanding of concepts and the knowledge obtained is only at the "memorization" stage, this results in the material obtained being easily forgotten.

Another factor is that students are less active in asking questions when the teacher explains or during discussions, students do not have the courage to express opinions and ask questions, apart from that, most students cannot solve test questions well.

From the description above, efforts must be made by researchers to increase student motivation and learning outcomes by using varied and innovative methods in the learning process. Trianto (2007) the use of learning methods is a method used by teachers or educators in delivering lesson material and also providing direction for the teaching and learning process, so that it really determines success in achieving the intended learning objectives.

the first alternative for solving the problem above can be by using the right method, namely using the CTL (Contextual Teaching and Learning) method, with the CTL method students will be more active and concentrate more in the learning process in class, students will also be directly involved in mastering the material and conceptual understanding of the material being taught, so that students can build their knowledge independently, thereby helping to make the subject matter meaningful and motivating students. For this reason, a method is needed that can link these two things (lessons and students' real lives) and the most appropriate method is CTL (Contextual Teaching and Learning) Johnson, Elain B. 2009.

The second alternative is involving students in making teaching aids/learning models that are relevant to the material, making 3D cell models used to determine student creativity while providing meaningful learning for students. Meaningful learning can make it easier for students to remember the information they learn longer, the purpose of meaningful learning in the process of making 3D cell models is that students experience what they are learning. Besides that, making 3D cell models is a problem that students must solve creatively and in the process of creative thinking students need to have knowledge about the cell itself. So that students understand the concept of the structure and function of the components of cell organelles more quickly. The CTL method will be more effective if it is combined with the use of teaching aids, where students contribute and are constructed to create 3D cell models..

Sadirman (2005), states that, one of the functions of teaching aids or learning media is to make it easier for teachers to convey material to students, so that students will more easily understand the material presented by the teacher. Visual aids or media

can also help students to concentrate, because usually the presence of visual aids in teaching and learning activities in class can attract students' attention. With the presence of visual aids students not only know the structure, name and function of cells and their organelles, but can also directly see the location and shape of the cell structure with the organelle components that make up the cell from making the teaching aids/learning model.

RESEARCH METHODS

The research was conducted at Jenggawah High School, Jember Regency in two cycles, where in each cycle there were two face-to-face meetings. The subjects in this study were students of class XI.IPA-I at SMAN Jenggawah totaling 36 students with 12 male students and 24.

The research was carried out in two cycles, where each cycle consisted of 2 meetings, where the research adopted Kemis and Mc Taggart in Herawati, (2009:12). The classroom action research model consists of four stages, namely planning, action, observation and reflection. The flow of research implementation includes::

a) Planning (Planning)
Planning always refers to what actions are taken, taking into account the circumstances, such as needing to consider what specific actions will be taken and what the purpose is (Setyosari, 2013).
b) Implementation of Actions / Acting
a) Observation

Observations are carried out to observe the student learning process. The function of observing is to find out how far the attention and activity of students' learning processes are in learning activities.

b) Reflection (Reflecting)

Reflection is an effort to examine what has happened, what has been produced, or what has not been produced, or what has not been completed from the steps or efforts that have been made (Setyosari, 2014).

Data collection techniques in this study used test (written test) and non-test (observation, motivational questionnaires by Keller ARCS (adaptation from Basit, A. 2011: 105) and documentation). This research uses descriptive statistical data analysis with benchmarks or standards. It is said to be a benchmark, because before the research was carried out the benchmark had been previously established. The use of benchmarks in

data analysis is intended to standardize quality, regardless of the type of group, class conditions or local environmental conditions (Masyud, Sulton. 2012: 66). This analysis includes:

a). Student learning outcomes

Classifying student learning outcomes after measuring learning outcomes, five criteria are used: very good, good, poor. The range of scores for each classification of learning outcomes can be followed by the criteria below.

b). Motivation to learn

Qualitative data in the form of student learning motivation questionnaire results were analyzed using the following formula:

$$Mtv = \frac{\sum st}{\sum sm} \times 100$$

Keterangan :
Mtv = motivasi
∑ st = Jumlah skor tercapai
∑ sm = Jumlah skor maksimal yang bisa dicapai.

(Diadaptasi dari Masyud, M.Sulton. 2014:34)

Based on the results of the assessment on a scale of 100, it is then interpreted using a qualitative range as seen in table 2 below:

Table. 2. Benchmark Criteria for Student Learning Motivation

Learning Motivation Criteria	Score Range
Very high	81 – 100
high	61 – 80
Enough	41 – 60
Low	21 – 40
Very low	0 – 20

(Diadaptasi dari Masyud, M. Sulton. 2012:71)

RESEARCH RESULTS AND DISCUSSION

There are 2 main data in this study, namely data on student learning outcomes and data on student motivation. The presentation of the results of this research begins with data on student learning outcomes in the pre-cycle, cycle 1 and cycle 2. The learning outcome data in this research are the scores from written tests which cover the main subject matter of Cell, chapters on the theory of cell development and chemical components of cells for the pre-cycle, understanding the structure of prokaryotic and eukaryotic cells, cell membranes, cytoplasm, and cell organelles for cycle 1, while the

second cycle contains material about cell structure and function, namely material about cell organelles.

Meanwhile, data on the condition of student learning outcomes in the Pre-Cycle, Cycle 1, and Cycle 2 are listed in Table 4 below:

Tabel 4. Increasing students' classical cognitive learning outcomes

No	Written Test Score			Enhancement	Enhancement	Enhancement
	Pra Siklus	cycle 1	cycle 2	Pre cycle to cycle 1	Cycle 1 to cycle 2	Pre cycle to cycle 2
Total	2352	2635	2874	283	239	522
Average	65	73	80	8	7	15
Highest	85	89	98	23	35	45
Lowest	25	35	68	4	-1	-2

Based on table 4. there is an increase in student learning outcomes in each cycle. The average increase in student learning outcomes from pre-cycle to cycle 1 was 8%, where the average number for pre-cycle was 65 and in cycle 1 was 73 and the average increase in student learning outcomes from cycle 1 to cycle 2 also increased by 7% with the average score in the cycle 2 of 80. While the average increase in student learning outcomes in the pre-cycle to cycle 2 has increased 15%. So that the increase in the completeness of student learning outcomes from pre-cycle to post-cycle sequentially can be seen from the scores of students who have a score of 75 or above or based on the KKM that has been determined, namely 15 students or 41.67% in pre-cycle, 23 students or 63.89% in cycle 1 and 31 students or 86.11% in cycle 2.

data on the condition of student learning outcomes in Pre-Cycle, Cycle 1 and Cycle 2 are listed in Table 5 below :

Tabel 5. Condition of Student Learning Outcomes in Pre-Cycle, Cycle 1 and Cycle 2

esults Category Learning	Range Skor	Learning Outcome Conditions					
		Pra cycle		Cycle		Cycle	
		F	%	F	%	F	%
Very good	80 – 100	3	8	13	36	25	69
Good	70 – 79	12	33	15	42	10	28
Pretty good	60 – 69	10	28	5	14	1	3
Kurang Baik	40 – 59	7	20	1	3	0	0
Very Not Good	0 – 39	4	11	2	5	0	0
Sum		36	100	36	100	36	100

Based on the data above, the condition of student learning outcomes in the pre-cycle where there has been no treatment in the learning methods, so the results are very good, only 8%, the same as 3 students, good category 33% (12 students) good category 28% (10 students) for the not good category 20%, namely 7 students, while the very poor category is 11%, namely 4 students.

Then in cycle 1 student learning outcomes had increased in each category, for the very good category it was 36% (13 students), the good category was around 42% (15 students), for the quite good, poor and very poor categories there was a decrease of 14% (5 students), poor 3% (1 student) and very poor 5% (2 students) this is in line with the increase in the good and very good categories.

In cycle 2, the very good and good categories experienced an increase of 69% (25 students) and 28% (10 students) respectively. -each category sequentially becomes 3% (1 student) for the quite good category, 0% (0 students) for poor and very poor.

The percentage increase in classical student learning outcomes can be seen from the diagram below
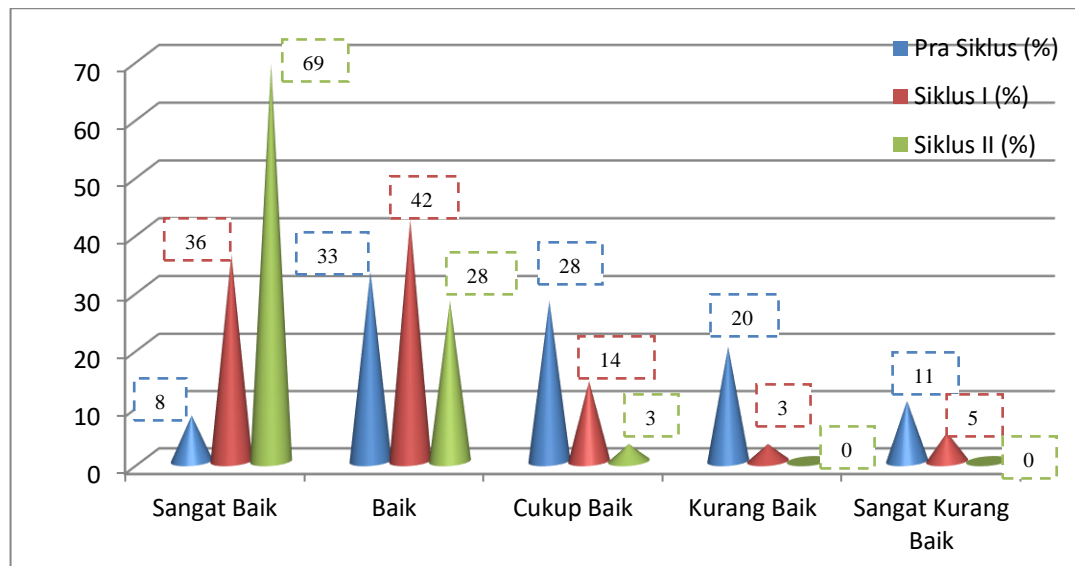
Histogram Image 1. Comparison of Student Learning Outcomes in Pre-Cycle, Cycle 1 and Cycle II Based on 5 Assessment Classifications.

Hisogram Figure 1 above explains that there has been an increase in results student learning from Pre-Cycle to Cycle 1 and Cycle 1 to Cycle 2. These results make it possible not to continue to the next cycle because student learning outcomes in the categories quite good, not good and very bad no longer exist.

The second main data is student learning motivation data, this data is obtained from filling out motivation questionnaires. Furthermore, the percentage data comparing the average aspects of student learning motivation in Pre-Cycle, Cycle 1, and Cycle 2 are in table 6 as follows.

Tabel 6. Percentage increase in motivation for learning outcomes

Perlakuan	∑ Motivational indicators of learning outcomes				∑ Aspek Motivasi	avarege Kelas
	Attention	*Relevance*	*Confidence*	*Satisfaction*		
Pre cycle	28,44	31,18	16,72	17,94	94,92	63
cycle 1	34,28	41,22	18,64	20,17	114,31	76
cycle 2	41,50	48,89	18,75	20,86	130,00	87
Enhancement Pre cycle to cycle 1	5,84	10,04	1,92	2,92	19,39	13
Enhancement cycle 1 to cycle 2	7,22	7,67	0,11	0,69	15,69	11

From the table above, it was obtained that the motivational value which consisted of four aspects experienced a very significant increase from the pre-cycle, cycle 1 to cycle 2, where the average value of motivation from pre-cycle to cycle 1 increased 13% from a value of 63% to 76%, so did the average value of motivation results in cycle 1 to cycle 2 increased 11% from 76% in cycle 1 to 87% in cycle 2.

Table 6 shows in detail that each indicator of motivation for student learning outcomes has increased in each cycle. For the attention aspect in the pre-cycle, the figure was 28.44%, then it increased to 34.28% in cycle 1 and in cycle 2 it increased to 41.50%, while the percentage increase from pre-cycle to cycle 1 was 5.84% and in cycle 1 to cycle 2 experienced an increase of 7.22%.

The increase in the relevance aspect (Relevance) was 31.18 in prasikus and it increased in cycle 1 with an acquisition of 41.22%, while in cycle 2 it increased by 48.89%. For an increase in comparison, the percentage from pre-cycle to cycle 1 increased by 10.04% and from cycle 1 to cycle 2 it became 7.67%. In the pre-cycle for the aspect of confidence (Confidance) experienced an increase of 16.72%, for cycles 1 and 2 respectively the increase became 18.64% and 18.75%.

The percentage increase from pre-cycle to cycle 1 was 1.92% and from cycle 1 to cycle 2 the increase was 0.11%. Meanwhile, in the aspect of satisfaction, the increase in

pre-cycle was 17.94%, while in cycle 1 it increased to 20.17%, then increased to 20.86% in cycle 2. For an increase from pre-cycle to cycle 1, the percentage ratio was 2. 92% and in cycle 1 to cycle 2 the percentage increased by 0.69%.

Meanwhile, the increase in student learning motivation from pre-cycle, cycle 1 and cycle 2 based on the qualitative range of benchmark learning motivation criteria can be seen in table 7 as follows.

Table 7 Percentage of classical learning motivation increase

Siklus	Learning Motivation Criteria					avarege kls %
	Sangat Tinggi	high	Cukup	low	Very low	
	81-100	61-80	41-60	21-40	0-20	
Pre cycle	0	20	12	4	0	63
cycle 1	20	10	5	1	0	76
Cycle 2	32	3	1	0	0	87
Enhancement						
Precycle to cycle 1	20					13
Cycle 1 to cycle 2	12					11

Based on table 7, there is an increase in students' learning motivation criteria from pre-cycle, cycle 1 and cycle 2. The frequency of obtaining scores in the pre-cycle for students in the very high category is 0 students, then in cycle 1 it increases to 20 students and in cycle 2 it increases to 32 students. The number of students in the high category in the pre-cycle was 20 students and in cycle 1 it was 10 students, then in cycle 2 it decreased to 3 students, this is in line with the increase in the score obtained in the very high category..

Judging from the class average in the pre-cycle, it was 63%, which was considered sufficient, while the class average in cycle 1 was 76%, which was considered good, so there was an increase from pre-cycle to cycle 1 of 13% or as many as 20 students. Likewise, from cycle 1 to cycle 2 the increase reached 11%, or as many as 12 students, where the class average in cycle 2 was 89%. this is considered very good.

Findings during observations during learning took place, in Cycle 1 there were still students who joked and chatted with their friends and there were still those who were confused about working on the questions contained in the LKPD/LKS, especially when making concept maps, there were also those who were late in collecting LKPD/LKS, some even don't want to cooperate with their group. In group discussion activities and class

discussions, students were also found who were still shy and awkward about giving questions, responding or responding to discussion activities, they were busy talking and joking..

Student learning outcomes in cycle I experienced an increase when compared with student learning outcomes before the action was implemented. This increase was caused by student activity in the classroom also increasing. Even though learning outcomes in Cycle 1 have increased, there are still students who receive poor and very poor criteria. One of the factors that causes there are still students who receive poor and very poor criteria is that students are still not used to the methods used. Students are still used to working on worksheets by copying friends' work, so there are some students who are reluctant to look for information in textbooks or handouts. This then affects students' level of understanding, so that student learning outcomes are still quite low.

Even though there was an increase in learning outcomes from pre-cycle to cycle 1, the learning outcome scores obtained on average were still below the KKM score, so they could not be declared classically complete. If in cycle 1 the student's learning outcomes are still below the minimum completeness value = 75, then the researcher continues at cycle 2 stage until they obtain classical completeness or the learning results reach the minimum completeness value

There are two factors that influence the learning process and outcomes of students, namely internal factors and external factors (Suparno, 2000:42 in Febriyanto 2010:40). Internal factors come from the students themselves, namely the lack of ability to concentrate and manage time. Meanwhile, external factors can come from the environment in the form of physical, social and economic. Based on the results of reflection in cycle I, students' internal factors that influence learning outcomes are lack of motivation, lack of concentration and time management of the students themselves. Meanwhile, the external factor is the lack of variation in teachers in delivering lesson material in the classroom, who often use the lecture method and occasionally use discussions. These factors influence student learning outcomes.

Class conditions in cycle II were more active compared to cycle 1 and class conditions were very conducive and there was a significant increase, this can be seen from the students who got very good and good criteria, respectively, the very good and good categories were 69% (69%). 25 students) and 28% (10 students). So the increase in

classical learning outcomes was 86.11% (31 students completed) with an average score of 79.83= 80 and the highest score was 98 while the lowest score was 68. This increase was influenced by the condition of students who could directly see the location and shape cell structure with organelle components that make up cells from making 3D cell models, so that knowledge, understanding and interpretation of the concept of structure and function of cell organelle components are more closely embedded in students' thinking processes. Apart from that, students are starting to get used to and are interested in the learning methods applied. It can be concluded that, the application of the CTL (Contextual Teaching And Learning) method in biology learning on the subject of cell structure and function can increase the motivation and learning outcomes of class XI IPA.1 students at SMAN Jenggawah.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research and evaluation, the following conclusions can be drawn: (1) that the application of the CTL (Contextual Teaching And Learning) method can improve student learning outcomes, (2) the application of the CTL (Contextual Teaching And Learning) method can increase motivation for student learning outcomes .

By knowing the research results that have been presented previously, it is recommended that fellow teachers should always innovate in learning to increase student motivation and learning outcomes. "Application of the CTL (Contextual Teaching and Learning) method" can be used as an alternative method that can be used.

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