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The Effectiveness of Contextual Learning with the Small Group Discussion Method to Improve Students Critical Thinking Skills

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Abstract

Learning in schools generally still uses conventional learning models or methods that focus on the teacher. This causes students to be less trained in critical thinking. This study aims to determine the effectiveness of implementing contextual learning with small group discussion methods to improve students critical thinking skills on environmental pollution material. The study was carried out on class X vocational students in Lamongan. This research began by conducting observations and interviews at one of the vocational schools in Lamongan Regency. The findings from the observations and interviews indicated that students have poor critical thinking skills, as traditional teaching models and methods are still being utilizedThis study employed a pre-experimental design featuring a one-group pre-test and post-test approach, with the sample selected through purposive sampling. The data in this research was obtained using the results of the pre-test and post-test given to students. A pre-test is given to students before the learning treatment is carried out using a contextual model with a small group discussion method. Post tests were given to students after learning treatment using a contextual model with small group discussion methods. The research result were analyzed using paired samples t-test and N-gain test. The results obtained from the paired sample t-test were 0.000 which showed a significant effect between learning using the contextual model with the small group discussion method to improve students critical thinking skills and was strengthened by the N-gain test for Office Management class 1 of 0.75 and the value of N-the gain of Office Management class 2 is 0.74, the N-gain value is both in the high category. So the application of contextual learning with small group discussion methods can improve students critical thinking skills.

Keywords: *Critical Thinking Skills, Contextual Learning, Small Group Discussion*

Introduction

Education is an effort to help children develop character, mental toughness, physical toughness, reason, and character so they can live in harmony with the environment and society (Delisa et al., 2022). The educational process has been regulated in Ministerial Regulation Number 68 of 2014, which regulates how a teacher can create an active learning environment for students. This aims to improve the quality of education in Indonesia which has been regulated in RI Regulation Number 19 of 2005 concerning National Education Standards. Improving the quality of education has an important role to play in preparing students to become the next generation of superior nations who are able to compete in the 21st century with the rapid development of science and technology. One of the skills that must

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be mastered and developed by students is critical thinking skills which are skills for solving complex problems in life (Mudrikah et al., 2022).

Critical thinking skills are one of the 21st century skills that are being developed and trained in learning. Critical thinking skills are defined as active intellectual discipline processes and with skills in conceptualizing, applying, analyzing, synthesizing, and/or evaluating information by observing, reflecting, reasoning, or communicating as a guide to beliefs and making decisions on the problems faced (Liu et al., 2022). Without critical thinking, a person will not get valid and trustworthy information, so this can hinder other thinking skills. Entering world competition, critical thinking skills will become very important and needed for both a scientist and someone in the smallest environment, namely students in schools (Rosdiana, 2020., Indawati, 2021). In fact, practicing skills that are classified as high-order thinking, including critical thinking skills to students is not easy. This is because the facts show that learning in schools still uses the lecture model or method which causes students to be less active and less trained in their critical thinking skills (Harun, 2021).

According to the results of observations by researchers at SMK Negeri 1 Lamongan in Office Management class 1 and Office Management class 2 during PLP, that students are less able to give their opinions when asked about a learning topic, this is an example of students' deficiencies in critical thinking. In addition, researchers also conducted interviews with one of the teachers at SMK Negeri 1 Lamongan. From the results of the interviews, it was found that the learning carried out by the teacher usually uses the lecture method without any media or teaching aids, so that students are less actively involved in the learning process. This causes the subjects taught in class are less understood by students. Especially in Natural Sciences subjects where learning Science itself requires students to be actively involved in the learning process. Because students will better understand the material presented if they are actively involved in class, especially in the subject of living things and their environment in the environmental pollution sub-chapter.

Education on the Importance of Maintaining Cleanliness and Protection of the Environment" suggests that environmental conditions are deteriorating every day as a result of environmental pollution carried out by human activities. Environmental problems in Indonesia are quite complex. So that protection of the environment must be instilled from an early age for the next generation of the nation (Ginting et al., 2022). Therefore, environmental pollution material is very important to learn and students must understand this material. It is also hoped that after understanding the subject matter of environmental pollution students can apply it in everyday life. Teachers can create an active learning environment through the use of learning resources, models, methods and learning media (Wusananto et al., 2022). Therefore, choosing the right learning model and method is very important to teach students about environmental pollution. One of the learning models that can be used in the learning process is the contextual model. Contextual learning models are learning models that present the real world in the classroom, helping students to draw connections between their knowledge and its application in everyday life (Kakar et al., 2022).

In the Contextual Learning model the educational unit is seen as part of a life system which is a unit between the lives of students, teachers, the community, and the surrounding environment. Contextual learning models can improve students' critical thinking skills, especially in Natural Sciences learning subjects (Paresti, 2022). While the learning method is defined as the method used by the teacher in the learning process to meet learning objectives. The application of contextual learning models can be applied with one of the learning methods,

namely small group discussions. The small group discussion method can make students active in class (Rosiva Rosdiana, 2020).

The small group discussion learning method was chosen because it involves students in learning and is centered on the students themselves, by encouraging small group discussions that help them advance their knowledge, professionalism, and abilities. Previous studies have conducted small group discussion research to hone critical thinking skills by (Fauzan et al., 2022). According to the research findings, learning through small group discussions has proven effective in helping students strengthen their critical thinking skills because it allows them to create a conducive social environment by looking at current social conditions (social space, social present) and positive cohesion.

So the researchers conducted research using the Contextual Learning Model assisted by the Small Group Discussion Method in one of the science subject matter at SMK Negeri 1 Lamongan. In addition to the contextual learning model, researchers also use small group discussion learning methods. Where in this learning students will be able to be actively involved in the learning process. The researcher also hopes that by using the contextual learning model with this small group discussion learning method it can improve students' critical thinking skills. Especially on environmental pollution material.

Method

This research began by conducting observations and interviews at one of the vocational schools in Lamongan Regency. Observations were made by researchers in two classes, namely Office Management 1 class and Office Management 2 class during PLP, that students were less able to give their opinions when asked about a learning topic, this is an example of students' deficiencies in critical thinking. Apart from that, researchers also conducted an interview with one of the teachers at SMK Negeri 1 Lamongan. From the results of the interviews, the results obtained were that the learning carried out by teachers usually used the lecture method without any media or teaching aids, so that students were less actively involved in the learning process. This causes the subjects taught in class to be less understood by students. Especially in Natural Sciences (Science) subjects, where science learning itself requires students to be actively involved in the learning process. The research flow can be seen in Figure 1.

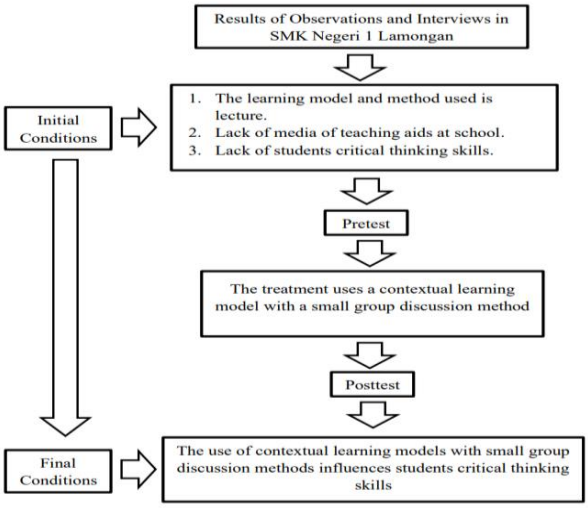
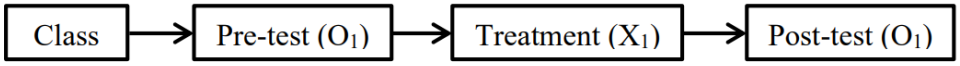


Figure 1. Research flow

The method used in this study was a pre-experimental design with one group pre-test and post-test designs. The population of this study were all students of class X SMK Negeri 1 Lamongan spread over several majors. The sample selection was carried out using a purposive sampling technique for all students of class X, then 2 classes were selected, namely Office Management 1 class and Office Management 2 class. Each class was given the same treatment or became an experimental class. students' critical thinking.



Information:
O_1 : Pre-test
X_1 : Treatment
O_1 : Post-test

This research was conducted at SMK Negeri 1 Lamongan, located at Jl. General Sudirman No. 84, Lamongan, during the even semester of May in the 2022/2023 academic year. The study employed three data analysis techniques: (1) testing the feasibility of learning instruments and tools, which included a critical thinking skills validation test and validation of the LKPD module, (2) conducting prerequisite tests, which included a normality test and a homogeneity test, and (3) testing the hypothesis using the Paired Sample t-test. Additionally, the N-Gain test was used to measure improvement.

Results

The findings from the validation of the learning instruments and materials used in this study. Validation was carried out by 3 validators consisting of material validation and language validation. Analysis of validation results was carried out using Microsoft excel. This validation test is conducted to assess the suitability of learning instruments and devices to be used in research (Adarbah et al, 2022). The validation outcomes for the critical thinking skills test show that NV = 78 or 75 <NV ≤ 85, which means that the critical thinking skills test instrument is valid or quite appropriate. The validation results for teaching modules and LKPD show that NV = 83.6 or 75 < NV ≤ 85, which means that the learning tools for teaching modules and LKPD are valid or quite appropriate. Based on the results of the validation of the instrument and learning device, it was declared feasible as data collection with several revisions from the validator which had been corrected by the researcher.

The prerequisite test is carried out with two tests, namely the normality test and homogeneity test. The normality test uses the Shapiro-Wilk significance value as follows: If the significance probability value (sig) is ≥ 0.05, the data distribution is considered normal. However, if the probability value (sig) is < 0.05, the data distribution is deemed not normal (Sugiyono, 2019). The results of the pre-test data normality test showed the probability of class MP 1 and MP 2 sig of 0.063 and 0.114. While the post-test data normality test results showed the sig probabilities of MP 1 and MP 2 classes were 0.108 and 0.157. Therefore, both the pre-test and post-test data are normally distributed, allowing for the use of parametric statistical analysis. The homogeneity test was conducted using Levene's test. The criterion for homogeneity is that if the significance (sig) value is greater than 0.05, the data has homogeneous variances, while a sig value less than 0.05 indicates non-homogeneous variances. The results of the pre-test homogeneity test showed a significance value of 0.402, which is greater than 0.05, and the post-test homogeneity test showed a significance value of

0.741, also greater than 0.05. Thus, both the pre-test and post-test data exhibit homogeneous variations.

Hypothesis testing was conducted using a paired sample t-test. The hypothesis is assessed based on the following criteria: Ho is accepted if the significance level (sig) is greater than 0.05, meaning variable X does not affect variable Y. Ho is rejected if the sig level is less than 0.05, indicating that variable X influences variable Y. As shown in Table 1, the sig value is 0.000, which is less than 0.05, meaning variable X significantly affects variable Y. This implies that Ha is accepted and Ho is rejected, confirming a significant impact of contextual learning and the small group discussion method on students' critical thinking skills in the context of environmental pollution material.

Table 1. Results of the Paired Sample T-test

	Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference Lower	Paired Differences 95% Cofidence Interval of the Difference Upper	t	df	Sig. (2-tailed)
Pretest MP 1 & MP2-Posttest MP 1 & MP 2	-37.236	6.312	0.744	-38.719	-35.753	-50.055	71	0.000

This table presents the results of a paired sample t-test used to compare the pretest and posttest scores for two groups (MP 1 and MP 2). The key statistics shown are:

1. Mean: The average difference between the pretest and posttest scores. For the comparison between MP 1 and MP 2, the mean difference is -37.236.
2. Std. Deviation: The standard deviation of the differences between the pretest and posttest scores. The standard deviation here is 6.312.
3. Std. Error: The standard error of the mean difference, which is 0.744 in this case.
4. 95% Confidence Interval of the Difference Lower: The lower bound of the 95% confidence interval for the mean difference, which is -38.719.
5. 95% Confidence Interval of the Difference Upper: The upper bound of the 95% confidence interval for the mean difference, which is -35.753.
6. t: The t-statistic value for the paired sample t-test, which is -50.055.
7. df: The degrees of freedom for the test, which is 71.
8. Sig. (2-tailed): The p-value for the test, which is 0.000. This indicates that the difference between the pretest and posttest scores is statistically significant.
9. In summary, the table shows a significant decrease in scores from the pretest to the posttest for both groups, with the difference being statistically significant at the 0.05 level ($p < 0.05$).

Table 2. Average Results of Students' Critical Thinking Skills

Group	N	Pretest	Posttest	N-Gain	Category
Class MP 1	36	49,86	87,42	0,75	High
Class MP 2	36	50,31	87,22	0,74	High

The results of the N-Gain test can be seen in Table 2. It can be seen that the pre-test scores on the results of students' critical thinking skills before being taught by researchers in MP 1 class was 49.86 and MP 2 class was 50.31. While the post-test scores of students' critical thinking skills after learning was carried out by researchers using contextual learning with the small group discussion method obtained scores in MP 1 class of 87.42 and MP 2 class of 87.22. So from the results of the value of both there was a very significant increase.

The N-Gain value for MP 1 class is 0.75 and for MP 2 class is 0.74. The N-Gain values are both included in the high category.

The title "Implementation of Contextual Teaching and Learning (CTL) to Improve Critical Thinking Ability and Student Learning Achievement" the results of the analysis show that the application of Contextual Teaching and Learning (CTL) learning is effective for improving students' abilities critical thinking of students, also improve student achievement (Afriani, 2022). Entitled "Small Group Discussion Learning: How Effective is it in Improving Critical Thinking Skills in Students" the research shows that learning using the small group discussion method has proven effective in helping students improve critical thinking skills, because through In this method students can build social space, current social conditions (social space, social present) and positive cohesion (Fauzan, 2022). In research conducted by researchers, who combined contextual learning models with small group discussion methods have been successful in helping to improve the critical thinking skills of class X SMK on environmental pollution material.

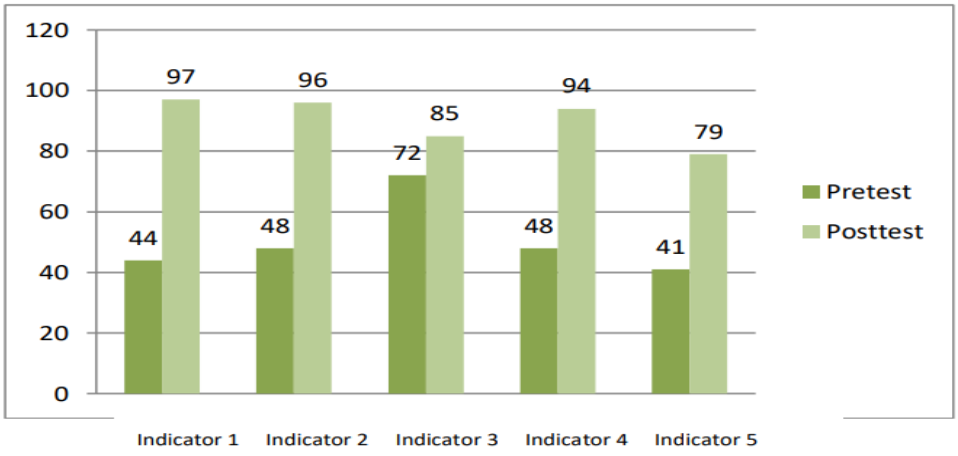
Discussion

Based on the data in Table 1, the significance value from the paired sample t-test is 0.000, which is less than 0.05. This indicates that Ha is accepted and Ho is rejected, showing a significant effect of contextual learning and the small group discussion method on the critical thinking skills of grade X vocational school students regarding environmental pollution material. Meanwhile, Table 2 shows that the average pre-test score for class MP 1 is 49.86, and for class MP 2, it is 50.31. The pre-test results indicate a difference in the average critical thinking skills between the two classes. After both classes received treatment, there was a notable improvement in critical thinking skills. Class MP 1 experienced an increase of 37.56, with an average post-test score of 87.42, placing it in the high category. Similarly, class MP 2 saw an increase of 36.91, with an average post-test score of 87.22, also in the high category.

The overall hypothesis testing results described previously show that the contextual learning model using the small group discussion method is shown to have an impact on students' critical thinking skills. The contextual learning model using the small group discussion method can influence students' critical thinking skills, because in the learning process students will be trained to hone their critical thinking skills by answering several questions and solving problems in everyday life. Contextual learning using the small group discussion method will enable students to connect the subjects studied with real life, besides that it will encourage students to be more engaged in the learning process. The LKPD done by students can make students active in discussing a problem together with their group friends. This will make students actively express opinions to train their critical thinking skills. Apart from that, the presentation process will enable students to speak and answer questions asked by other students.

In classroom learning can prevent students from feeling bored and engage students more actively in the learning process, contextual learning places students in a relevant context that connects the knowledge they have with the material being studied (Sarwari et al, 2023., Jannah, 2022). The results of other similar research state that contextual learning combined with experimental methods can improve students' critical thinking abilities (Delisa et al., 2022). The findings from additional research that uses small group discussion methods in learning can improve students' critical thinking skills, compared to using lecture methods or methods usually used by teachers in class (Fauzan et al., 2022).

Learning using a contextual model with small group discussions can improve students' critical thinking skills. This increase can be seen in the indicators of students' critical thinking skills. The first indicator related to assessing data validity has improved from 44 to 97. The second indicator, which is the need for more information for conclusions, has also increased from 48 to 96. The third indicator of critical thinking skills, namely concluding correct statements, has increased from 72 to 85. Then the fourth indicator, namely predicting the probability of an event, also increased from 48 to 94. The fifth or final indicator of critical thinking skills, namely identifying alternative solutions in solving problems, also increased from 41 to 79, as shown in Figure 2.



Keterangan :

Indicator 1 : Evaluate the validity of the date.

Indicator 2 : Need more information for conclusions.

Indicator 3 : Conclude the correct statement.

Indicator 4 : Predict the probability of an event.

Indicator 5 : Identify alternative solutions in problem solving.

Figure 2. Diagram of the results of improving students critical thinking skills

Figure shows the increase in students' critical thinking skills. There are 5 indicators of critical thinking skills, according to Halpern (1998) developed by (Tiruneh et al., 2016) each indicator has an increasing value. This value is obtained from the results of the student's pretest and posttest. The pretest was carried out before the treatment was carried out using a contextual learning model with a small group discussion method. The students' pretest scores did not meet the criteria for achieving learning objectives (KKTP), namely 0-60 (Anggraena et al., 2022). Meanwhile, after carrying out the learning process using the contextual learning model with the small group discussion method, the results of obtaining scores met the criteria for achieving learning objectives (KKTP), namely 81-100, which was shown by the students' posttest results. So that the application of learning using a contextual model with small group discussion methods can improve students' critical thinking skills.

The greatest indicator of critical thinking skills is obtained by the first indicator, namely evaluating the validity of the data. Students are given a statement that comes from data, students can answer questions correctly or specifically according to the data. Students answer

the questions given using appropriate answers or based on data. During the learning process, using a contextual model with a small group discussion method can make students connect the material with real life and students will learn to discuss to determine an answer, but according to valid data or sources. The fifth indicator, namely identifying alternative solutions in solving problems, students get the lowest score. Students have not been able to provide answers or the core problem solving of a problem in accordance with the assessment rubric. Students still need to learn to make the most appropriate decisions to solve a problem.

The results obtained were that the highest score was obtained for the indicator of analyzing, students were able to analyze a problem and provide answers according to the correct data or source (Fauzan, 2022). The lowest score was obtained for the indicator of providing a simple explanation (interpretation), students were still unable to provide an explanation when answering a problem. However, in this study all indicators of critical thinking skills increased quite significantly. So the application of contextual model learning using the small group discussion method is very helpful in training students' critical thinking skills.

Conclusion

Based on the research that has been conducted, it was found that the greatest indicator of critical thinking skills was obtained by the first indicator, namely evaluating the validity of the data. Students are given a statement that comes from data, students can answer questions correctly or specifically according to the data. Students answer the questions given using appropriate answers or based on data. During the learning process, using a contextual model with a small group discussion method can make students connect the material with real life and students will learn to discuss to determine an answer, but according to valid data or sources. So in this research can produce a study that the application of contextual learning with small group discussion method can enhance students' critical thinking skills. In addition, it also encourages students to be active in participating in the learning process future research can apply other learning models or methods, to train or boost students' critical thinking skills.

Acknowledgment

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References

Sarwari, K., & Kakar, A. F. (2023). Developing students' critical thinking skills through contextual teaching and learning. *Journal of Cognition, Emotion & Education*, *1*(1), 29-42. https://doi.org/10.22034/cee.2023.172192

Anggraena, Y., Ginanto, D., & Felicia, N. (2022). Panduan Pembelajaran dan Asesmen. Jakarta

Delisa, S., & Akhdinirwanto, R. W. (2022). Pengaruh Metode Exsperimen Dengan Model Kontekstual Untuk Meningkatkan Keterampilan Berpikir Kritis Peserta Didik Pada Pembelajaran Fisika. Jurnal Kajian Pendidikan Sains, 8(1), 58–63. http://dx.doi.org/10.32699/spektra.v8i1.231

Fauzan, M. F., Nadhir, L. A., Kustanti, S., & Kamilah, S. (2022). Pembelajaran Diskusi Kelompok Kecil : Seberapa Efektif kah dalam Meningkatkan Keterampilan Berfikir Kritis Pada Siswa ? Jurnal Ilmu Pendidikan Nonformal, 08(September), 1805–1814. http://ejurnal.pps.ung.ac.id/index.php/Aksara

Ginting, J. M., Sasmi, N. I., Siongly, L. J., Palar, I., Tambunan, H., & Tjung, K. Y. (2022). Edukasi Pentingnya Menjaga Kebersihan Dan Pelindungan Terhadap Lingkungan. Jurnal Universitas Internasional Batam, 4, 376–380. http://journal.uib.ac.id/index.php/nacospro

Harun, S. (2021). Penerapan Model Pembelajaran Contextual Teaching and Learning (CTL) Untuk Meningkatkan Hasil Belajar Biologi pada Materi Struktur dan Fungsi Jaringan Tumbuhan Siswa Kelas XI IPA 2 MAN 1 Banda Aceh. Jurnal Pendidikan Dan Pengabdian, 2(2), 197–204. https://doi.org/10.32672/jp2v.v2i2.3601

Indawati, H. (2021). Studi Literatur Pembelajaran Inkuiri Terbimbing Terhadap Kemampuan Berpikir Kritis IPA SMP. Jurnal Pendidikan IPA, 99–107.

Adarbah, H., & Jajarmi, H. (2022). active learning for Omani at-risk students through educational technology: A case of content-based language instruction. International Journal of Society, Culture & Language, 10(2), 82-91. https://doi.org/10.22034/ijscl.2022.550654.2583

Kakar, A., Sarwari, K. (2022). Second language communication and interference from L1. Journal of Business, Communication & Technology, 1(2), 13-23. https://doi.org/10.56632/bct.2022.1202

Liu, Y., & Pásztor, A. (2022). Effects of problem-based learning instructional intervention on critical thinking in higher education: A meta-analysis. Thinking Skills and Creativity, 45, Article 101069. https://doi.org/10.1016/j.tsc.2022.101069

Mudrikah, S., Ahyar, D. B., Lisdayanti, S., Parera, M. M. A. E., Wardani, D. K. A., Siahaan, M. N., Wellyana, Hanifah, D. P., Amalia, R., Rahmadi, Siagian, R. C., Rahmandani, F., Ihsan, I. R. I., & Widyaningrum, R. (2022). Inovasi Pembelajaran di Abad 21 (Issue June). Pradina Pustaka.

Miterianifa, M., Ashadi, A., Saputro, S., & Suciati, S. (2021). Higher order thinking skills in the 21st century: Critical thinking. In A. D. Wicaksono, A. Rokhman, & E. S. Prasetyo (Eds.), Proceedings of the 1st International Conference on Social Science, Humanities, Education and Society Development (pp. 1-10). https://doi.org/10.4108/eai.30-11-2020.2303766

Rosiva Rosdiana, S. (2020). Kemampuan Berpikir Kritis Siswa dalam Pembelajaran Inquiry-Discovery. Science Education and Application Journal (SEAJ), 2, 101–111. http://jurnalpendidikan.unisla.ac.id/index.php/SEAJ

Pishghadam, R., & Khajavy, G. H. (2013). Intelligence and metacognition as predictors of foreign language achievement: A structural equation modeling approach. Learning and Individual Differences, 24, 176-181. https://doi.org/10.1016/j.lindif.2012.12.004

Suci Paresti, A. S. (2022). Mengatasi kejenuhan belajar dari rumah dengan penerapan model pembelajaran kontekstual. Jurnal Pendidikan, Politik, Budaya, Bahasa, Manajemen, Komunikasi, Pemerintahan, Humaniora, Dan Ilmu Sosial, 604–615. https://doi.org/10.53947/perspekt.v1i6.223

Sudarmin. (2016). Berpikir Kritis (Critical Thinking) Konsep dan Penerapannya pada Pembelajaran.

Sugiyono. (2019). *Metode Penelitian Pendidikan*. Alfabeta.

Tiruneh, D. T., Verburgh, & Elen, J. (2016). Effectiveness of Critical Thinking Instruction in Higher Education : A Systematic Review of Intervention Studies Effectiveness of Critical Thinking Instruction in Higher Education : A Systematic Review of Intervention Studies. Higher Education Studies, February 2016, 1–17. https://doi.org/10.5539/hes.v4n1p1

Welerubun, R. C., Wambrauw, H. L., Jeni, J., Wolo, D., & Damopolii, I. (2022). Contextual teaching and learning in learning environmental pollution: The effect on student learning outcomes. Prima Magistra: Jurnal Ilmiah Kependidikan, 3(1), 106-115. https://doi.org/10.37478/jpm.v3i1.1487

Wusananto, T., Faiziyah, N., & Wahyuningsih, E. A. (2022). Penerapan Model PBL berbasis PPT Berbantuan Soal Cerita Untuk Meningkatkan Minat dan Hasil Belajar Siswa. JPTP Jurnal Penelitian Tindakan Pendidikan, 1(1), 36–49