



The Effect of Contextual Teaching and Learning and Motivation Against the Understanding of Adzkie University Students In the Course of Basic Concepts of Elementary Biology

Elva Zuleni¹

¹Program Studi Pendidikan Guru Sekolah Dasar, Universitas Adzkie Padang, Indonesia

* Corresponding Author. E-mail: elva@adzkie.ac.id

Receive: 12/01/2023

Accepted: 22/02/2023

Published: 01/03/2023

Abstract

This study aims to determine the effect of Contextual Teaching and Learning (CTL) and Motivation methods on the understanding of Adzkie University students in the basic concepts of elementary biology course. The type of research conducted was a pseudo-experiment with a factorial design of 2 x 2. The research population was first semester students of Adzkie University. Research samples of class A and class B students. Simple random sampling technique. The research data were obtained from questionnaires of motivation and concept understanding. Data were analyzed with Anova. For hypothesis testing, there is a significant influence between the CTL method and motivation in influencing the understanding of Adzkie University students in the basic concepts of elementary biology course. The conclusion of this study is that there is an effect of CTL method and motivation on the understanding of Adzkie University students in the basic concepts of elementary biology course. This means that the CTL method and motivation affect the understanding of the concept.

Keywords: *Contextual Teaching and Learning, Understanding Students, Basic Concepts of Biology*

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh metode Contextual Teaching and Learning (CTL) dan Motivasi terhadap pemahaman mahasiswa Universitas Adzkie pada mata kuliah konsep dasar biologi SD. Jenis penelitian yang dilakukan adalah eksperimen semu dengan desain faktorial 2 x 2. Populasi penelitian mahasiswa semester satu Universitas Adzkie. Sampel penelitian mahasiswa kelas A dan kelas B. Teknik pengambilan sampel acak sederhana. Data penelitian diperoleh dari angket motivasi dan pemahaman konsep. Data dianalisis dengan Anova. Untuk pengujian hipotesis terdapat pengaruh yang signifikan antara metode CTL dan motivasi dalam mempengaruhi pemahaman mahasiswa Universitas Adzkie pada mata kuliah konsep dasar biologi SD. Kesimpulan penelitian ini terdapat pengaruh metode CTL dan motivasi terhadap pemahaman mahasiswa Universitas Adzkie pada mata kuliah konsep dasar biologi SD. Berarti metode CTL dan motivasi mempengaruhi pemahaman konsep

Kata Kunci: *Contextual Teaching and Learning, Pemahaman Mahasiswa, Konsep Dasar Biologi*

Introduction

Natural Sciences (IPA) according to BSNP (2013) as follows; 1. Gaining confidence in the greatness of God Almighty based on the existence, beauty and order of His natural creation; 2. Developing knowledge and understanding of science concepts that are useful and can be applied in everyday life; 3. Developing curiosity, a positive attitude and awareness of the interrelationship between science, environment, technology and society; 4. Develop process skills to investigate the surrounding nature, solve problems and make decisions; 5. Increase awareness to participate in maintaining, preserving and conserving the natural environment; 6. Increase awareness to appreciate nature and all its order as one of God's creations; 7. Acquire science knowledge, concepts and skills as a basis for continuing education to junior high school / MTs.

Based on these objectives that in science learning, the learning outcomes to be developed are also three kinds, from knowledge, attitudes commonly known as scientific attitudes and skills known as process skills in science learning. Of course it is highly expected that these three elements can appear in students so that students can experience the learning process as a whole to understand natural phenomena through problem solving activities, scientific methods and imitate the way and attitude of scientists working in finding facts.

According to Aris Shoimin (2018) "Contextual Teaching and Learning (CTL) is a holistic learning process and aims to motivate students to understand the meaning of the subject matter they learn by linking the material to the context of their daily lives (personal, social, and cultural contexts) so that students have knowledge / skills that can be flexibly applied (transferred) from one other problem ". Furthermore, Trianto (2018: 105) states that

"Contextual Teaching and Learning (CTL) is a conception that helps teachers relate subject content to real-world situations and motivate students to make connections between knowledge and its application in their lives as family members, citizens, and workers". According to Rusman 2017: 187) "Contextual learning is an effort to make students active in pumping their abilities without losing in terms of benefits, because students try to learn concepts while applying and linking them to the real world".

Implementing the learning process optimally is inseparable from its relationship with motivation. According to Dimiyati and Mudjiono (2006:80) "Motivation is seen as a mental drive that drives and directs human behavior including learning behavior". In line with that, Ratumanan (2002: 72) says that; "Motivation is the basic impetus that drives a person to behave". Meanwhile, learning motivation is "The overall psychic driving force within students that gives rise to learning activities, ensures the continuity of learning activities and gives direction to these learning activities in order to achieve a goal".

For this reason, learning requires the teacher's ability to present a learning atmosphere that motivates students to learn. One of them is the reason why students need to learn the material that the teacher is teaching. If students feel that the material is important in their lives then they will be interested in learning it. This atmosphere makes students actively participate in learning and optimal in finding their own concepts of what they learn. This is where the right method is needed for students to be active and motivated in learning, one of which is the contextual teaching and learning (CTL) method.

Method

Research Type and Design

This research is a quantitative research. While the type of research is a quasi-experiment (Quasi Experimental

Design). Suryabrata (2003: 92) suggests that quasi-experimental research is research conducted to obtain information that is an estimate for information obtained by actual experiments in circumstances that do not allow to control and / or manipulate all relevant variables. In experimental research there are groups called experimental groups, namely groups that are deliberately influenced by certain variables and control groups, namely groups that are not influenced by these variables. The existence of a control group is intended as a comparison of changes due to the experimental variables (Nasution, 1996: 30).

The research design used is Randomized Control Group Only Design, because this study wants to know the effect of a treatment on a variable. In this study, the treatment given to the experimental class was the CTL model and motivation to student understanding in the Basic Concepts of Elementary Biology course. While in the control class using Non CTL learning and motivation to student understanding in the Basic Concepts of Elementary Biology course. The Randomized Control Group Only Design research design can be described as follows:

Table 1. Research Design

Class	Treatment	Post-test
Experiment	X1	T
Control	-	T

Source: Sumadi (2004:104)

Description:

X1 : The treatment given to the experimental class is the CTL method.

T : Post-test

Thus, the purpose of this study is located in the discovery of the facts of the influence of the application of CTL learning methods and Non CTL learning methods on the understanding of Basic Concepts of Elementary Biology. As for knowing the influence between the two methods on the understanding of concepts

used test techniques, while to determine the effect of motivation used a questionnaire with Rating Scale.

Based on the design used, the relationship between variables in this study is a factorial design (2 x 2), as described in Table. 2 below.

Table 2. Research Design Table

SCIENCE Concept Understanding Motivation	CTL (A) ₁	Non CTL (A) ₂
High (B) ₁	A B ₁₁	A B ₂₁
Low (B) ₂	A B ₁₂	A B ₂₂

Source: Suryabrata (2006:119)

Description:

A B ₁₁ :	Students' understanding of the Basic Concepts of Elementary Biology course using CTL strategies in terms of high motivation
A B ₂₁ :	Students' understanding of the Basic Concepts of Elementary Biology course using Non CTL learning strategies in terms of high motivation
A B ₁₂ :	Students' understanding of the Basic Concepts of Elementary Biology course using the CTL method in terms of low motivation
A B ₂₂ :	Students' understanding of the Basic Concepts of Elementary Biology course using the Non CTL method in terms of low motivation

Result And Discussion

Based on the Normality test of Concept Understanding can be seen in Table 3 below:

Table 3. Normality Test of Experimental and Control Class Concept Understanding and Experimental and Control Learning Motivation

		One-Sample Kolmogorov-Smirnov Test			
		pemahaman konsep eksperimen	pemahaman konsep kontrol	Motivasi Belajar Eksperimen	Motivasi Belajar Kontrol
N		33	20	33	20
Normal Parameters ^a	Mean	73.6061	74.0000	89.2121	86.5500
	Std. Deviation	10.66812	11.88099	4.27023	6.46834
Most Extreme Differences	Absolute	.174	.100	.146	.172
	Positive	.105	.100	.126	.172
	Negative	-.174	-.082	-.146	-.116
Kolmogorov-Smirnov Z		1.001	.449	.838	.770
Asymp. Sig. (2-tailed)		.269	.988	.484	.593

Based on Table 3. above shows that the asymp sign value on understanding the concept of Experiment (0.269), understanding the concept of control (0.988), experimental learning motivation (0.484) and control learning motivation (0.593) > 0.05, this means that the data can be said to be normal.

Table 4. Normality Test of Control Class Learning Motivation Based on Low Learning Motivation

		Unstandardized Residual
N		22
Normal Parameters ^a	Mean	.0000000
	Std. Deviation	3.62326884
Most Extreme Differences	Absolute	.173
	Positive	.132
	Negative	-.173
Kolmogorov-Smirnov Z		.812
Asymp. Sig. (2-tailed)		.525

Based on Table 4. shows that the asymp sign value in the control class learning motivation based on the lowest learning motivation (0.525) > 0.05, this means that the data can be said to be normal.

Table 5. Normality Test of Learning Motivation of Control Class Based on High Learning Motivation

		Unstandardized Residual
N		31
Normal Parameters ^a	Mean	.0000000
	Std. Deviation	3.04099800
Most Extreme Differences	Absolute	.178
	Positive	.178
	Negative	-.136
Kolmogorov-Smirnov Z		.991
Asymp. Sig. (2-tailed)		.279

Based on Table 5, it shows that the asymp sign value in the control class learning motivation based on the highest learning motivation (0.279) > 0.05, this means that the data can be said to be normal.

Table 6. Normality Test of Experimental Class Learning Motivation Based on Low Learning Motivation

		Unstandardized Residual
N		20
Normal Parameters ^a	Mean	.0000000
	Std. Deviation	2.31656239
Most Extreme Differences	Absolute	.135
	Positive	.135
	Negative	-.120
Kolmogorov-Smirnov Z		.602
Asymp. Sig. (2-tailed)		.861

Based on Table 6, it shows that the asymp sign value on the learning motivation of the experimental class based on the lowest learning motivation (0.525) > 0.05, this means that the data can be said to be normal.

Table 7. Normality Test of Experiment Class Learning Motivation Based on High Learning Motivation

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		20
Normal Parameters ^a	Mean	.0000000
	Std. Deviation	1.53101721
	Most Extreme Differences	
	Absolute	.227
	Positive	.227
	Negative	-.130
Kolmogorov-Smirnov Z		1.015
Asymp. Sig. (2-tailed)		.254

Based on Table 7, it shows that the asymp sign value on the learning motivation of the experimental class based on the highest learning motivation (0.254) > 0.05, this means that the data can be said to be normal.

Table 8. Homogeneity Test of Concept Understanding of Experimental and Control Classes Test of Homogeneity of Variances experimental and control concept understanding

Levene Statistic	df1	df2	Sig.
1.163 ^a	8	20	.177

Based on Table 8 shows that the sign value of Concept Understanding of Experimental Class and Control Class (0.177). this means that the data can be said to be homogeneous.

Table 9. Homogeneity Test of Concept Understanding of Experimental and Control Classes Lowest motivation Test of Homogeneity of Variances understanding of experimental and control concepts

Levene Statistic	df1	df2	Sig.
2.163 ^a	8	20	.077

Based on Table 9. shows that the sign value of understanding the concept of the experimental class and the lowest

motivation control class (0.077). this means that the data can be said to be homogeneous.

Table 10. Homogeneity Test of Concept Understanding of Experimental and Control Classes High motivation Test of Homogeneity of Variances experimental and control concept understanding

Levene Statistic	df1	df2	Sig.
1.597 ^a	5	13	.229

Based on Table 10, it shows that the sign value of understanding the concept of the experimental class and the highest motivation control class (0.229). this means that the data can be said to be homogeneous.

Discussion

The concept understanding of students in basic biology courses at Adzкия University studied showed that students taught with CTL overall concept understanding was higher than students taught with non-CTL methods.

Table 11. Hypothesis Test of Concept Understanding of Experimental Class against Control Class ANOVA experimental concept understanding

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3167.250	15	211.150	16.088	.008
Within Groups	52.500	4	13.125		
Total	3219.750	19			

Based on Table 11, it shows that the understanding of the concept of the experimental class has a significant effect on the control class. This is because the significant value of 0.008 < 0.05. Sanjaya (in Rukajat, 2019) explains that the contextual learning model or contextual teaching and learning is a learning concept that helps teachers relate the material taught to the real world situation of students and encourage them to make the connection

between the knowledge they have and its application in their lives. Therefore, it is natural that the understanding of the concept of the experimental class is higher than the control class. In the learning process during the study, students were trained to find their own concepts of a problem and connect the content of the material with real life.

Table 12. Hypothesis Test of Concept Understanding of Experimental Class and Control Class on Low Learning Motivation ANOVA understanding of experimental and control concepts

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2283.205	10	228.321	3.417	.009
Within Groups	1336.214	20	66.811		
Total	3619.419	30			

Based on Table 12, it shows that the understanding of the concept of experimental and control classes has a significant effect on low learning motivation. This is because the significant value of 0.009 < 0.05. This means that students who have low motivation in basic biology courses in both control and experimental classes also have low concept understanding.

Imron (in Muhammad, 2017) said that motivation is closely related to achievement or learning gains. Many studies prove that high motivation in learning is related to high learning achievement. Students who have high motivation, then they will get achievement in learning. Conversely, students who have low motivation, then the learning results are not in accordance with what is expected. This means that someone who has low motivation has a low effort to achieve.

Table 13. Hypothesis Test of Concept Understanding of Experimental Class and Control Class on High Learning Motivation ANOVA understanding of experimental and control concepts

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2426.367	8	303.296	4.882	.006
Within Groups	807.633	13	62.126		
Total	3234.000	21			

Based on Table.13 shows that the understanding of the concept of experimental class and control class has a significant effect on high learning motivation. This is because the significant value of 0.006 < 0.05. This is in line with the theory put forward by Sardiman (in Sholihah and Kurniawan, 2016) which states that the existence of good motivation in learning will show good results. This can be interpreted that students who have persistent effort and high motivation and realize that it is important in learning and achieving, the results will also be good. This high intensity of student motivation if maintained in achieving their achievements, the results will be maximized.

Table 14. Hypothesis Test of CTL Method and Learning Motivation on Concept Understanding in Experiment class ANOVA Experiment Learning Motivation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1064.717	29	36.714	2.101	.036
Within Groups	402.000	23	17.478		
Total	1466.717	52			

Based on Table. 14 shows that the CTL method and learning motivation have a significant effect on understanding the concepts of basic biology courses. This is because the significant value of 0.036 < 0.05. The results of this study also inform that there is a significant influence between methods and motivation on student learning achievement. This means that if students

have motivation in learning, then their learning achievement will be good (high). Conversely, if students have bad habits in learning, then their learning achievement will also be bad (low). However, with the selection of the right method, overall the experimental class with CTL has a higher average value as shown in Table 15.

Table 15: Data on Adzkia University Student Understanding on Elementary Biology Concepts Course

No	Statistics	Experimental Class Learning Outcomes	Control Class Learning Outcomes
1.	Average	89	86
2.	Maximum	99	99
3.	Minimum	78	71

The average in the experimental class is 89 while in the control class is 86 even though the maximum of the two classes is the same, and the minimum value still shows that the value in the experimental class is higher at 78 than the control class 71. This proves that there is an influence of the model on student learning motivation. This means that the method with motivation affects student learning outcomes. This happens because the CTL model can build student knowledge and develop thinking skills. Because this model helps students connect learning with real-world situations. In general, the chosen learning model is able to foster and develop creativity and innovation in finding new possibilities. According to P. Setiawan & Sudana in (Milania, S. A., Putri, A. Y. D. D., Lutviana, L., Listianingsih, L. A., & Putri, N. R. L, 2021) the contextual learning model has several advantages including (1) it can emphasize the full thinking activities of students, both physically and mentally; (2) it can make students learn not by memorization, but the process of experiencing in real life; (3) the subject matter is determined by the students themselves, not the results of other people's gifts; (4) class in contextual is not a place to obtain information, but as a place to test the data they find in the field.

Conclusion

Based on the findings, several It can be concluded that

1. CTL model has a significant effect on the understanding of Adzkia University Students In the course of Basic Concepts of Elementary Biology. Understanding of the concept of the experimental class is higher than the control class
2. Understanding the concept of experimental class and control class has a significant effect on low learning motivation. This means that students who have low motivation in basic biology courses in both control and experimental classes also have low concept understanding.
3. Concept understanding of experimental and control classes has a significant effect on high learning motivation. This means that the existence of high motivation in learning will show high results.
4. The CTL method and learning motivation have a significant effect on the understanding of the concepts of Adzkia University students in the basic Biology course. This means that there is a significant influence between methods and motivation on student concept understanding. This means that if students have motivation in learning, then their learning achievement will be good (high). Conversely, if students have bad habits in learning, then their learning achievement will also be bad (low). However, with the selection of the right method, overall the experimental class with CTL has a higher average score.

Bibliography

- BSNP. (2006). *Content Standards for Secondary and Primary Schools*. Jakarta: National Education Standards Board.
- Dimiyati & Mudjono (2006). *Learning and Learning*. Bandung: Alfabeta.
- Djumali, D., & Hidayanti, E. N. (2016). *The Application of Edutainment*

- Humanizing the Classroom Method in the Form of Moving Class to Learning Outcomes. *Journal of Social Science Education*, 26(1), 11-19.
- Milania, S. A., Putri, A. Y. D. D., Lutviana, L., Listianingsih, L. A., & Putri, N. R. L. (2021). Learning Models In Elementary School: A Literature Study. *SNHRP*, 269-279.
- Muhammad, M. (2017). The influence of motivation in learning. *Lantanida Journal*, 4(2), 87-97.
- Nasution, S.. (1996). *Naturalistic-Qualitative Research Methods*. Bandung: Tarsito Ratumanan. 2002. *Learning Model Creating Creative and Effective Teaching and Learning Process*. Jakarta: Bumi Aksara
- Rusman. (2017). *Learning Models*. Jakarta: PT Rajaperindo Persada
- Shoimin, Aris. (2018). *68 Innovative Learning Models in the 2013 Curriculum*. Yogyakarta: Ar-Ruzz Media.
- Sholihah, A., & Kurniawan, R. Y. (2016). Analysis of the effect of learning motivation and learning environment on learning outcomes. *Journal of Economic Education (JUPE)*, 4(3), 220-235.
- Trianto. (2018). *Designing Innovative-Progressive Learning Models*. Jakarta: Kencana
- Rukajat, A. (2019). Contextual teaching and learning to improve the quality of learning outcomes. *Pioneer: Journal of Education*, 8(1), 1-12.