

The Effect Of The Cooperative Team Quiz Model On The Problem-Solving Skills Of Students In Grade VII Of SMP Negeri 1 Simpang Tiga Pidie

Nadiatul Husna^{1*}, Mauliana Wayudi¹, Surya Darni¹

¹ Universitas Almuslim

Article Info

Article history:

Received 16 September 2025

Revised 19 September 2025

Accepted 22 September 2025

Keywords:

Team Quiz, Cooperative Learning, Problem Solving

ABSTRACT

This study aims to determine the effect of the Cooperative Team Quiz learning model on the problem-solving skills of seventh-grade students of SMP Negeri 1 Simpang Tiga. This study uses a quantitative approach with a Quasi-Experimental design. The research sample consists of two classes, namely the experimental class taught using the Cooperative Team Quiz model and the control class taught using conventional methods. The research instrument in the form of a pre-test and post-test was used to measure students' problem-solving skills. The results showed a significant increase in students' problem-solving skills in the experimental class compared to the control class. Statistical tests proved that the Cooperative Team Quiz model had a positive and significant effect in improving problem-solving skills. Thus, this model is effective to be used as a learning strategy to improve junior high school students' problem-solving abilities.

This is an open access article under the CC BY-SA license.



Corresponding Author:

Nadiatul Husna | Universitas Almuslim

Email: nadiatulhusna683@gmail.com

1. Introduction

Education plays a crucial role in developing students' potential to face the challenges of the 21st century, which require critical thinking, creativity, communication, and collaborative skills. Problem-solving is a key focus, as it is not only related to academic achievement but also provides essential skills for everyday life. However, the reality on the ground shows that students' problem-solving skills in Indonesia remain relatively low. The 2018 Programme for International Student Assessment (PISA) survey showed that Indonesia ranked low in literacy, numeracy, and problem-solving.

This problem is also evident in social studies learning in secondary schools, where students often struggle to analyze complex socioeconomic issues and tend to be passive during the learning process. This is because the learning process is still teacher-centered, with lecture-based methods, which provide little opportunity for students to practice critical thinking and problem-solving independently or in groups. Therefore, more innovative and interactive learning models are needed to enable students to develop higher-order thinking skills.

One model believed to be effective in addressing this issue is the Cooperative Team Quiz model. This model emphasizes collaboration in small groups, where students discuss problems with each other and are then tested through intergroup quizzes. This approach not only improves problem-solving skills but also builds students' motivation, self-confidence, and communication skills.

Several previous studies have shown positive results. Hanifah (2019) stated that the Team Quiz model can improve students' mathematical problem-solving skills. Maulidiawati et al. (2022) found that implementing Team Quiz can improve student engagement and learning outcomes. Devita (2019) also reported that the Cooperative Team Quiz model is more effective than conventional methods. However, research related to the application of this model in social studies learning at the junior high school level is still limited, particularly in the context of problem-solving skills.

Based on the description, this study aims to determine the effect of the Cooperative Team Quiz model on the problem-solving skills of seventh-grade students at SMP Negeri 1 Simpang Tiga. This study is expected to contribute to the development of innovative learning strategies that are more effective in improving learning outcomes, as well as serve as a reference for teachers in implementing learning models oriented towards the development of 21st-century skills.

2. Research Methodology

This study used a quantitative approach with a Quasi-Experimental design of the Nonequivalent Control Group Design type. This design was chosen because the research sample could not be completely randomized, but still allowed for comparisons between the experimental group and the control group. The study was conducted at SMP Negeri 1 Simpang Tiga, Pidie Regency in the even semester of the 2024/2025 academic year. The study population was all 216 seventh-grade students, while the research sample was selected purposively, namely class VII B with 32 students as the experimental class and class VII C with 32 students as the control class. The experimental class was given treatment using the Cooperative Team Quiz model, while the control class used conventional learning methods.

The research variables consist of the independent variable, namely the Cooperative Team Quiz model, and the dependent variable, namely students' problem-solving skills. The research instrument is a multiple-choice problem-solving skills test that has passed the validity, reliability, difficulty level, and discriminatory power tests. Of the 26 questions tested, 20 questions were declared valid, with a reliability of 0.83 which is included in the very high category. The level of difficulty of the questions consists of 17 easy items, 6 medium items, and 3 difficult items, while the discriminatory power consists of 1 very good item, 12 good items, and 7 sufficient items.

Data collection techniques were conducted through tests, namely pre-tests and post-tests to measure students' problem-solving skills, observations to monitor learning activities, and documentation to obtain supporting data. Data analysis was conducted through prerequisite

tests, including normality and homogeneity tests, followed by hypothesis testing using an independent two-sample t-test at a significance level of 0.05.

3. Result and Discussion

Research Results

The study was conducted at SMP Negeri 1 Simpang Tiga, Pidie, Aceh. The research data were first tested for prerequisites. The results of the Shapiro-Wilk normality test showed that all pre-test and post-test data, both for the experimental and control classes, were normally distributed ($p > 0.05$). The homogeneity test also showed that both groups had the same variance ($p > 0.05$), thus the data met the requirements for analysis using the t-test.

In the experimental class treated with the Cooperative Team Quiz model, the average pre-test score of 40.94 increased to 74.22 in the post-test, a difference of 33.28 points. Meanwhile, the control class taught using conventional methods only experienced an increase from an average pre-test score of 39.69 to 52.19 in the post-test, a difference of 12.50 points. This difference in results can be seen more clearly in the following graph.

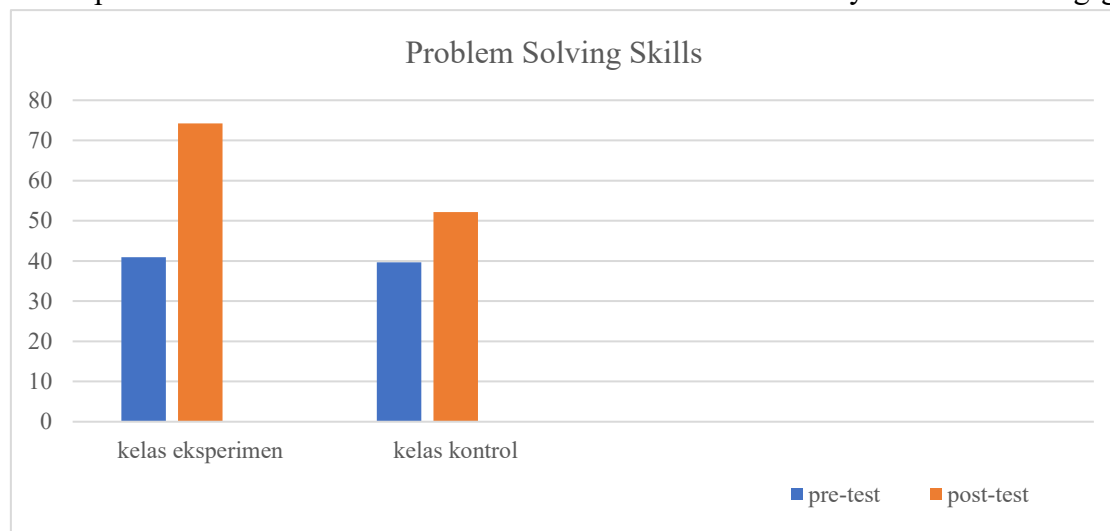


Figure 1. Problem Solving Skills

The N-Gain analysis shows a significant difference between the two classes. The average N-Gain in the experimental class was 56.20, which is in the moderate category, while the control class only reached 17.50, which is in the low category. These results indicate that the Cooperative Team Quiz model is more effective in improving students' problem-solving skills than conventional learning. This difference is also supported by the research data as shown in the following table.

Table 1. Summary of Research Results

Class	Pre-test (Mean)	Post-test (Mean)	N-Gain (Mean)	Category
Eksperimental	40,94	74,22	56,20	moderate
Control	39,69	52,19	17,50	Low

Source: Processed data from SPSS (2025)

The Paired Sample t-test on both groups showed a significant difference between the pre-test and post-test scores ($p < 0.05$), indicating an improvement in problem-solving skills after learning. Furthermore, the Independent Sample t-test produced a t-value of 4.962 with a significance of 0.000 (< 0.05). These results prove that there is a significant difference between the experimental class and the control class, where the improvement that occurred in the experimental class was higher than that in the control class

Discussion

The results of the study indicate that the Cooperative Team Quiz model has a significant effect on improving students' problem-solving skills. In the experimental class, the average score increased from 40.94 to 74.22 with an N-Gain of 56.20 (moderate category), while in the control class, it only increased from 39.69 to 52.19 with an N-Gain of 17.50 (low category). The Independent Sample t-test reinforced these findings, with a t-count (4.962) $>$ t-table (1.96) and significance of $0.000 < 0.05$, which means there was a significant difference between the experimental and control classes.

This difference shows that the Cooperative Team Quiz model is more effective than conventional methods. In this model, students are actively involved through group discussions, team quizzes, and two-way interactions, encouraging them to think critically, collaborate, and solve problems. In contrast, conventional teacher-centered learning makes students more passive, resulting in less than optimal improvement in problem-solving skills.

Theoretically, the effectiveness of this model is in line with constructivism, which emphasizes the importance of social interaction and active learning experiences in building knowledge. Previous studies have shown that Team Quiz can improve problem-solving skills (Hanifah, 2019; Maulidiawati et al., 2022; Devita, 2019).

As a result, the Cooperative Team Quiz model can be used as an alternative learning strategy in schools because it has been proven to improve problem-solving skills while building students' active, confident, and responsible character. In addition, the application of this model is also relevant to the demands of the independent curriculum, which emphasizes activity-based learning, collaboration, and the development of 21st-century skills. With consistent application, this model has the potential to have a broader impact on the quality of learning in various subjects.

4. Conclusion

This study shows that the application of the Cooperative Team Quiz model has a positive and significant effect on improving students' problem-solving skills. This model is more effective than conventional learning because it creates an active, interactive, and collaborative learning atmosphere. In addition, this model also contributes to building cooperation, responsibility, and student motivation to learn.

Therefore, the Cooperative Team Quiz model can be used as an alternative learning strategy that is in line with the demands of the independent curriculum and relevant to the development of 21st-century skills.

5. Recommendations

Based on the results of this study, it is recommended that teachers apply the Cooperative Learning Model of Team Quiz as an alternative strategy to improve students' problem-solving skills. This model has been proven to be more effective than conventional methods because it encourages active participation, cooperation, and motivation in students. For schools, the results of this study can be used as a reference in developing innovative learning policies that are in line with the needs of the 21st century. For further research, it is recommended that the application of this model be tested at different levels of education or with more diverse learning materials so that the results can provide a more comprehensive picture.

6. Acknowledgement

The author would like to express his deepest gratitude to his supervisor for providing guidance and valuable input throughout this research process. Thanks are also extended to SMP Negeri 1 Simpang Tiga, especially the teachers and students who actively participated in the research. In addition, appreciation is given to family and friends who have always provided moral and material support so that this research could be completed successfully.

References

- Ahyar, H., Andriani, H., Sukmana, D. J., Hardani, S. P., MS, N. H. A., GC, B., & Istiqomah, R. R. (2020). Buku metode penelitian kualitatif & kuantitatif. CV. Pustaka Ilmu.
- Agusta, E. S. (2020). Peningkatan kemampuan pemecahan masalah matematika melalui model pembelajaran berbasis HOTS. *Jurnal Riset Pembelajaran Matematika Sekolah*, 4(1), 58–64.
- Amanda, F. (2022). Pengaruh model pembelajaran problem based learning (PBL) berbantuan media YouTube terhadap kemampuan berpikir kritis pada siswa kelas IV SDN Margorejo 1 Surabaya [Skripsi, Universitas PGRI Adi Buana Surabaya].
- Anggraeni, N. S., & Sundayana, R. (2021). Kemampuan komunikasi matematis siswa dengan pembelajaran kooperatif tipe Group Investigation dan Team Quiz ditinjau dari kemandirian belajar. *Plusminus: Jurnal Pendidikan Matematika*, 1(3), 469–480.
- Astutiani, R. (2019). Kemampuan pemecahan masalah matematika dalam menyelesaikan soal cerita berdasarkan langkah Polya. *Prosiding Seminar Nasional Pascasarjana*, 2(1), 297–303.
- Bintara, A. C. (2017). Pengaruh metode pembelajaran aktif tipe Quiz Team berbantuan Question Card terhadap peningkatan hasil belajar (Penelitian pada mata pelajaran IPA materi sumber daya alam siswa kelas IV SD Muhammadiyah Integratif Dukun, Kabupaten Magelang) [Skripsi, Universitas Muhammadiyah Magelang].

- Hadinata, S. R. (2022). Pengaruh model pembelajaran Team Quiz terhadap kemampuan pemahaman konsep matematis siswa kelas XI IPA SMA Negeri Kaureh Kabupaten Jayapura. *Journal on Education*, 4(4), 1060–1067.
- Hendriani, M., Melindawati, S., & Mardicko, A. (2021). Keterampilan pemecahan masalah matematika di era revolusi industri 4.0 siswa SD. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 5(2), 892–899.
- Jainuri, M. (2014). Kemampuan pemecahan masalah. *Academia.edu*, 1–7.
- Jawaher, J. (2023). Penerapan metode Team Quiz dalam meningkatkan minat dan hasil belajar siswa kelas XII MIPA 4 SMAN 1 Tualang. *Maras: Jurnal Penelitian Multidisiplin*, 1(3), 378–391.
- Lase, I. P. S., & Sihura, H. K. (2022). Metode pembelajaran inquiry terhadap kemampuan pemecahan masalah ekonomi. *Curve Elasticity: Jurnal Pendidikan Ekonomi*, 3(2), 58–71.
- Magdalena, I., Anggraini, I. A., & Khoiriah, S. (2021). Analisis daya pembeda dan taraf kesukaran pada soal bilangan Romawi kelas 4 SDN Tobat 1 Balaraja. *Nusantara*, 3(1), 151–158.
- Mardhiyah, R. H., Aldriani, S. N. F., Chitta, F., & Zulfikar, M. R. (2021). Pentingnya keterampilan belajar di abad 21 sebagai tuntutan dalam pengembangan sumber daya manusia. *Lectura: Jurnal Pendidikan*, 12(1), 29–40.
- Marlina, M., Hadi, S., & Rahim, A. (2021). Media demonstrasi dan eksperimen berbasis animasi: Efektivitas meningkatkan keterampilan siswa memecahkan masalah di era revolusi industri 4.0. *Jurnal Pendidikan Kimia Indonesia*, 5(2), 60–67.
- Manurung, D., Sinaga, C. V. R., & Thesalonika, E. (2022). Pengaruh model Team Quiz terhadap hasil belajar siswa pada pembelajaran Subtema 3 Bersyukur Atas Keberagaman kelas IV SD Negeri 091488 Bah Sampuran. *Pedagogika: Jurnal Pedagogik dan Dinamika Pendidikan*, 10(2), 169–175.
- Mirdad, J. (2020). Model-model pembelajaran (empat rumpun model pembelajaran). *Jurnal Sakinah*, 2(1), 14–23.
- Nasution, H. N. (2019). Efektivitas penggunaan model pembelajaran Team Quiz dengan kemampuan pemecahan masalah matematis siswa MTs Syhbuddin Mustafa Nauli. *Jurnal MathEdu (Mathematic Education Journal)*, 2(2), 1–8.
- Octavia, S. A. (2020). Model-model pembelajaran.
- Palennari, M., Rachmawaty, R., & Rahmawati, R. (2022). Profil keterampilan pemecahan masalah peserta didik SMA Negeri 1 Tinambung pada mata pelajaran biologi. *Jurnal Sainsmat*, 11(1), 78–85.
- Parwati, N. N. (2019). Adaptasi pembelajaran matematika di era revolusi industri 4.0. *Prosiding Senama PGRI*, 1, 1–11.
- Purnomo, A., Kanusta, M., Fitriyah, S. A., Guntur, M., Siregar, R. A., Ritonga, S., & Listantia, N. (2022). Pengantar model pembelajaran (Vol. 1). Runi Fazalani.
- Rosita, N. T., & Yuliawati, L. (2017). Analisis kemampuan pemecahan masalah matematis pada materi aljabar SMP berdasarkan disposisi matematis. *Symmetry: Pasundan Journal of Research in Mathematics Learning and Education*, 2(2), 46–51.

- Situmorang, M. (2017). Upaya meningkatkan hasil belajar siswa pada mata pelajaran menggambar teknik melalui model pembelajaran kooperatif tipe Team Quiz pada siswa kelas X program keahlian teknik mesin produksi SMK Negeri 2 Tanjungbalai TA 2016/2017. *Jurnal Pendidikan Teknologi dan Kejuruan*, 19(1), 19–25.
- Tabrani, T., Afendi, A., Baitullah, B., Zamzami, Z., & Maspan, M. (2024). Model-model pembelajaran. *Jurnal Review Pendidikan dan Pengajaran (JRPP)*, 7(4), 14713–14720.
- Wayudi, M. (2020). Pengaruh metode problem based learning dan guided discovery learning dalam meningkatkan kemampuan berpikir kritis siswa berdasarkan self-regulated learning (Kuasi eksperimen pada mata pelajaran Ekonomi di SMAN 1 Seunagan Provinsi Aceh) [Tesis, Universitas Pendidikan Indonesia].
- Yazidi, A. (2014). Memahami model-model pembelajaran dalam kurikulum 2013. *Jurnal Bahasa, Sastra, dan Pembelajarannya (JBSP)*, 4(1), 89–95.