**El-Aulad: Jurnal Pendidikan Dasar**
Volume 01, Number 02, 2024

# Contextual Teaching and Learning (CTL) Model and Its Influence on Critical Thinking Skills of Elementary School Students

**Sulistyowati[1], Sunaji[2], Ifedolapo Oyewumi[3]**
IAIN Palangka Raya Kalimantan Tengah, Indonesia[1], Institut Alif Muhammad Imam Syafi'i Lamongan, Indonesia[2], University of Ibadan, Nigeria[3]
Email correspondence: najihae98@gmail.com

**Abstract**

This study aims to analyze the Contextual Teaching and Learning (CTL) model on Critical Thinking Ability and learning outcomes. The type of research used in this study is quantitative research (quasi-experimental). The subjects used in this study are class V students with a total of 70 students consisting of two classes (VA and VB) at SDN 02 Selat Tengah. The instruments used in this study are tests, observation sheets, and documentation. Data analysis techniques were carried out, namely descriptive tests (mean, median, mode, and standard deviation) and inferential tests (Normality, Homogeneity, and Manova). Based on data analysis using SPSS v.24, the normality test of critical thinking ability using Kolmogorov-Smirnov is sig > 0.05 from the results of the pretest and posttest of the control and experimental classes and the homogeneity test using the based mean is sig > 0.05 from the results of the pretest and posttest of the control and experimental classes while the Manova test obtained shows a significance value of 0.000. 0.000 < 0.05 then $H_o$ rejected and $H_a$ accepted. Based on this, it can be concluded that there is an Influence of the CTL Model on Science Critical Thinking Ability at the Elementary School Level of the Concept of Changing the Form of Objects.

**Keywords**

Contextual Teaching And Learning (CTL), critical thinking, the concept of changing the form of objects

## INTRODUCTION

Referring to the results of PISA 2018 in the science category (Maritha et al., 2021) emphasized that Indonesian students tend to be passive in learning and are not able to think critically. Critical thinking skills are active, continuous, and careful consideration of a belief or form of knowledge that is not accepted only by including supporting reasons and rational conclusions (Handoyono, 2022). Critical thinking has eight interrelated components, namely (1) the existence of problems, (2) having goals, (3) the existence of data and facts, (4) theories, definitions, axioms, and evidence, (5) the beginning of the solution, (6) the framework for the solution, (7) the solution and conclusion, and (8) the implications (Wahyuni et al., 2023).

The ability to think critically is one of the basic capital or intellectual capital that is very important for everyone and is a fundamental part of human maturity. One of the goals of critical thinking is to be able to help students make conclusions by considering data and facts that occur in the field (Trimahesri & Hardini, 2019). Based on some of the opinions of the experts above, it can be concluded that critical thinking is to conclude what is known, know how to use the information to solve a problem and be able to find relevant

sources of information to support problem-solving. Critical thinking is also considered an ability that needs to be developed so that a person's self-quality can improve.

Teachers must help students to develop critical thinking skills through several things, including models, and learning methods that support students to learn actively (Febrita & Harni, 2020). Critical thinking skills can be developed both directly and indirectly in science learning. Science subjects are considered important because they are taught from elementary school age. Science learning is directed at constructivism learning that forms meaningful learning, of course, it will not go well without learning that allows students to think critically (Rosdiana & Surya, 2022).

The characteristics of science learning are factual and experiential. This means that the provision of knowledge, ideas, and concepts about the environment is carried out through the process of scientific experiment activities. Science learning is said to be effective if it has a very close relationship with real experience (Trianto, 2013). Teachers in Indonesia are classified as having high enthusiasm but do not understand the needs of each individual student. For example, teachers who apply a conventional learning model for each subject and material to be taught. The conventional model is actually either applied to certain subjects with certain materials or in its implementation combined with other learning models to achieve learning goals to the maximum. In the process of implementing science learning, the Contextual Teaching and Learning (CTL) model is one of the learning models that help teachers connect activities and teaching materials with the real situations and experiences of students in daily life (Ramadhan et al., 2021).

The CTL learning pattern can make students grasp the relationship between learning experiences at school and real life. Contextual learning is an effort to make students active in pumping their abilities through learning activities that relate material to the real world, this supports the independent learning process of students (Sudarmin, 2023). CTL applies the principle of meaningful learning that prioritizes the learning process so that students are motivated to find knowledge on their own and not only through knowledge transfer from teachers but also by striving independently (Anwar, 2018).

The difference between this study and previous research (Wahyunita & Subroto, 2021; Bahtiar et al., 2022; Sutamrin & Khadijah, 2022; Putri et al., 2020; Simbolon et al., 2022) lies in the learning model used, namely the CTL model. The CTL model was chosen because it is very suitable for the material being studied, namely Changes in the Form of Objects, where this material is very closely related to the lives of students, the events of changes in the form of objects cannot be separated in the daily activities of students.

## METHOD

This study uses a quantitative approach that aims to determine the influence of the CTL model on the critical thinking ability of science on the concept of changing the form of objects in class V of SDN 02 Selat Tengah, Selat District, Kapuas Regency, Central Kalimantan. The research design used was a quasi-experimental design with a non-equivalent control group design. Quasy experimental design is to give two different treatments to two research groups, the first group received the CTL model called the experimental class, and the second group did not apply the CTL model called the control class. These two classes are not randomly selected. Sampling was carried out using a saturated sampling technique based on previously known population characteristics. The

sample in this study is all 70 students of class V consisting of VA class as many as 35 as an experimental class, and VB class as many as 35 as a control class.

The data collection techniques used in this study include; 1) The tests provided include pre-test and post-test for both experimental and control classes, 2) Observations in this study are intended to obtain data about the learning process of students during learning and classroom conditions during the learning process regarding active participation and attention to learning using the CTL model, 3) Documentation is intended to obtain data directly from the place research, including relevant books, regulations, activity reports, and relevant data in the research.

The data analysis techniques used are 1) descriptive analysis is intended to explain the Critical Thinking Ability and Learning Outcomes of class V students. This will be used by the researcher to see some of the connections between the points in the questionnaire and the respondent's profile. From this descriptive statistical analysis, the characteristics of the respondents can be known. 2) Inferential Statistical Analysis is a technique of analyzing sample data and applying the results to the population. This statistical method aims to test hypotheses, but a normality test must be carried out first. The data of this study was analyzed using the Statistical Package for Social Science (SPSS) version. 24. Furthermore, hypothesis testing uses Manova's Multivariate Analysis of Variance. Manova is used to measure the influence of independent variables on several bound variables simultaneously or simultaneously. This study will look at the influence of the CTL model on students' critical thinking ability and cognitive learning outcomes separately and simultaneously.

## RESULT AND DISCUSSION

### Result

The data of this study was collected from a sample of 35 subjects from the experimental class and 35 subjects from the control class. Before conducting this study, the researcher had prepared research tools, namely: the Learning Implementation Plan (RPP) in the experimental class using the CTL Model and the control class using the conventional model.

### 1. Critical thinking skills and student learning outcomes

This data description will provide the data obtained during the study. The data related to this study involved two variables, namely the CTL model as an independent variable (X) and the student's critical thinking as a bound variable (Y). The pre-test was carried out to determine the uniformity between classes so that after the pre-test was carried out, the same two classes were used as research samples, namely the VA class as the experimental class and the VB class as the control class. The data of the pretest and posttest results conducted in the Experiment class can be seen in the table below:

**Table 1.** Descriptive Statistics Data Pre-test and Post-Test Results Critical Thinking Students in Experimental and Control Classes

| Variable | N | Min | Max | Mean | Sdt. Dev |
|---|---|---|---|---|---|
| Pre Test Experiment | 35 | 0 | 35 | 18,14 | 10,224 |

| | | | | | |
|---|---|---|---|---|---|
| Post Test Experiment | 35 | 40 | 90 | 64,00 | 14,491 |
| Pre Test Control | 35 | 5 | 30 | 17,71 | 7,984 |
| Post Test Control | 35 | 0 | 35 | 18,43 | 9,835 |

Based on the descriptive statistical table of students' critical thinking scores, the results of the pre-test in the experimental class had an average score of 18.14, the lowest score of 0, and the highest score of 35, after being treated using the CTL model, a post-test score was obtained with an average score of 64.00, the lowest score of 40 and the highest score of 90. Meanwhile, in the control class, the average score in the pre-test was 17.71, the lowest score was 5 and the highest score was 30. Meanwhile, the average post-test score of the control class was 18.43, the lowest score was 0 and the highest score was 35.

**Table 2.** Frequency Distribution and Percentage of Critical Thinking Skills

| Interval | Categories | Control | | | | Experiment | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Pre Test | | Post Test | | Pre Test | | Post Test | |
| | | F | % | F | % | F | % | F | % |
| 80 – 100 | Very High | 0 | 0 % | 0 | 0 % | 0 | 0 % | 5 | 14 % |
| 66 – 79 | Tall | 0 | 0 % | 0 | 0 % | 0 | 0 % | 9 | 26 % |
| 56 – 65 | Keep | 0 | 0 % | 0 | 0 % | 0 | 0 % | 16 | 46 % |
| 40 – 55 | Low | 0 | 0 % | 0 | 0 % | 0 | 0 % | 5 | 14 % |
| ≤ 39 | Very Low | 35 | 100 % | 35 | 100 % | 35 | 100 % | 9 | 0 % |
| Sum | | 35 | 100 % | 35 | 100 % | 35 | 100 % | 35 | 100 % |

Based on the frequency distribution table and the percentage of stages above, it can be seen that the critical thinking skills of students in the experimental class before being given treatment were as many as 35 students in the very low category with a percentage of 100%. After being given treatment, there were 5 students in the low category with a percentage of 14%, 16 students in the medium category with a percentage of 46%, and students in the high category with a percentage of 26%. Meanwhile, in the control class, the results were obtained, the critical thinking skills of students in the pre-test stage were 35 students in the very low category with a percentage of 100%, in the post-test stage still 100% of students were incomplete or in the very low category. Therefore, it can be concluded that those who are treated using the CTL model are superior to the conventional learning model.

The completeness of students' learning can be compared between the scores obtained in the post-test compared to the Minimum Completeness Criteria (KKM > 75) which is presented in the form of Table 3.

**Table 3**. Learning Completeness (Critical Thinking)

| Class | Interval | Learning Completeness | Sum | Percentage |
|---|---|---|---|---|
| Experiment | > 75 | Complete | 12 | 34 % |
| | < 75 | Incomplete | 23 | 66 % |
| Control | > 75 | Complete | 0 | 0 % |
| | < 75 | Incomplete | 35 | 100 % |

Based on the table above, it can be understood that the students who achieved the KKM in the experimental class were only 12 students or 34%, while the students who had not completed the test were 23 students or as many as 66%. Meanwhile, in the control class, students who have not completed it or 100%.

## 2. Normality test, homogeneity test, and hypothesis test

The normality test was carried out to test the critical thinking data of students (pre-test and post-test) obtained from the control class and the experimental class from a population that was normally distributed or not. If the data is normally distributed, a t-test can be performed. The results of the normality test of students' critical thinking data analyzed using SPSS v.24 are in the table below:

**Table 4.** Results of the Critical Thinking Normality Test

| Class | Kolmogorov-Smirnov Test | |
|---|---|---|
| | N | Sig. |
| Pre-Test Experimental Classes | 35 | 0,272 |
| Post-Test Experimental Classes | 35 | 0,391 |
| Pre-Test Control Class | 35 | 0,188 |
| Post-Test Control Class | 35 | 0,167 |

Based on the table of normality test results above, it is known that the normality test of this study uses the Kolmogorov-Smirnov Test, the results of the normality test in this study can be seen in the column table of the Kolmogorov-Smirnov Test, it is known that in the experimental class, the Sig value was obtained. The pretest is 0.272 and the posttest is a sig value. 0.391. While in the control class, it is known that df (degree of freedom) is 188, it can be seen that the Sig. value in the pretest is 0.064 and the posttest is the Sig value. 0.167. Both classes have pretest and posttest significance values greater than 0.05. Based on the decision-making criteria, it was stated that the samples of the experimental class and the control class came from a normally distributed population.

Meanwhile, homogeneity tests were carried out to see that two or more groups of sample data came from populations that had the same variation. The homogeneity test in this study was carried out by Levene's Test using SPSS v.24 with a Sig. level of 0.05. The hypothesis of this test is as follows:

$H_a$: samples come from homogeneously distributed populations

$H_0$: the sample did not come from a homogeneously distributed population

**Table 5.** Results of Critical Thinking Homogeneity Test

| Statistics | Experimental Classes and Control Classes |
|---|---|
| Sig | 0,065 |
| Sig Level (α) | 0,05 |
| Conclusion | Homogeneous |

Based on the table of homogeneity test results using SPSS 23 above, it can be seen based on the mean that the significant value is 0.065, and the significant value obtained is greater than 0.05. So H0 was rejected and Ha was accepted. Based on decision-making, it can be stated that the samples from the experimental class and the control class come from a homogeneously distributed population.

Next, the hypothesis test. This test was carried out to determine the influence of the use of the CTL model on students' critical thinking, where in this study two classes were used, namely the experimental class and the control class. After the researchers conducted normality and homogeneity tests, the data was normally and homogeneously distributed. Furthermore, a t-test was carried out with a significance level of 0.05. The t-test used is t-test independent. This test was carried out to find out whether there was a difference in students' critical thinking after being given treatment between the experimental class that received treatment (CTL Model) and the control class that did not use the CTL model. Based on the results of the prerequisite test, statistical analysis that has been carried out shows that the pre-test and post-test data of students in the experimental class and control class in this study are normally distributed and have homogeneous variations. Therefore, independent sample t-test hypothesis testing can be performed. The hypothesis of the independent sample t-test test is:

**Table 6**. Test Results of Independent Sample t-test Data Post Test Class Experiment and Critical Thinking Control

| Variable | Analysis | Sig. (2-tailed) | Df | Calculation |
|---|---|---|---|---|
| Hypothesis | Independent Samples Test | .000 | 68 | 15,394 |

Based on the results of the independent sample t-test in the table above, it is known that the degree of freedom (df) is 68 with a sig value (2-tailed) which is 0.000, the value of 0.000. 0.000 < 0.05. Apart from that, it can also be seen from the acquisition of a calculated t-value of 15.394 > a t-table value of 1.66757. Then it can be stated that Ha is accepted and H0 is rejected. Based on the hypothesis criteria from the independent sample t-test, it can be concluded that there is a difference in critical thinking between the experimental class and the control class after using the CTL model.

This is also supported by the acquisition of mean post-test scores for the experimental class and the control class. The mean posttest value in the experimental class was 64.00 and the control class was 18.43. Because the score is 64.00 > 18.43, it can be concluded that there is a difference in students' critical thinking between classes taught with the CTL model and those who do not use the CTL model. Based on the acquisition of the mean value, it can be concluded that the CTL model has a positive influence on the critical thinking of students in class V Concept of Change in the Form of Objects.

## Discussion

Based on the results of descriptive statistical analysis, the critical thinking scores of students in the pre-test of critical thinking skills in the experimental class received an average score of 18.14, namely with the lowest score of 0 and the highest score of 35. After being treated using the CTL model, the post-test questions were given an average score of

64.00 with the lowest score of 40 and the highest score of 90. Meanwhile, in the control class, the average score on the pre-test was 17.71 and the post-test score of the control class was 18.43. Based on the average score of the two classes, it can be understood that the experimental class experienced an increase in critical thinking skills compared to the control class. This proves that the CTL model has an effect on students' critical thinking skills (Harahap et al., 2021; Shintia et al., 2023; Binti Yusup et al., 2022).

However, when viewed from the completeness of student learning outcomes seen from the KKM, which is 75, there are only 12 or 34% of students who have completed, while 23 or 66% have not completed. Therefore, the use of the CTL model can be recommended for further science learning considering the results that affect critical thinking skills compared to the control class where there are no students who complete it at all.

The improvement of students' critical thinking is also inseparable from the influence of teachers in teaching. Creative teachers can make students think critically and quickly understand the concepts taught. Teachers must be able to choose the right model and adapt to the material being taught. Teachers must pay attention to the suitability of learning activities with model steps so that learning is more meaningful. Learning activities that are in accordance with the model steps will affect students' critical thinking skills (Sudarmin, 2023).

Based on the research data conducted, it can be proven that the CTL learning model has an effect on critical thinking. This is because the CTL learning model emphasizes students learn actively and independently. It also has the same results, such as research conducted by Anwar (2018) and Sugiartini (2013) research obtained that the CTL model has a positive effect on students' critical thinking skills. This means that there is an influence of the CTL model on students' critical thinking, in other words, the CTL model has a significant effect on critical thinking in learning the Science of the Concept of Object Change.

## CONCLUSION

Based on the results of the research and discussion, it can be concluded that the CTL model affects the critical thinking skills of grade V students on the Concept of Changing the Form of Objects. However, there are still 66% of students whose scores have not reached the KKM. Seeing the influence of the CTL model on students' critical thinking skills, it is better to continue to use this model in classroom learning.

## BIBLIOGRAPHY

Amijaya, L. S., Ramdani, A., & Merta, I. W. (2018). Pengaruh Model Pembelajaran Inkuiri Terbimbing Terhadap Hasil Belajar dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Pijar Mipa, 13* (2), 94–99.

Anwar, S. (2018). Model Pembelajaran Contextual Teaching And Learning (Ctl) Dalam Pembelajaran Inklusi. *Jurnal Ilmiah Sustainable, 1*, 57–74.

Bahtiar, B., Maimun, M., & Baiq Lily Anggriani W. (2022). Pengaruh Model Discovery Learning Melalui Kegiatan Praktikum IPA Terpadu Terhadap Kemampuan Berpikir Kritis Siswa. *Jurnal Pendidikan Mipa, 12* (2), 134–142.

Binti Yusup, W., Prasetiawati, P., & Yosepa, T. (2022). Efektivitas Penggunaan Model Pembelajaran Contextual Teaching and Learning Terhadap Kemampuan Berpikir Kritis Peserta Didik Pada Pembelajaran Pendidikan Agama Kristen. *Harati: Jurnal Pendidikan Kristen, 2* (1), 18–31.

Febrita, I., & Harni. (2020). Model Problem Based Learning dalam Pembelajaran Tematik Terpadu terhadap Berfikir Kritis Siswa di Kelas IV SD. *Jurnal Pendidikan Tambusai, 4* (2), 1619–1633.

Handoko, A., Supriadi, N., & Ningrum, S. (2019). Pengaruh Strategi Pembelajaran Peningkatan Kemampuan Berpikir (SPPKB) Terhadap Kemampuan Berpikir Kritis Peserta Didik. Biosfer: *Jurnal Tadris Biologi, 10* (2), 189–200.

Handoyono, N. A. (2022). Dampak Fasilitas Belajar Dan Motivasi Belajar Terhadap Hasil Belajar Gambar Teknik Selama Masa Pandemi Covid-19. *Jurnal Pendidikan (Teori Dan Praktik), 7* (1), 18–23.

Harahap, T. D., Husein, R., & Suroyo, S. (2021). Pengaruh Model Pembelajaran Contextual Teaching And Learning Terhadap Hasil Belajar Matematika Ditinjau Dari Berpikir Kritis. *Journal of Education, Humaniora and Social Sciences (JEHSS), 3* (3), 972–978.

Hermawan, I., Supiana, S., & Zakiah, Q. Y. (2020). Kebijakan Pengembangan Guru Di Era Society 5,0. *JIEMAN: Journal of Islamic Educational Management, 2* (2), 117– 36.

Maritha, R. F., Pratama, F., Utomo, T. C., Amrullah, H. M., Hadibasyir, H. Z., & Wicaksana, A. A. (2021). Analisis Persepsi Konsumen dan Harapan Terhadap Produk Inovasi Boba Bonggol Pisang. *Jurnal Inovasi Dan Kreativitas (JIKa), 1* (2), 64–76.

OECD. (2018). PISA 2018. Result Combined Executive Summarie. PISA-OECD Publishing.

Putri, A., Sumardani, D., Rahayu, W., & Hajizah, M. N. (2020). Kemampuan Berpikir Kritis Matematis Menggunakan Model Generative Learning Dan Connecting, Organizing, Reflecting, Extending (Core). *AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 9* (1), 108.

Ramadhan, T., Arifuddin, M., & Mastuang, M. (2021). Pengembangan Bahan Ajar Model Quantum Teaching pada Materi Fluida Statis untuk Melatih Keterampilan Proses Sains Siswa. *Jurnal Ilmiah Pendidikan Fisika, 4* (3), 99.

Rosdiana, E., & Surya, E. (2022). Model Pembelajaran Sets (Science, Environmental, Technology, Society) Berbasis Budaya Lokal Pada Pembelajaran Ipa Terhadap Berfikir Kritis Dan Peduli Lingkungan. *School Education Journal Pgsd Fip Unimed, 12* (1), 1–7.

Saepudin, D., Sugito, S., & Jayadi, J. (2022). Penggolongan Generasi sebagai Pemoderasi Lingkungan Kerja, Kepemimpinan dan Beban Kerja terhadap Loyalitas Karyawan. MASTER: *Jurnal Manajemen Strategik Kewirausahaan, 2* (2), 155–166.

Simbolon, J., Nasution, H., & Simanjorang, M. (2022). Pengembangan Perangkat Pembelajaran Berbasis HOTS Menggunakan Model Pembelajaran Contextual Teaching Learning untuk Meningkatkan Kemampuan Critical Thinking dan Self-Confidence. *Jurnal Cendekia : Jurnal Pendidikan Matematika, 6* (3), 2498–2514.

Sudarmin, R. R. D. K. S. (2023). Pengaruh Model Pembelajaran CTL ( Conntextual Teaching and Learning ) Terhadap Hasil Belajar IPS Siswa Kelas V. *Saraweta, 1* (01).

Sutamrin, S., & Khadijah, K. (2021). Analisis Kemampuan Berpikir Kritis dalam Project Based Learning Aljabar Elementer. *EQUALS: Jurnal Ilmiah Pendidikan Matematika, 4* (1), 28–41.

Trianto. (2013). *Mendesain Model Pembelajaran Inovatif, Progresif, Konsep, Landasan, dan Implementasinya Pada Kurikulum Tingkat Satuan Pendidikan (KTSP)*. Group Kencana Prenada Media.

Trimahesri, I., & Hardini, A. T. A. (2019). Peningkatan Kemampuan Berpikir Kritis dan Hasil Belajar Pada Mata Pelajaran Matematika Menggunakan Model Realistic Mathematics Education. *Thinking Skills and Creativity Journal, 2* (2), 111– 120.

Wahyuni, T., Uswatun, N., & Fauziati, E. (2023). Merdeka Belajar dalam Perspektif Teori Belajar Kognitivisme Jean Piaget. *Tsaqofah, 3* (1), 129–139.

Wahyunita, I., & Subroto, W. T. (2021). Efektivitas Model Pembelajaran Blended Learning dengan Pendekatan STEM Dalam Upaya Meningkatkan Kemampuan Berfikir Kritis Peserta Didik. *Edukatif : Jurnal Ilmu Pendidikan, 3* (3), 1010–1021.