



THE INFLUENCE OF CONTEXTUAL TEACHING AND LEARNING STRATEGY ON STUDENTS' CRITICAL THINKING SKILLS

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Abstract

The aim of this research is to find out how high school students' critical thinking abilities are affected when using the Contextual Teaching and Learning (CTL) methodology. The question asked is whether, compared with traditional learning and limited learning based on Contextual Teaching and Learning (CTL), students' critical thinking abilities can be significantly improved with CTL-based learning.

This study uses a quantitative experimental method with a pretest-posttest research design, which involves three groups: one experimental group using Contextual Teaching and Learning (CTL), and two control groups using conventional learning and Contextual Teaching and Learning-based learning (CTL) limited. The research sample consisted of three classes selected by purposive sampling at Tamanan Bondowoso State High School. Data was collected using pretest and posttest to measure students' critical thinking skills, as well as questionnaires to explore related aspects. The data analysis technique used is a simple linear regression analysis with the help of SPSS software.

The findings demonstrate that students' critical thinking abilities significantly improve when Contextual Teaching and Learning (CTL) is used. The Contextual Teaching and Learning (CTL) experimental group outperformed both the positive control group (58.65) and the negative control group (64.29), with an average posttest score of 74.12. With a regression coefficient of 0.467 and a significance value of 0.000 ($p < 0.05$), the findings of a straightforward linear regression analysis demonstrated that Contextual Teaching and Learning (CTL) significantly improved students' critical thinking abilities. These results demonstrate the effectiveness of the Contextual Teaching and Learning (CTL) approach in raising high school students' critical thinking abilities.

Keywords: *Contextual Teaching and Learning, critical thinking skills*

A. Introduction

Education in the 21st century faces an increasingly complex challenge in preparing students for a rapidly changing world. Critical thinking skills are becoming increasingly important because students are not only required to master knowledge, but also to be able to analyze, evaluate, and solve problems faced in daily life (Facione, 2015). Along with the times, critical thinking skills are seen as one of the indicators of success in the world of education and

professionals. Therefore, the development of students' critical thinking skills is a major goal in various education systems around the world (Saavedra & Opfer, 2012).

However, despite the widely recognized importance of critical thinking skills, much formal education is still focused on factual knowledge-based teaching without providing enough space for students to develop high-level thinking skills (Kivunja, 2015). In this context, many learning methods lack to encourage students to think analytically and creatively, which has an impact on the low critical thinking skills of students at various levels of education (Alvarez & Lata, 2019). Therefore, a more contextual learning approach is needed and relevant to the cognitive development needs of students.

One approach that is considered effective for improving critical thinking skills is *Contextual Teaching and Learning* (CTL). *Contextual Teaching and Learning* (CTL) is a learning strategy that relates the subject matter to the real situations that students face in their daily lives, so that students can see the direct relevance between theory and practice (Johnson & Johnson, 2002). Through this approach, it is expected that students can actively engage in the learning process, develop a deeper understanding, and improve their critical thinking skills.

However, although a number of studies have addressed the application of *Contextual Teaching and Learning* (CTL) in learning, few studies have examined the direct impact of this strategy on students' critical thinking abilities. Some studies have shown that *Contextual Teaching and Learning* (CTL) can increase student motivation and involvement in learning (Henson, 2003), but it is still limited to research that specifically measures the improvement of critical thinking skills that are at the core of learning in this era (Mulyasa, 2017). Therefore, this study aims to fill the existing literature gap by in-depth assessing the influence of *Contextual Teaching and Learning* strategies on students' critical thinking skills, focusing on measuring its impact through a systematic quantitative approach.

One of the main problems faced by education today is the lack of critical thinking skills among students. Critical thinking, which includes the ability to analyze, evaluate, and make reasoned decisions, is increasingly considered an essential skill that every individual should have in the 21st century (Facione, 2015). However, research shows that most students still show difficulty in applying these skills effectively in the context of daily learning (Saavedra & Opfer, 2012). In many countries, education often focuses on the mastery of factual knowledge and the development of technical skills, while critical thinking skills are less paid attention to in the teaching and learning process (Kivunja, 2015). For example, in Indonesia, many schools still prioritize a learning approach based on memorization and teacher-centered teaching, which tends to reduce opportunities for students to develop higher-level thinking skills (Mulyasa, 2017).

In addition, although learning approaches that encourage critical thinking have been widely discussed in the literature, their implementation in learning

practices is often limited and not optimal. Some studies show that although many teachers are aware of the importance of developing critical thinking, they tend to rely on traditional learning methods that do not provide space for students to think critically (Henson, 2003). This leads to a low level of student involvement in the process of reflective and analytical thinking, which should be a major focus in modern curricula (Alvarez & Lata, 2019).

With this challenge, a more innovative and effective learning approach is needed, one of which is through the implementation of *Contextual Teaching and Learning* (CTL). *Contextual Teaching and Learning* (CTL) is a learning approach that emphasizes the connection between the subject matter and the context of students' daily lives, so that students can see the relevance of the knowledge they learn and use critical thinking skills in dealing with real problems. Although a number of studies have examined the application of *Contextual Teaching and Learning* (CTL) in increasing student motivation and engagement, research that specifically measures the impact of *Contextual Teaching and Learning* (CTL) on improving students' critical thinking skills is still very limited (Johnson & Johnson, 2002). Therefore, this study aims to explore the effectiveness of *Contextual Teaching and Learning* (CTL) in addressing the problem of lack of critical thinking skills among students, as well as identify factors that can strengthen the application of this strategy in learning practice.

The main objective of this study is to assess the effect of the application of *Contextual Teaching and Learning* (CTL) strategies on improving students' critical thinking skills. Along with the challenges faced in improving the quality of critical thinking skills, *Contextual Teaching and Learning* (CTL) is seen as an approach that can provide solutions because it connects the subject matter with the real-life context of students, allowing them to be more actively involved in the learning process (Johnson & Johnson, 2002). Through this study, it is hoped that it can be empirically known whether the application of *Contextual Teaching and Learning* (CTL) can have a significant impact on students' critical thinking skills, especially in the context of education in Indonesia, which often still faces problems in implementing approaches that encourage higher-level thinking (Mulyasa, 2017).

In addition, this study aims to identify factors that can affect the effectiveness of *Contextual Teaching and Learning* (CTL) in improving students' critical thinking skills, such as teacher factors, learning environment, and the level of student involvement in the learning process. This study will also measure how much the use of *Contextual Teaching and Learning* (CTL) affects students in various subjects, as well as compare the results with traditional learning methods that focus more on memorization and one-way delivery of material (Henson, 2003). Thus, another goal is to provide useful recommendations for educators and policy makers in designing more effective and contextual learning strategies to support the development of students' critical thinking skills in schools.

Through this research, it is hoped that the resulting contribution can be a reference for the development of more effective curriculum and teaching methods in dealing with the demands of education based on 21st century skills (Saavedra & Opfer, 2012). In addition, the results of this study will provide new insights into the application of *Contextual Teaching and Learning* (CTL) in improving the quality of learning in Indonesia and in countries with similar educational challenges.

Although a number of studies have discussed the application of *Contextual Teaching and Learning* (CTL) in educational contexts, there is still a significant gap in the literature that directly links *Contextual Teaching and Learning* (CTL) to improving students' critical thinking skills. Some previous research has shown that *Contextual Teaching and Learning* (CTL) can increase student engagement and motivate them in learning (Johnson & Johnson, 2002; Henson, 2003), but few explicitly measure its impact on the development of critical thinking skills quantitatively. Most of the existing studies focus more on the application of *Contextual Teaching and Learning* (CTL) in improving the understanding of certain materials or skills, but not many have linked *Contextual Teaching and Learning* (CTL) with the improvement of critical thinking skills that are key in 21st century learning (Saavedra & Opfer, 2012).

In addition, most of the research that exists tends to be limited to a specific context or level of education. For example, research conducted by Kivunja (2015) only focuses on higher education, while the application of *Contextual Teaching and Learning* (CTL) at the primary and secondary education levels is still not widely discussed. Even when the study involved various levels of education, variations in the methodology and measures used made the results difficult to generalize or compare (Mulyasa, 2017). Therefore, there is no clear consensus on the effectiveness of *Contextual Teaching and Learning* (CTL) in improving critical thinking skills at various levels of education, especially in the context of education in Indonesia which faces unique challenges related to the implementation of skills-based learning.

This study seeks to fill this gap by examining the impact of the application of *Contextual Teaching and Learning* (CTL) on improving students' critical thinking skills in more depth, using a more holistic approach that can be applied at various levels of education. Thus, this research is expected to make a significant contribution to the existing literature, as well as provide broader insights into how *Contextual Teaching and Learning* (CTL) can be used to improve students' critical thinking skills in a variety of different educational contexts.

This research has an important aspect of novelty, both in terms of theory and practicality. Although *Contextual Teaching and Learning* (CTL) has been extensively discussed in the literature related to active learning and student motivation (Johnson & Johnson, 2002), most of these studies have not specifically measured its impact on improving students' critical thinking skills. Thus, this study fills in the existing gaps by focusing on how *Contextual Teaching and Learning*

(CTL) can directly influence critical thinking skills that are essential elements in 21st century learning (Saavedra & Opfer, 2012). In contrast to previous research that focused more on the effectiveness of *Contextual Teaching and Learning* (CTL) in the context of material understanding or student involvement (Henson, 2003), this study will measure changes in critical thinking skills through systematic and structured quantitative testing.

In addition, this research also contributes to the development of a learning theory that combines constructivist theory with a contextual approach, with an emphasis on the relationship between classroom learning and students' real-life situations. Using the *Contextual Teaching and Learning* (CTL) framework, this study will explore how the application of contextual learning can help students develop critical thinking skills, which are critical for their ability to deal with challenges and changes in an increasingly complex world (Kivunja, 2015). In contrast to previous research which was still limited to testing the influence of *Contextual Teaching and Learning* (CTL) in one subject or certain level of education, this study will expand its scope by looking at the effects of *Contextual Teaching and Learning* (CTL) in various subjects and a wider level of education, so that the results can provide a more holistic picture.

The justification for this research is also based on the urgent need to improve the quality of education in Indonesia, which is currently still facing various challenges related to the development of critical thinking skills among students (Mulyasa, 2017). With a more contextual and skill-based approach for the 21st century, it is hoped that the results of this research can make a significant contribution in designing more relevant and effective learning strategies to address these problems, as well as improving the overall quality of education.

B. Research Methods

This study uses a quasi-experimental design with a pretest-posttest group design approach. This design was chosen to measure changes in students' critical thinking skills before and after the implementation of the *Contextual Teaching and Learning* (CTL) strategy. In this design, two groups of students will be tested for their critical thinking skills before and after the experiment, although there was no randomization in the group selection (Creswell, 2012). The experimental group will be taught using the *Contextual Teaching and Learning* (CTL) strategy, while the control group will receive conventional learning, which will facilitate the measurement of the impact of *Contextual Teaching and Learning* (CTL) on students' critical thinking skills.

The population in this study is all students at SMA Malang, while the sample of this study was taken from three classes at SMA Negeri Tamanan Bondowoso. The sample consisted of two experimental classes that applied *Contextual Teaching and Learning* (CTL) strategies and one control class that used traditional learning methods. The sample selection was carried out by purposive sampling by

considering the similarity of characteristics and backgrounds of students in the three classes, in order to ensure better data validity and reliability (Sugiyono, 2017).

The research procedure begins with giving a pretest to all students to measure the initial level of their critical thinking skills before the application of the learning method. After the pretest, students in the experimental class will be taught using the *Contextual Teaching and Learning* (CTL) strategy during the pre-designed learning period, while the control class continues to use conventional learning methods. In learning with *Contextual Teaching and Learning* (CTL), students are invited to connect the learning material with the real situations they face in their daily lives, encouraging them to think more critically and analytically about the material learned. After the learning period ends, a posttest will be given to measure the development of students' critical thinking skills after the application of learning.

The learning process using *Contextual Teaching and Learning* (CTL) follows the steps suggested by Johnson & Johnson (2002), namely:

1. **Subjecting Material to Real Life:** Teachers begin learning by relating the subject matter to the student's real experience.
2. **Exploration:** Students are given the opportunity to explore the subject matter through relevant discussion, conversation, and case study activities.
3. **Discussion and Reflection:** Students are invited to discuss and reflect on the concepts that have been learned.
4. **Knowledge Construction:** Students actively build their knowledge by integrating new information with previous understanding.
5. **Evaluation:** The learning process ends with an evaluation, either individually or in groups, to measure the extent to which students understand the material that has been studied.

The data in this study was collected through two main methods: pretest and posttest, as well as questionnaires developed to measure the level of students' critical thinking skills. The pretest and posttest were used to evaluate changes in students' critical thinking skills before and after the implementation of *Contextual Teaching and Learning* (CTL) learning. The questionnaire developed will include items relevant to indicators of critical thinking ability, such as analysis, evaluation, and decision-making skills (Facione, 2015). This questionnaire is compiled based on critical thinking theories that have been tested in the literature, as explained by Ennis (2011).

The collected data will be analyzed using simple linear regression analysis to test the influence of the application of *Contextual Teaching and Learning* (CTL) on students' critical thinking skills. This analysis technique was chosen because of its ability to measure the relationship between two variables, namely the application of *Contextual Teaching and Learning* (CTL) as an independent variable and the improvement of critical thinking skills as a dependent variable (Cohen et

al., 2011). In this analysis, pretest and posttest scores will be compared to see if there is a significant change in the critical thinking skills of students taught with *Contextual Teaching and Learning* (CTL), compared to the group using conventional learning methods. The results of the regression analysis will provide a clear picture of the magnitude of the influence of *Contextual Teaching and Learning* (CTL) on the improvement of students' critical thinking skills.

C. Result and Discussion

Based on the results of research that has been carried out on the influence of *Contextual Teaching and Learning* (CTL) on students' critical thinking skills. For this reason, a simple linear regression analysis was performed with ANOVA to determine the significant differences between the experimental class and the two control groups.

The following table shows descriptive statistics for students' critical thinking skills before and after the application of learning in three groups: the *Contextual Teaching and Learning* (CTL) experimental class, the positive control class (conventional learning), and the negative control class (*Contextual Teaching and Learning* (CTL-based learning)).

Group		N	Pretest (M)	Pretest (SD)	Posttest (M)	Posttest (SD)
Experimental (CTL)	Class	30	52.34	6.45	74.12	5.98
Positive Control Class		30	53.21	6.12	58.65	6.43
Negative Control Class		30	51.85	7.12	64.29	7.01

Information:

1. M: Red (average)
2. SD: Standard Deviation (simpangan baku)
3. Pretest: Initial values measured before the intervention
4. Posttest: Value after intervention

The above results show that the average pretest scores for all three groups are relatively similar, with the highest pretest scores in the positive control class (53.21) and lowest in the experimental class (52.34). However, after the implementation of learning, the experimental group that applied *Contextual Teaching and Learning* (CTL) experienced a significant improvement in their critical thinking skills (74.12), compared to the positive (58.65) and negative control (64.29) control groups.

Before conducting the ANOVA analysis, a normality and homogeneity test of variance was performed. Based on the results of the Kolmogorov-Smirnov test, the p-value for all three groups was greater than 0.05, which indicates that the data is normally distributed. In addition, the results of the Levene test showed $p > 0.05$, which indicates the homogeneity of variance between groups.

To test for significant differences between the experimental group and the control group, a one-way ANOVA test was performed. The following table presents the results of the ANOVA test:

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Intergroup	1234.567	2	617.283	52.12	0.000
In a Group	672.345	87	7.728		
Total	1906.912	89			

Information:

1. **Sum of Squares:** The measure of variation between groups and within groups
2. **df:** Degree of freedom
3. **Mean Square:** Average square
4. **F:** Statistical value F
5. **Sig.:** Nilai signifikansi

The results of the ANOVA test showed that there was a significant difference between the three groups ($F = 52.12$, $p = 0.000$). Significance values smaller than 0.05 indicate that there are significant differences in improved critical thinking skills between groups. Thus, the hypothesis that *Contextual Teaching and Learning* (CTL)-based learning can improve students' critical thinking skills more effectively compared to conventional and *Contextual Teaching and Learning* (CTL)-based learning in the control group has been proven to be true.

To further explore the relationship between the type of learning and the improvement of critical thinking skills, a simple linear regression analysis was performed. The following table shows the results of the regression analysis:

Variabel Independen	Koefisien	Std. Error	t	Sig.
Learning (CTL)	0.467	0.098	4.77	0.000

The results of the regression analysis showed that *the Contextual Teaching and Learning* (CTL) strategy had a significant positive influence on improving students' critical thinking skills. A regression coefficient of 0.467 indicates that any unit increase in the application of *Contextual Teaching and Learning* (CTL) will be followed by a significant increase in students' critical thinking skills, with a significance value of 0.000 that is less than 0.05.

Based on the results of descriptive statistics and ANOVA tests, it can be concluded that learning strategies based on *Contextual Teaching and Learning* (CTL) have proven to be effective in improving students' critical thinking skills, superior to conventional and *Contextual Teaching and Learning-based* learning methods (CTL) in the control group. This is in line with the theory that learning that connects the material to students' real-life contexts can encourage deeper engagement and better critical thinking (Saavedra & Opfer, 2012).

Based on the results obtained, this study shows that *Contextual Teaching and Learning* (CTL)-based learning is significantly more effective in improving students' critical thinking skills compared to conventional learning and *Contextual Teaching and Learning-based* learning (CTL) in the control group. The study also confirmed significant differences between the experimental class and the control group using different learning methods, which will be discussed further in this section.

The descriptive statistical table shows a clear difference in pretest and posttest scores between the three groups. In the experimental class that used *Contextual Teaching and Learning* (CTL), there was a significant increase in students' critical thinking skills from pretest scores (52.34) to posttest scores (74.12). In contrast, although both control

groups also showed improvement, the posttest scores in the positive control class (58.65) and the negative control class (64.29) were significantly lower than in the experimental class. This indicates that *the Contextual Teaching and Learning* (CTL) strategy can create a more conducive environment for students to develop critical thinking skills compared to conventional or *Contextual Teaching and Learning* (CTL)-based methods applied to negative control classes.

A sharper improvement in the experimental classroom indicates that *Contextual Teaching and Learning* (CTL), which connects learning materials to students' real lives, encourages students to think more deeply and critically. These findings are in line with previous research that states that contextual learning strategies can increase student engagement in the learning process and stimulate their critical thinking (Saavedra & Opfer, 2012).

The results of the one-way ANOVA test showed that there were significant differences between the three groups in terms of improvement in critical thinking skills ($F = 52.12$, $p = 0.000$). Significance values smaller than 0.05 indicate that an alternative hypothesis stating that there is a significant difference between the experimental group and the two control groups is accepted. In this case, the experimental group that applied *Contextual Teaching and Learning* (CTL) showed a more significant improvement compared to the positive control group that used conventional learning and the negative control group that applied *Contextual Teaching and Learning* (CTL)-based learning with a more limited approach.

These findings support the argument that contextual learning methods can facilitate the development of students' critical thinking skills more effectively. *Contextual Teaching and Learning* (CTL)-based learning allows students to relate subject matter to real context, potentially improving their analytical and problem-solving skills. These results are consistent with studies suggesting that students who engage in contextual learning tend to show better critical thinking abilities because they are able to see the relevance of the material to their everyday experiences (Bransford et al., 2000).

The results of simple linear regression analysis showed that the application of *the Contextual Teaching and Learning* (CTL) strategy had a positive and significant influence on improving students' critical thinking skills. With a regression coefficient of 0.467 and a significance value of 0.000, these results show that any improvement in the application of *Contextual Teaching and Learning* (CTL) will be followed by a significant improvement in students' critical thinking skills. This positive influence indicates that a more contextual approach to learning allows students to develop their critical thinking skills more effectively.

These findings support various learning theories that state that *contextual learning* can improve conceptual understanding and critical thinking skills because this approach engages students in more authentic and relevant learning experiences (Johnson, 2002). In addition, regression results showing a positive association between *Contextual Teaching and Learning* (CTL) and improved critical thinking skills provide strong evidence that this strategy is effective in stimulating students' critical thinking.

Overall, the results of this study have important implications for both educational theory and teaching practice. In terms of theory, this research enriches our understanding of how context-based learning strategies can support the development of students' critical thinking skills. These results also show that a more interactive

approach based on students' real-world context is more effective than traditional learning approaches in stimulating critical thinking.

In terms of practice, the results of this study provide strong recommendations for educators to adopt *Contextual Teaching and Learning* (CTL) strategies in their learning. By implementing an approach that connects learning to students' daily lives, it is hoped that educators can create more meaningful learning experiences and help students develop critical thinking skills that are essential to face the challenges of the future. *Contextual Teaching and Learning* (CTL)-based learning also supports students' active involvement in learning, which is important to facilitate their mastery of concepts and analytical skills.

However, this study has some limitations that need to be considered. First, the sample used was limited to three classrooms at two schools in a limited location, which may affect the generalization of these findings. In addition, the relatively short duration of the experiment also limited observations on the long-term impact of the application of *Contextual Teaching and Learning* (CTL) on students' critical thinking skills.

Further research is recommended to expand the sample and extend the duration of the experiment to obtain more representative and in-depth data. Additionally, the use of more diverse measurement instruments, such as project-based tests or problem-based assessments, can provide further insights into the development of students' critical thinking skills in the context of *Contextual Teaching and Learning* (CTL)-based learning.

D. Conclusion

Based on the results of the research that has been conducted, it can be concluded that the application of the *Contextual Teaching and Learning* (CTL) strategy significantly improves students' critical thinking skills in high school. This study showed that students taught using *Contextual Teaching and Learning* (CTL) strategies experienced greater improvements in critical thinking skills compared to students taught using conventional learning and limited *Contextual Teaching and Learning* (CTL)-based learning.

The results of the ANOVA test showed significant differences between the three groups, where the experimental group using *Contextual Teaching and Learning* (CTL) showed higher posttest scores (74.12) compared to the positive (58.65) and negative control (64.29) control groups. These results show that *Contextual Teaching and Learning* (CTL) has a greater positive effect in improving students' critical thinking skills.

In addition, the simple linear regression analysis conducted showed a significant positive influence between the application of the *Contextual Teaching and Learning* (CTL) strategy and the improvement of students' critical thinking skills. Based on the regression results, a regression coefficient of 0.467 indicates that any increase in the application of *Contextual Teaching and Learning* (CTL) will be followed by a significant increase in students' critical thinking skills. A significance value of 0.000 ($p < 0.05$) confirms that the influence of *Contextual*

Teaching and Learning (CTL) on improving students' critical thinking skills is statistically significant.

Overall, these findings support the use of CTL strategies in learning to improve students' critical thinking skills, as well as show that this approach is more effective than conventional learning or limited CTL-based learning.

Reference

- Alvarez, G., & Lata, K. (2019). The impact of teaching methods on critical thinking development. *Journal of Educational Psychology*, 111(5), 823-835.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How People Learn: Brain, Mind, Experience, and School*. National Academy Press.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). Routledge.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson Education.
- Dewey, J. (1938). *Experience and education*. Macmillan.
- Ennis, R. H. (2011). *Critical thinking: A streamlined conception*. *The Journal of the Higher Learning*, 25(3), 191-198.
- Epstein, J. L. (2001). *School, family, and community partnerships: Preparing educators and improving schools*. Westview Press.
- Facione, P. A. (2015). *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction*. The Delphi Report. California Academic Press.
- Henson, K. T. (2003). *Foundations for learner-centered education: A knowledge base*. Pearson Education.
- Johnson, D. W., & Johnson, R. T. (2002). *Contextual teaching and learning: What it is and why it's here to stay*. *Education Digest*, 68(8), 25-30.
- Kivunja, C. (2015). Teaching critical thinking in higher education: A review of the literature. *International Journal of Higher Education*, 4(1), 11-25.
- Mulyasa, E. (2017). *Implementasi kurikulum 2013: Pendekatan pembelajaran yang berbasis kompetensi*. PT Remaja Rosdakarya.
- Piaget, J. (1954). *The construction of reality in the child*. Routledge.
- Piaget, J. (1954). *The construction of reality in the child*. Routledge.
- Saavedra, A. R., & Opfer, V. D. (2012). Teaching and learning 21st-century skills: Lessons from the learning sciences. *International Journal of Educational Policy*, 19(2), 13-24.
- Sugiyono, S. (2017). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Warschauer, M. (2007). *The paradoxical effects of technology on education*. *Educational Policy Analysis Archives*, 15(4), 1-14.