

CONTEXTUAL TEACHING AND LEARNING MODEL ASSISTED BY ZOOM CLOUD MEETINGS: THE IMPACT ON STUDENTS' CRITICAL THINKING SKILLS

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ABSTRACT

This research aimed to investigate the influence of the Contextual Teaching and Learning (CTL) model assisted by Zoom Cloud Meeting on learners' critical thinking skills. This research employed a quasi-experimental design. The population of the study was all tenth graders of MAN 2 Tulang Bawang Barat. The samples were class X MIA 2 as the experimental class and class X MIA 3 as the control class. Tests were utilized as the data collecting technique. The researchers performed the normality and homogeneity tests on the research data before performing the independent sample t-test as the hypothesis test. Based on the test results on the Pre-test and Post-test data, the N-gain values tested using the t-test obtained a significance value (2-tailed) of 0,00. The Contextual Teaching and Learning model assisted by Zoom Cloud Meeting improved students' critical thinking skills. Based on the research, the Contextual Teaching and Learning assisted by Zoom Cloud Meeting could improve students' critical thinking skills.

Model Contextual Teaching and Learning berbantuan Zoom Cloud Meetings: Dampaknya Terhadap Kemampuan Berpikir Kritis Siswa

ABSTRAK: Tujuan penelitian ini adalah untuk mengetahui pengaruh model Contextual Teaching and Learning berbantuan Zoom Cloud Meeting terhadap kemampuan berpikir kritis siswa. Penelitian ini merupakan metode Quasy Eksperiment desant. Populasi dalam penelitian ini seluruh siswa kelas X MAN 2 Tulang Bawang Barat. Sampel penelitian ini yaitu kelas X MIA 2 sebagai kelas eksperimen dan kelas X MIA 3 sebagai kelas kontrol. Pengumpulan data dilakukan dengan Teknik tes. Sebelum uji hipotesis, dilakukan uji normalitas dan uji homogenitas terhadap data penelitian. Uji statistik menggunakan Independent Sample t – test. Berdasarkan hasil uji terhadap data pretes dan Post-test Pengujian hipotesis terhadap data N-Gain menggunakan uji-t didapatkan nilai signifikansi (2-tailed) sebesar 0,00 artinya model Contextual Teaching and Learning berbantuan Zoom Cloud Meetings berpengaruh terhadap peningkatan kemampuan berpikir kritis siswa. Berdasarkan hasil penelitian yang telah dilakukan, maka menunjukkan bahwa penggunaan Contextual Teaching and Learning berbantuan Zoom Cloud Meeting memberikan peningkatan terhadap kemampuan berpikir kritis siswa.

INTRODUCTION

The rapid development of science and technology directly impacts human life, including the field of education (Amalia & Wilujeng, 2018, p. 157). The educational process is also required to prepare quality human resources that can act and think critically to process various information and science and technology properly and correctly (Juniwati & Sari, 2019, p. 39). Therefore, in the education process, teachers must familiarize students with critical thinking skills in every lesson.

Critical thinking skills are needed in education because students can prepare themselves for future situations and conditions (Puspita et al., 2020; Yasin et al., 2020). Through critical thinking skills, students will come to understand themselves and understand the world and their environment (Nadeak et al., 2020, p. 99). Related to the information processing in learning, students' critical thinking is directed to process learning information. Critical thinking skills supported by appropriate learning models will further improve students' understanding. Students are directed to focus their minds on processing and understanding any information in the critical thinking process. It is hoped that students can analyze and respond to information appropriately After going through the critical thinking process (Nadeak et al., 2020).

However, since the Covid-19 pandemic occurred in early March 2020, the educational effort will not run effectively because learning is carried out online. Covid-19 virus in 2020 had a tremendous impact on almost all fields, one of which is education. The learning process has transformed from face-to-face to distance learning. However, the teacher still has to carry out his obligations to ensure that students can obtain information and knowledge (Yunitasari & Hanifah, 2020, p. 233).

Online learning is an educational innovation involving information technology elements in learning (Brahma, 2020, p. 98; KOMARUDIN et al., 2020). Online learning is a distance education system with a set of teaching methods where there are teaching activities carried out separately from learning activities (Daniel Hasibuan et al., 2020; Pakpahan & Fitriani, 2020). Online learning is held through

internet networks. Therefore, it involves technology elements, where the internet serves as a facility and networks serve as the system (Ismawati & Prasetyo, 2020, p. 666). Online learning has been widely performed. Several studies explain that online learning provides benefits to provide access to learning for all. Thereby eliminating physical barriers as a factor of classroom learning. It is even seen as effective to implement, but it cannot be denied that not all learning can be transferred to the online learning environment directly (Fitriyani et al., 2020, p. 166).

Contextual Teaching and Learning (CTL) is one of the models to improve critical thinking skills and make learning activities more meaningful (Komariah et al., 2016, p. 623). CTL is a system that stimulates the brain to construct patterns that embody meaning by linking academic content to the context of students' daily lives. Furthermore, CTL is also learning that allows students to apply and experience what is being taught by referring to real-world problems so that learning will be more meaningful and fun. Thus, learning is not only seen as a product but rather a process (Dosmaroha, 2020, p. 63)

Previous studies that support this research have been conducted by Bahri (2017); Lestari et al. (2020). They state a significant critical thinking skills difference between students who studied using the CTL model and students who used the direct learning model. The critical thinking skills of students who are taught using the CTL model are better than those taught using the direct learning model. Furthermore, this research is also supported by Novitasari et al. (2019b), They state that the critical thinking skills on ecosystem materials of students taught using the CTL were higher than those taught using conventional learning. Based on previous research, the CTL model assisted by Zoom Cloud Meeting has never been applied to influence critical thinking skills. In this regard, it was necessary to research the effect of the CTL model assisted by Zoom Cloud Meeting on critical thinking skills.

METHOD

This research employed the quantitative research method with a quasi-experimental of Pre-test-Post-test control group design. This research was conducted in the second semester of the 2020/2021 academic year at MAN 2 Tulang Bawang Barat. This research involved two classes, namely the experimental class (class with CTL model) and the control class (class with Direct Instruction model). The population in this study were all tenth-grade students of MAN 2 Tulang Bawang Barat in 2020/2021, consisting of three classes, namely X MIA 1, X MIA 2, and X MIA 3. The cluster random sampling technique was performed because the students were considered to have the same characteristics (homogeneous). The sample of this research were students of class X MIA 2 as the experimental class and class X MIA 3 as the control class. The research data were collected using tests. The instrument was a description test checked for its validity, reliability, discriminating index, and level of difficulty. Before testing the hypothesis, the normality test and the homogeneity test were performed on the research data. The hypothesis testing was carried out using a t-test on the N-Gain data. The statistical calculation was assisted by SPSS 21 program.

RESULTS AND DISCUSSION

The research data on critical thinking skills were obtained using a critical thinking ability test instrument.

Table 1. The Recapitulation of Critical Thinking Skills in Pre-test

	<i>Pre-test</i>	
	Experimental	Control
The highest score	40	40
The lowest score	15	15
Total	875	945
Average	32.41	30.48

The researcher used a Pre-test of 10 description questions to measure the students' initial abilities. The Pre-test questions were administered before starting the learning process. The Pre-test aimed to see whether the students' initial abilities have increased after participating in the learning process. Table 1 shows that the scores in both classes were the same, namely

40 for the highest score and 15 for the lowest score. However, the average scores between the two classes were different, where the experimental class obtained 32.41 and the control class obtained 30.48. The range of Pre-test scores for the experimental and control classes was the same, with a value of 15-40, as shown in Figure 1.

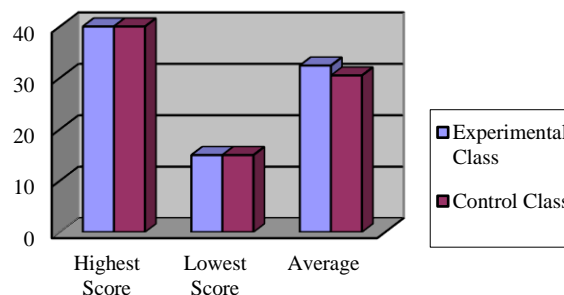


Figure 1. The Pre-test Results on Students' Critical Thinking Skills

Based on Figure 1, the average score of students' critical thinking skills before the treatments were low and below the Criteria of Minimum Mastery (KKM). However, after the treatments had been implemented, the following data were obtained:

Table 2. The Recapitulation of Critical Thinking Skills in Post-test

	<i>Post-test</i>	
	Experimental	Control
The highest score	95	90
The lowest score	75	30
Total	2375	1990
Average	81.90	68.62

Table 2 shows the Post-test score, where the experimental class obtained an average score of 81.90, and the control class obtained an average score of 68.62. Therefore, the Post-test scores of the two classes were different. The average score of the experimental class was higher than the control class.

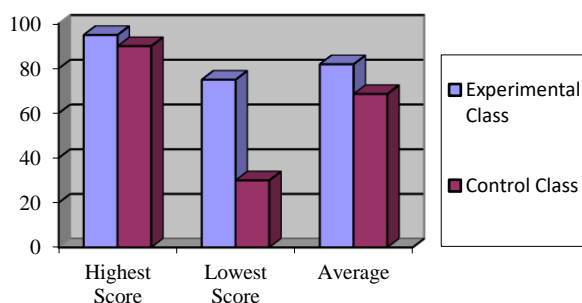


Figure 2. The Pre-test Results on Students' Critical Thinking Skills

Based on Figure 2, the experimental class obtained a higher score. After implementing treatments on the subject of mushrooms, the Post-test scores obtained by the two classes increased. However, the increase was different. Proven by the average score of the experimental class (80), which was higher than the average score of the control class (75). The results indicated that the CTL model assisted by *Zoom Cloud Meeting* influenced students' critical thinking skills. The results of data analysis on the N-gain score are displayed in Table 3.

Table 3. N-Gain Test Results

Class	Average		N-Gain	Category
	Pre-test	Post-test		
Experimental	32.41	81.90	0.73	High
Control	30.48	68.62	0.55	Moderate

Table 3 shows that the average N-gain score of the experimental class was 0.73 in the high category, and the average N-gain score of the control class was 0.55 in the moderate category.

The researchers used test questions to measure students' critical thinking skills. The measurement of critical thinking skills was conducted before (Pre-test) and after (Post-test) the treatments. The tests were administered to the experimental class and the control class. The tests administered to the two classes were identical. The critical thinking skills test data were processed using the t-test to answer the research hypothesis. The

prerequisite test was conducted before testing the hypothesis. The tests were the normality test and the homogeneity test.

Table 4. The Normality Test Results

No	Class	Sig	Description
1	Pre_Ex	0.72	Normal
2	Post_Ex	0.14	Normal
3	Pre_Con	0.15	Normal
4	Post_Con	0.90	Normal

Based on the normality test in Table 4, the significance value of the experimental class in the Pre-test was 0.72, while the significance value of the control class in the Pre-test was 0.15. The significance value of the experimental class in the Post-test was 0.14, and the significance value of the control class in the Post-test was 0.90. The data is declared normally distributed if the significance value is more than 0.05. Thus, the two classes were declared as normally distributed because their significance values were more than 0.05.

Table 5. Homogeneity Test Results

Pre_test	0.185	Homogeneous
Post_test	0.617	Homogeneous

Based on the results of the homogeneity test in Table 5, the significance value was 0.19. The data is declared homogeneous if the significance value is more than 0.05. Thus, the two classes were declared homogeneous because the significance value was more than 0.05. Based on the normality and the homogeneity test results, it can be concluded that the data that has been collected met the requirements to be analyzed using the independent sample t-test. The independent sample t-test is used for unrelated data, such as Post-test data for the experimental and control classes.

Table 6. The Result of the *Independent Samples t-test*

Characteristics	Sig	Description
N-Gain Critical Thinking Skills	0.00	H_0 is rejected

The hypothesis is determined by looking at the significance value. If the significance value is higher than 0.05, then H_0 is accepted. If the significance value is lower than 0.05, then H_0 is rejected. The calculations using SPSS 21 obtained a significance value of 0.19, meaning that the CTL model assisted by Zoom Cloud Meeting improved students' critical thinking skills.

The research was carried out at MAN 2 Tulang Bawang Barat because the school had never implemented the CTL model assisted by Zoom Cloud Meetings. The problem in this school is the low critical thinking ability. So it is necessary to make efforts to see the effect of the model CTL Rocking Zoom Cloud Meetings on critical thinking skills.

The material taught in this research was fungi. The CTL model assisted by Zoom Cloud Meetings was applied within three meetings in the experimental class. On the other hand, the Direct Instruction model was applied within three meetings in the control class.

Through Zoom Cloud Meetings, the learning activities provided more experiences for students because they could interact directly, ask questions, discuss, and make presentations about the problems they faced. During the current pandemic, the teaching and learning activities are done online. Zoom Cloud Meetings is a supporting media for the CTL model that can improve students' critical thinking skills.

Based on the Pre-test and Post-test data, the significance value of the experimental class in the Pre-test was 0.72, while the significance value of the control class in the Pre-test was 0.15. The significance value of the experimental class in the Post-test was 0.14, while the significance value of the control class was 0.90. Thus, the two classes were declared to be normally distributed because their significance values were more than 0.05.

Based on the homogeneity test results, the Pre-test significance value of the control class and the experimental class was 0.185, and the Post-test significance value was 0.617. The data are declared homogeneous if

the significance value is more than 0.05. Thus, the two classes were declared homogeneous because the significance value was more than 0.05.

Since the data were normal and homogeneous, the hypothesis test using the independent sample t-test could be performed. The average N-gain value of the Pre-test and Post-test on students' critical thinking skills taught using the CTL model assisted by Zoom Cloud Meetings was 0.73, which was higher than the average N-gain value of the Pre-test and Post-test on students' critical thinking skills taught using the Direct Instruction learning model (0.55).

The CTL model is the right learning model to improve learning outcomes (Juarsa & Djuwita, 2020; Warno, 2015)(Juarsa & Djuwita, 2020; Lestari et al., 2020; Warno, 2015). The CTL model refers to the philosophical foundation of constructivism, namely a learning philosophy that emphasizes that learning is not just memorizing. Still, students must construct the knowledge that is in their minds oriented to direct experience.

The CTL model is a holistic educational process (Adim et al., 2020) It aims to motivate students to understand the meaning of each subject matter by connecting the material with the context of their lives. Therefore, the students have knowledge or skills that can be applied flexibly (Sariani et al., 2019; Suarjana et al., 2018). Maryati & Priatna (2018) state that CTL is a learning concept that connects the material with students' real-life conditions and encourages students to connect their knowledge and its application. Students are required to develop critical and creative thinking skills, which can increase their concept mastery (Juniwati & Sari, 2019).

The previous study that supports this research was conducted by Bahri (2017) which states that there is a significant difference in students who were taught using the CTL model and students who were taught using the Direct Learning model. The critical thinking skills of students who were taught using the CTL model were better than those

taught using the Direct Instruction model. Furthermore, Novitasari et al. (2019a) state that the critical thinking skills on ecosystem materials of students taught using the CTL model were higher than those taught using the Direct Instruction model.

After reviewing further, it can be concluded that there were increases in students' critical thinking abilities in the experimental class and the control class, although not significant. It happened because the experimental class was invited to criticize problems from the information and facts available. Schools are closer to the community (not physically). However, functionally, what is learned in school is always in contact with existing alternatives.

The process that students go through will train their critical thinking skills, which will lead to high learning motivation. The challenges make their knowledge useful in the real world.

In the control class, the students learned using the Direct Instruction model with content-oriented steps only. The thinking process involved was low-level thinking skills. Also, the practice problems generally only touch the theoretical aspects of the science. As a result, the students felt that what they were learning was not relevant to their goals.

There was an increase in students' critical thinking skills through the CTL model assisted by Zoom Cloud Meeting. It actively involved the students in the learning process, and the students were encouraged to remember things related to mushrooms. Nikmah et al. (2016) state that active involvement in the learning process helps students master the concepts. Therefore, students' critical thinking skills appear when faced with problems in the student worksheet and when they observe mushrooms directly.

The CTL model was more productive and could foster concept strengthening because the students must construct their knowledge. However, in the control class, the teacher acted as the center of learning who delivered the material. The students were not

actively involved in the learning process because they only received the material presented. Thus, the CTL model can be more effective in activating students' critical thinking skills. It can also create an interesting and fun learning atmosphere to easily understand the material being studied and obtain more optimal learning outcomes.

CONCLUSIONS AND SUGGESTIONS

Based on the results of data analysis, it can be concluded that the CTL model assisted by Zoom Cloud Meeting affected students' critical thinking skills. The average N-Gain score of critical thinking skills in the experimental class was 0.73 in the high category, while the average N-Gain score of the control class was 0.55 in the moderate category.

Based on the research, it is recommended to use learning media that does not burden the students.

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