Journal on Mathematics Education Research

Journal homepage: https://ejournal-science.upi.edu/jmer

Think Talk Write (TTW) Learning Model for Improving Mathematical Problem-Solving Skills: Systematic Literature Review

Moch, Rasyid Ridha, Alifah Fadilah Nurunnisa*
Universitas Langlangbuana, Bandung, Indonesia
*Correspondence: E-mail: fariqrasya@gmail.com

A B S T RAK

Kemampuan pemecahan masalah matematis merupakan kompetensi esensial yang memungkinkan siswa menyelesaikan persoalan kontekstual maupun non-kontekstual secara terstruktur. Namun, fakta di lapangan menunjukkan rendahnya kemampuan ini, yang diperkuat oleh penurunan skor literasi matematika Indonesia pada PISA 2022. Penelitian ini bertujuan untuk menganalisis dan mensintesis pengaruh model pembelajaran Think Talk Write (TTW) terhadap peningkatan kemampuan pemecahan masalah matematis siswa melalui metode Systematic Literature Review (SLR). Metode penelitianmenggunakan prosedur PRISMA dengan mengidentifikasi 34 artikel dari basis data seperti Google Scholar, PubMed, ResearchGate, DOAJ, dan ERIC. Setelah melalui proses penyaringan berdasarkan kriteria inklusi—seperti studi eksperimen kuantitatif pada jenjang SMP dan SMA di Indonesia, terbitan tahun 2016-2026, dan terindeks SINTA—terpilih 6 artikel utama untuk dianalisis. Hasil analisis menunjukkan bahwa model pembelajaran Think Talk Write memiliki pengaruh positif yang signifikan terhadap kemampuan pemecahan masalah matematis siswa. Model ini memfasilitasi proses kognitif melalui tahapan Think (berpikir mandiri), Talk (berdiskusi), dan Write (menuliskan solusi), yang secara langsung Berkaitan dengan indikator pemecahan masalah seperti memahami masalah dan merencanakan penyelesaian. Hasil penelitian ini menyimpulkan bahwa penelitian ini paling banyak ditemukan pada tahun 2018, 2022, dan 2023. Penelitian banyak dilakukan pada jenjang SMP dengan pokok bahasan yang paling banyak ditemukan yaitu aljabar. Penelitian banyak ditemukan pada jurnal yang terindeks SINTA 4, SINTA 3, dan SINTA 2. Selain itu, penelitian ini menyimpulkan bahwa factor keberhasilan implementasi model ini meliputi ketersediaan waktu yang cukup, kepekaan guru terhadap kendala siswa, serta pemberian masalah kontekstual dalam lembar kerja siswa. Penelitian ini menyimpulkan bahwa model Think Talk Write merupakan alternatif efektif bagi guru untuk meningkatkan kualitas pembelajaran matematika di jenjang menengah.

A R T I C L E I N F O

Article History:
Received:2026-05-15
Revision: 2026-05-28
Accepted: 2026-05-31
Published: 2026-05-31

Kata Kunci:
Think Talk Write, Pemecahan Masalah Matematis, Systematic Literature Review

A B S T R A C T

Mathematical problem-solving skills are essential competencies that enable students to solve contextual and non-contextual problems in a structured manner. However, facts in the field show that these skills are lacking, which is reinforced by the decline in Indonesia's mathematics literacy scores in PISA 2022. This study aims to analyze and synthesize the effect of the Think Talk Write (TTW) learning model on improving students' mathematical problem-solving skills through the Systematic Literature Review (SLR) method. The research method used the PRISMA procedure by identifying 34 articles from databases such as Google Scholar, PubMed, ResearchGate, DOAJ, and ERIC. After screening based on inclusion criteria—such as quantitative experimental studies at the junior high and high school levels in Indonesia, published between 2016 and 2026, and indexed by SINTA—six main articles were selected for analysis. The results of the analysis show that the Think Talk Write learning model has a significant positive effect on students' mathematical problem-solving abilities. This model facilitates the cognitive process through the stages of Think (independent thinking), Talk (discussion), and Write (writing down solutions), which are directly related to problem-solving indicators such as understanding problems and planning solutions. The results of this study conclude that most of the research was found in 2018, 2022, and 2023. Much research has been conducted at the junior high school level, with algebra being the most common subject. Much of the research was found in journals indexed by SINTA 4, SINTA 3, and SINTA 2. In addition, this study concluded that the factors for the successful implementation of this model include sufficient time, teacher sensitivity to student constraints, and the provision of contextual problems in student worksheets. This study concludes that the Think Talk Write model is an effective alternative for teachers to improve the quality of mathematics learning at the secondary level.

Keywords:
Think Talk Write, Mathematical Problem Solving, Systematic Literature Review

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

1. INTRODUCTION

Mathematics education still faces many challenges for both teachers and students; the perception that mathematics is a difficult, abstract, and boring subject remains deeply ingrained, which in turn contributes to students' low mathematical proficiency. Mathematics is often viewed as a difficult, complex, and boring subject, which in turn leads to mathematics anxiety (Hembree & College, 2015). This anxiety hinders students' interest and ability to improve their mathematical skills.

Students' mathematical abilities are not limited to their ability to solve problems using given formulas; they must also be able to understand mathematical problems and solve them effectively, especially when the context relates to real-life situations. According to Boaler, mathematics learning must go beyond mere routine procedures and focus on developing conceptual understanding that allows students to connect mathematical ideas with real-world problems (Boaler, 2022). It is important to continuously develop students' ability to solve math-related problems in daily life; through this, students will learn to understand each problem thoroughly and solve them using appropriate procedures, thereby fostering meaningful learning. Based on this, one of the essential skills students must possess is mathematical problem-solving ability.

Mathematical problem-solving ability refers to a student's capacity to solve problems—whether contextual or non-contextual—using mathematical steps. Mathematical problem-solving ability encompasses a person's ability to understand a problem, design a mathematical model, solve the model, and interpret the solution obtained (Exacta et al., 2021). Fundamentally, mathematics learning is inseparable from problems; therefore, problem-solving skills are one of the goals of mathematics education (Yuhani et al., 2018). Mathematical problem-solving skills are an essential life skill for fostering a structured way of thinking in students as they tackle various problems both within and outside of mathematics learning.

The importance of mastering mathematical problem-solving skills does not align with the reality on the ground, particularly in Indonesia. PISA, an international assessment that measures a country's educational quality in Indonesian Language Literacy, Mathematical Literacy, and Science, showed that in the 2022 PISA assessment, Indonesia's score in mathematical literacy declined from 379 points in 2018 to 366 points. PISA in the field of mathematical literacy includes problems that require students to be able to solve contextual problems through mathematical solutions. According to Wardani, students' low ability to solve problems—especially PISA-oriented problems—is caused by students not being accustomed to solving problems accurately and correctly (Sutama et al., 2019). Based on this, strategies are needed to support the problem-solving process, one of which is the implementation of an appropriate learning model.

The teaching methods used by teachers play a very important role; conventional teaching methods, which tend to be teacher-centered, are often less than optimal in facilitating students' ability to construct their own knowledge and develop mathematical skills, one of which is problem-solving. Therefore, student-centered teaching methods that actively engage students are essential. Students who participate actively tend to exhibit strong enthusiasm, concentration, and a sense of responsibility in completing their studies (Pasaribu & Hutagaol, 2025). One learning model that can support active student engagement is the Think Talk Write (TTW) learning model.

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

The Think Talk Write learning model is a student-centered learning process in which students actively participate in every step of the learning process so that they can reach their full potential. The Think Talk Write model was first introduced by Huinker and Laughlin in 1996; according to them, learning is more effective when students interact with one another and exchange opinions about their ideas before putting them into writing. According to Ngalimun (Sani, 2018) the Think Talk Write learning model is a learning process that begins with thinking activities based on reading materials, followed by discussions regarding the content of the reading, and then creating a report based on the reading. According to Huda (Wijaya, 2022), the Think Talk Write learning model provides practice in both oral and written language skills. The Think Talk Write learning model follows a sequence that begins with student engagement in independent thinking, discussion, and sharing ideas with peers before the writing activity (Anggi Rahmani, 2020). In mathematics instruction, the Think Talk Write model can help students develop mathematical skills through thinking, discussion, and writing activities.

The Think Talk Write learning model provides students with opportunities to develop problem-solving skills. According to Polya, problem-solving skills encompass students' ability to understand a problem, formulate a solution plan, implement the solution, and draw conclusions from the solution steps (Reski et al., 2019). The steps involved in problem-solving are closely related to the Think Talk Write learning model; through the stages of the Think Talk Write learning model, students are given the opportunity to understand the problem in the Think stage, then discuss how to solve the problem in the Talk stage, and summarize the results through writing in the Write stage, according to Ansari (Chandra Sari, 2018). Problem-solving skills can be developed through the stages found in the Think Talk Write learning model.

Recognizing the importance of students' mathematical problem-solving skills, the author is interested in conducting research by examining and analyzing other research sources regarding the application of the Think Talk Write learning model to improve students' mathematical problem-solving skills through a Systematic Literature Review. The purpose of this study is to examine the application of the Think Talk Write learning model in improving mathematical problem-solving skills, and it is hoped that the findings can serve as a reference for policymakers in implementing an effective Think Talk Write learning model to enhance the quality of students' problem-solving skills while taking several factors into account.

Although numerous studies have examined the effectiveness of the Think Talk Write (TTW) learning model in improving students' mathematical problem-solving skills, most previous studies were conducted as individual experimental research at specific educational levels and mathematical topics. Previous studies have not systematically synthesized findings regarding publication trends, educational levels, mathematical topics, journal indexing, and factors influencing the effectiveness of the TTW model in Indonesia. Therefore, this study fills the gap by conducting a Systematic Literature Review (SLR) to comprehensively analyze and synthesize previous findings related to the implementation of the Think Talk Write learning model in improving students' mathematical problem-solving skills.

2. METHOD

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

The research method used was a Systematic Literature Review (SLR). The SLR method is a systematic technique for collecting, critically evaluating, integrating, and synthesizing the results of various research studies on a specific question or topic to be explored (Norlita et al., 2023). SLR research aims to identify, evaluate, and interpret the results of previous studies relevant to specific questions, topics, or phenomena that are the focus of the review (Ma'rifatin Indah Kholili et al., 2020). Based on this, this study aims to systematically analyze and synthesize studies that have examined the Think Talk Write learning model's impact on students' mathematical problem-solving skills at the secondary school level.

In this study, the research selected for the systematic literature review was limited to studies involving junior high and high school students in Indonesia; the experimental group was taught using the Think Talk Write learning model, while the control group was taught using a conventional learning model for comparison; the outcome of the studies was mathematical problem-solving ability; the research method used was quantitative with an experimental design; the subject included in the studies was mathematics; the publication years of the studies ranged from 2016 to 2026; and the studies were indexed in SINTA. The SLR research procedure steps used are: Research Question, Search Process, Inclusion and Exclusion Criteria, Quality Assessment, Data Collection, Data Analysis, and Deviation from Protocol (Triandini et al., 2019). The explanation of each procedure step is as follows.

Research Question

The research questions were formulated based on the requirements of the selected topic. There are two research questions used in this systematic literature review, namely:

RQ (1) *What are the characteristics of studies on the application of the Think Talk Write learning model to the mathematical problem-solving abilities of secondary school students, as examined based on the publication year (2016–2026), educational level, subject matter tested, and journal indexing?*

RQ (2) *What is the effect of the Think Talk Write learning model on improving students' mathematical problem-solving skills?*

Search Process

The search process was used to identify reference studies that would serve as research sources to answer the research questions, as well as other relevant references. The search for studies, specifically journal articles, was conducted through several databases, including Google Scholar, PubMed, ResearchGate, DOAJ, and ERIC. The keywords used in this search include "Think Talk Write Learning Model," "Think Talk Write," and "Students' Mathematical Problem-Solving Skills." At this stage, a total of 34 articles were collected, forming the research population for the selection criteria in the next stage.

Inclusion and Exclusion Criteria

The studies identified during the search phase will undergo a selection process to determine their eligibility for inclusion in this systematic literature review by establishing inclusion (acceptance) and exclusion (rejection) criteria. The criteria used in this systematic literature review are as follows.

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Table 1. Inclusion Criteria

Inclusion Criteria	Reason
Articles relevant to the topic of the impact of the Think-Talk-Write learning model on students' mathematical problem-solving skills	Articles relevant to the topic of the impact of the Think-Talk-Write learning model on students' mathematical problem-solving skills
Research published between 2016 and 2026	The analyzed data describe current findings
The subjects of the study are junior high and high school students in Indonesia	This study aligns with the formal operational stage of cognitive development and the relevance of competency achievement standards in Indonesia's national curriculum
The research method used a quantitative experimental design	To provide empirical evidence of the causal relationship between the Think-Talk-Write learning model and students' problem-solving skills.
The topics or material covered in the exam are listed in the article	Ensures the validity of the problem-solving instrument's content and enables a comparative analysis of the model's effectiveness on specific mathematical topics.
Articles published in SINTA-indexed journals	Ensuring the scientific quality of the research and maintaining the validity of the data to be analyzed.

Articles that did not meet the inclusion criteria were classified under the exclusion criteria, namely: (1) articles that were not relevant to the topic of the impact of the Think Talk Write learning model on students' problem-solving skills; (2) studies conducted outside the 2016–2026 timeframe; (3) research subjects who are not junior high or high school students; (4) research methods that are not quantitative experimental methods; (5) main topics or materials not specifically stated; (6) articles not indexed in SINTA.

Quality Assessment

At this stage, studies or articles that meet the inclusion and exclusion criteria will undergo a quality assessment, which will evaluate the alignment with the research objectives, the research methods used, and the clarity of the data collection and analysis procedures. Articles that meet these quality assessment criteria will then proceed to the data collection stage.

Data Collection

The data collection stage is the phase in which the data obtained in the article is compiled to determine whether it meets the predetermined quality assessment criteria.

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Data Analysis

At this stage, the collected data is evaluated based on quality assessment criteria to determine its relevance, ensuring that the data is more meaningful and clearly verifiable in accordance with the research objectives and can serve as a basis for the research findings.

Deviation from Protocol

Deviations in the report were made in the presentation of data from the research study by noting several changes aimed at comprehensively reviewing and identifying each article, which indicated that the Think Talk Write learning model has an effect on mathematical problem-solving skills.

The stages used for presenting data from the selected research studies were based on the PRISMA guidelines. The PRISMA stages consist of the processes of identification, screening, eligibility assessment, and article selection to ensure that the study selection process is systematic, transparent, and free of bias (Rizky et al., 2025)These stages help ensure that the SLR results have a high level of validity.

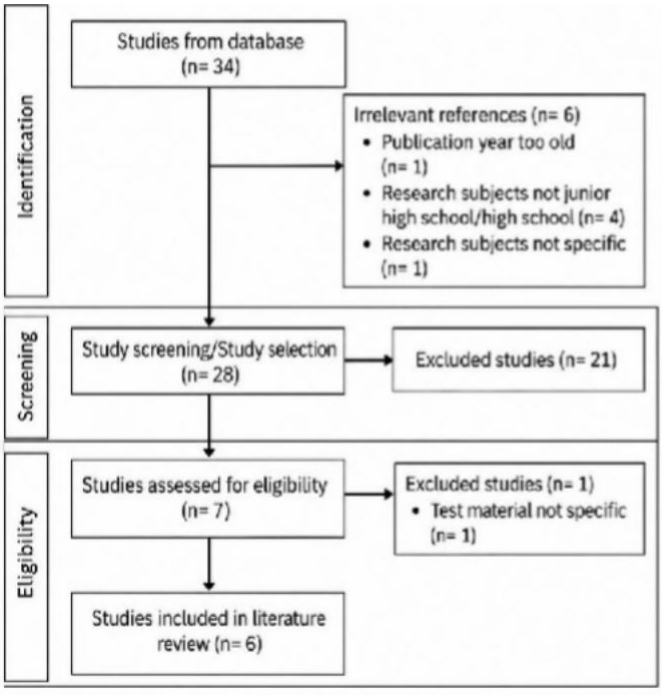

Figure 1. PRISMA Stages

Based on Figure 1, which illustrates the PRISMA steps, a keyword search identified 34 articles, which were then screened according to inclusion and exclusion criteria. This systematic process, encompassing the identification, screening, and eligibility assessment stages, resulted in the selection of 6 articles. The use of the PRISMA steps aims to ensure transparency, minimize bias, and strengthen the validity of the findings in this systematic review.

3. RESULT AND DISCUSSION

The discussion is intended to address the research questions and synthesize the findings obtained from the selected studies or articles. The six selected articles will be comprehensively reviewed and thoroughly analyzed to synthesize the key findings, which will constitute the final results of the Systematic Literature Review (SLR) conducted by the author.

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

RQ (1) What are the characteristics of studies on the application of the Think Talk Write learning model to the mathematical problem-solving abilities of secondary school students, as examined based on the publication year (2016–2026), educational level, subject matter tested, and journal indexing?

Studies by Publication Year

Studies by publication year aim to examine developments in the application of the Think Talk Write learning model to mathematical problem-solving skills over the period from 2016 to 2026.

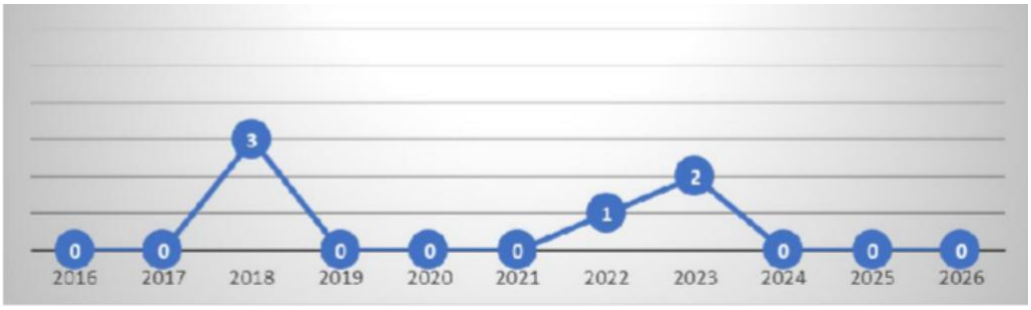

Figure 2. The Think-Talk-Write Instructional Model and Its Impact on Students' Mathematical Problem-Solving Skills by Year of Publication

Based on the data presented in Figure 2, it can be seen that research on the Think Talk Write learning model and its impact on middle school students' mathematical problem-solving skills has changed from year to year. Between 2016 and 2017, no research on this topic was found. Then, in 2018, two new research publications were identified. Between 2019 and 2021, no further research on this topic was found. In 2022 and 2023, research was found again, with one study in 2022 and two studies in 2023. From 2024 to 2026, there is a gap, or no further research has been found on the Think Talk Write learning model regarding middle school students' mathematical problem-solving skills. Based on the interpretation of this data, it can be concluded that research on the Think Talk Write learning model regarding students' mathematical problem-solving abilities has not shown continuous development; new studies were found in 2018, 2020, 2022, and 2023. For the other years, there is a gap.

Study by Educational Level

This study by educational level aims to examine the context of applying the Think Talk Write learning model to improve students' mathematical problem-solving skills at different educational levels—in this study, junior high school and high school.

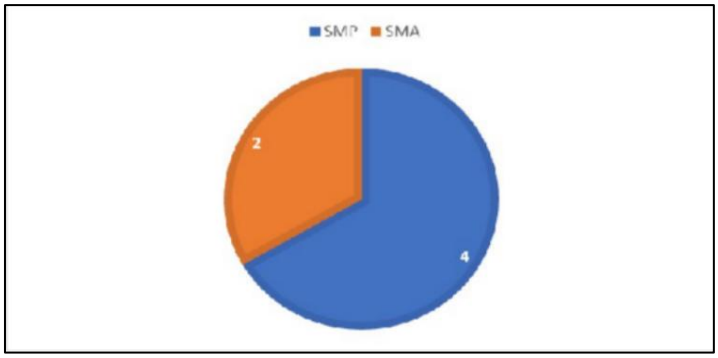

Figure 3. The Think-Talk-Write Instructional Model and Its Impact on Students' Mathematical Problem-Solving Skills by Educational Level

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Based on Figure 3, it can be seen that there are four studies on the Think Talk Write learning model's impact on students' mathematical problem-solving skills at the junior high school level and two studies at the senior high school level. Based on these data, it can be concluded that research on this topic is most prevalent at the junior high school level.

Topic-Based Study

This topic-based study aims to determine whether the Think Talk Write learning model has a significant impact across various subject areas in order to assess the model's effectiveness in improving students' mathematical problem-solving skills.

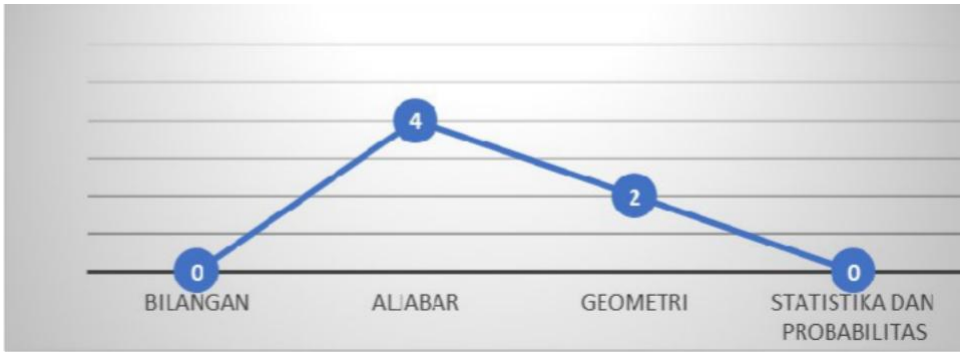

Figure 4. The Think-Talk-Write Instructional Model and Its Impact on Students' Mathematical Problem-Solving Skills by Topic

Figure 4 shows that there are four main topics commonly covered in mathematics instruction in schools, namely: (1) Numbers, (2) Algebra, (3) Geometry, and (4) Statistics and Probability. The data above indicate that regarding the research topic of the Think Talk Write learning model's impact on improving students' mathematical problem-solving skills, no studies have been found on the topic of numbers; four studies have been found on algebra; two on geometry; and no studies have been found using statistics and probability as the subject matter tested. Therefore, it can be concluded that research on this topic is predominantly applied to the subjects of algebra and geometry.

Study Based on Journal Indexes

A study based on journal indexes was conducted to provide an overview of the scientific quality standards and the scope of dissemination of research on the Think Talk Write learning model as it relates to students' mathematical problem-solving skills.

Figure 5. The Think-Talk-Write Instructional Model and ts Impact on Students' Mathematical Problem-Solving Skills: A Journal Index Analysis

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Based on the data above, it can be seen that the research articles used in this SLR have been indexed by SINTA. Regarding the research topic of the Think Talk Write learning model and its impact on improving students' mathematical problem-solving skills, no articles indexed in SINTA 6 or SINTA 5 were found. Two research articles were found that were indexed in SINTA 4. Three research articles were found that were indexed in SINTA 3. One research article was found indexed in SINTA 2. No research articles on this topic have been found in SINTA 1. Based on this, it can be concluded that articles on the research topic of the Think Talk Write learning model regarding the improvement of students' mathematical problem-solving skills are most frequently found in articles indexed in SINTA 3, followed by SINTA 4, and SINTA 2.

RQ (2) What is the effect of the Think Talk Write learning model on improving students' mathematical problem-solving skills?

The impact of the Think Talk Write learning model on improving students' mathematical problem-solving skills can be seen from the results of the research that has been conducted. The research results from the selected articles are presented in Table 2 below.

Table 2. Study on the Think Talk Write learning model and its impact on improving students' mathematical problem-solving skills

Authors	Research Result
Cahyaningrum, et al (2020)	The implementation of the Think Talk Write learning model has had a positive impact and has proven effective in improving students' mathematical problem-solving skills regarding flat-sided three-dimensional shapes.
Sari (2018)	The Think Talk Write learning model has proven effective in improving students' mathematical problem-solving skills when studying two-dimensional quadrilaterals, such as calculating the perimeter and area of parallelograms, rectangles, and squares. In lessons that apply the Think Talk Write model, students are also actively engaged throughout the learning process.
Yadih, et al. (2023)	There is a significant effect of applying a contextual approach using the Think Talk Write learning model on the improvement of students' mathematical problem-solving skills. Students who used the Think Talk Write learning model demonstrated higher mathematical problem-solving skills than those taught using the conventional expository model

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Rais & Ramadhani (2023)	The Think Talk Write learning model provides students with opportunities to actively engage in the learning process, which leads to an improvement in their mathematical problem-solving skills. The average score for mathematical problem-solving skills among students using the Think-Talk-Write learning model is higher than that of students using conventional learning models.
Ristantia, et al (2022)	The Think Talk Write learning model has a significant impact on improving students' mathematical problem-solving skills in the topic of systems of linear equations with two variables.
Riansyah (2018)	The Think Talk Write learning model has a positive impact on improving students' mathematical problem-solving skills, as measured by their initial mathematical ability.

Based on the table, it can be seen that the implementation of the Think Talk Write learning model has excellent potential for improving students' mathematical problem-solving skills, whether at the junior high or senior high school level, across various subject areas. A study (Rais & Ramadhani, 2023) sstates that one of the factors contributing to the success of the Think Talk Write learning model in improving students' mathematical problem-solving skills is that this model fosters active learning, where students can collaborate to solve problems. In line with this, a study (Yadih et al., 2023) tates that the Think Talk Write learning model provides students with the opportunity to express their opinions or ideas regarding material they have already understood, thereby training them to develop a pattern of thinking in problem-solving. The Think Talk Write learning model can create an interactive learning process (Chandra Sari, 2018). Learning models that center the process on students can have a positive impact on the improvement of certain skills, one of which is students' mathematical problem-solving ability.

The Think Talk Write learning model is a learning model that consists of three main stages: thinking, talking, and writing. The Think Talk Write cooperative learning model begins with students engaging in self-reflection or internal dialogue after reading a problem, followed by discussing and sharing ideas with peers before writing down solutions or answers to the problem (Fahri Riansyah, 2018). Mathematical problem-solving ability, on the other hand, is a competency through which students are able to solve various problems related to mathematical concepts. In mathematical problem-solving ability, there are four indicators that serve as benchmarks for students' mastery of this skill. The indicators of mathematical problem-solving ability are: 1) understanding the problem; 2) planning the solution; 3) implementing the solution; 4) reviewing the solution (Fahri Riansyah, 2018). Based on this, there is a correlation

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

between the steps of the Think Talk Write learning model and the indicators of mathematical problem-solving ability.

The Think Talk Write learning model can serve as a platform for students to develop their mathematical problem-solving skills. Implementing the Think Talk Write strategy can improve the quality of students' mathematical problem-solving. This is because the learning process facilitates students' cognitive processes through the stages of Think, Talk, and Write, which support the development of mathematical problem-solving skills (Chandra Sari, 2018). In the thinking stage, students can build their knowledge and express their ideas (Cahyaningrum et al., 2020). Next, in the "Talk" stage, students can exchange opinions to formulate and finalize the solution they have planned before writing down the solution using language they understand (Write); this stage also allows students to review their solution (Rais & Ramadhani, 2023). Based on the studies that have been conducted and serve as references for this literature review, it can be concluded that the Think Talk Write learning model has an impact on improving students' mathematical problem-solving skills.

Despite its positive impact, the Think Talk Write learning model may not always be optimally implemented in all classroom conditions. Several studies reported that students often require adaptation time to follow the Think, Talk, and Write stages effectively (Cahyaningrum et al., 2020). In addition, students with low confidence levels tend to be less active during discussion sessions, causing group discussions to be dominated by more capable students (Rais & Ramadhani, 2023). The implementation of TTW also requires sufficient instructional time and carefully designed contextual problems (Yadih et al., 2023). Without adequate classroom management and teacher guidance, the effectiveness of the TTW model in improving mathematical problem-solving skills may decrease. Therefore, teachers need to consider classroom readiness, student characteristics, and time allocation before implementing the TTW learning model.

The factors contributing to the success of the Think Talk Write learning model in improving students' mathematical problem-solving skills include the availability of sufficient time; the success of the Think Talk Write learning model in improving students' mathematical problem-solving skills does not occur immediately upon implementation; on average, students demonstrate mastery of each competency indicator after several sessions. As in the study by (Cahyaningrum et al., 2020), during the first and second sessions, students were not yet accustomed to following the steps of the Think Talk Write learning model, so the steps within the model were not effectively implemented. However, by the third and fourth sessions, students began to follow the learning steps effectively. In addition to the study conducted (Cahyaningrum et al., 2020), other studies have reported similar findings, such as the research by (Yadih et al., 2023), which required seven sessions to conduct the study, and the research by (Ristantia et al., 2022), which required four sessions. Based on these studies, it can be concluded that the availability of sufficient time influences the effectiveness of the Think Talk Write learning model in improving students' mathematical problem-solving skills.

In addition to having sufficient time, success can be influenced by teachers' awareness of the challenges involved in implementing the Think Talk Write learning model to improve students' mathematical problem-solving skills. This is necessary to develop appropriate solutions and ensure that problem-solving skills are developed to their full potential. Common challenges include: 1) students are not yet accustomed to taking notes and tend to become discouraged; 2) students are not yet accustomed to learning according to the flow of the Think

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Talk Write learning model; 3) open-ended problems can overwhelm students as they work to solve them; 4) students easily lose confidence during discussion (talk) activities because they are dominated by capable students (Cahyaningrum et al., 2020); Rais & Ramadhani, 2023).

In addition to these challenges, the study (Rais & Ramadhani, 2023) proposes several possible solutions, including: 1) providing contextual problems; 2) ensuring students master the subject matter and that every group member expresses their opinion; 3) designing student worksheets to assess mathematical problem-solving skills so that the Think Talk Write learning model functions effectively. The identification and solutions to the challenges identified in this study can serve as a key factor in the success of the Think Talk Write learning model's impact on students' mathematical problem-solving skills.

4. CONCLUSION

Based on the literature review conducted by the author, it can be concluded that, regarding the characteristics of the Think Talk Write learning model in improving students' mathematical problem-solving skills, when examined by year of publication, the majority of studies on this topic were published in 2018, 2022, and 2023. When examined by educational level, studies on this topic were most frequently found at the junior high school level compared to the senior high school level. Furthermore, when examined by subject area, the most frequently used topics were algebra and geometry. When examined by research index, the studies were found in articles indexed in SINTA 4, SINTA 3, and SINTA 2. The impact of the Think Talk Write learning model's success on students' mathematical problem-solving skills can be influenced by several factors, such as: 1) sufficient time availability; 2) teachers' sensitivity to the challenges students face; 3) the solutions teachers employ to address these challenges. When teachers are able to consider these factors given this, it is highly likely that Think Talk Write learning model can optimally enhance students' mathematical problem-solving skills.

The author acknowledges that this literature review has many shortcomings; therefore, the researcher suggests expanding the sources or reference studies that have examined the impact of the Think Talk Write learning model on students' mathematical problem-solving skills more extensively. This is necessary to identify the constraints, success factors, and other findings related to the research topic.

5. REFERENCES

Boaler, J. (2022). *Mathematical Mindsets: Unleashing Students' Potential through Creative Mathematics, Inspiring Messages and Innovative Teaching*. Jossey-Bass A Wiley Brand. https://books.google.co.id/books?id=ys1VEAAAQBAJ&lpg=PP1&hl=id&pg=PR4#v=onepage&q&f=false

Cahyaningrum, I., Husna, A., & Gusmania, Y. (2020). Efektivitas Strategi Think Talk Write terhadap Kemampuan Pemecahan Masalah Matematis Siswa. *Edumatika: Jurnal Riset Pendidikan Matematika*, 3(1), 23. https://doi.org/10.32939/ejrpm.v3i1.405

Chandra Sari, A. (2018). Meningkatkan Kemampuan Pemecahan Masalah Matematis Siswa Smp Dengan Model Pembelajaran Think Talk Write. http://journal.unugiri.ac.id/index.php?journal=JaMES

Exacta, A. P., Hadiprasetyo, K., Afghohani, A., & Astutiningtyas, E. L. (2021). Analisis Kemampuan Problem Solving Mahasiswa Pada Mata Kuliah Analisis Kompleks Ditinjau

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Dari Kemampuan Awal. *JEID: Journal of Educational Integration and Development*, 1(2), 2021.

Riansyah, F., & Sari, A. (2018). Pengaruh Penerapan Pembelajaran Kooperatif Tipe Think Talk Write (TTW) Terhadap Kemampuan Pemecahan Masalah Matematika Ditinjau Dari Kemampuan Awal Matematika. *Juring: Journal for Research in Mathematics Learning*, 1(2), 119–126. https://ejournal.uinsuska.ac.id/index.php/juring/article/view/5426%0A

Hembree, R. A. Y., & College, A. (2015). *The Nature , Effects , And Relief Of Anxiety Mathematics. Journal for Research in Mathematics Education*, 21(1), 33–46. http://www.jstor.org/stable/749455?seq=1&cid=pdf-reference#references_tab_contents

Syaputra, M. R., Juandi, D., Kusnandi., & Elsa, H. A. (2025). Exploring Student Errors in Solving Derivative Problems: A Systematic Literature Review. *Jurnal Pendidikan MIPA*, 15(3), 723–731. http://jurnal.fkip.unila.ac.id/index.php/jpmipa/

Norlita, D., Wanda Nageta, P., Ayu Faradhila, S., Putri Aryanti, M., Fakhriyah, F., & Aditia Ismayam, E. A. (2023). SLR: Pendidikan Karakter di Sekolah Dasar. *Jurnal Ilmu Sosial, Pendidikan Dan Humaniora*, 2(1). https://jurnal-stiepari.ac.id/index.php/jispendiora

Pasaribu, S., & Hutagaol, N. S. M. (2025). Strategi Pembelajaran Aktif Untuk Meningkatkan Keterlibatan Siswa Di Sekolah Menengah: Kajian Teoritis Dan Implikasinya Dalam Pembelajaran Modern Menggunakan Model Pembelajaran Pbl (Problem Based-Learning). *Jurnal Review Pendidikan Dan Pengajaran*, 8(4), 8440–8445. https://doi.org/10.31004/jrpp.v8i4.53575

Rahmani, A., & Sutiawan, H. (2020). Pengaruh Model Pembelajaran Kooperatif Think Talk Write terhadap Pemahaman Konsep Matematika Siswa SMP. *GAUSS: Jurnal Pendidikan Matematika*, 3(1), 1–11. https://doi.org/10.30656/gauss.v3i1.2168

Rais, H., & Ramadhani, R. (2023). Pengaruh Penerapan Model Pembelajaran Kooperatif Tipe Think Talk Write Terhadap Kemampuan Pemecahan Masalah Matematis Siswa. *Lattice Journal : Journal of Mathematics Education and Applied*, 3(2), 130. https://doi.org/10.30983/lattice.v3i2.7584

Reski, R., Hutapea, N., & Saragih, S. (2019). Peranan Model Problem Based Learning (PBL) terhadap Kemampuan Pemecahan Masalah Matematis dan Kemandirian Belajar Siswa. *Juring: Journal for Research in Mathematics Learning*, 2(1), 49–57. https://share.google/15VeHKZwL5odjO8DU

Wahid, R., Busnawir, & Sahidin, L. (2022). Pengaruh Model Pembelajaran Kooperatif Tipe Think Talk Write Terhadap Kemampuan Pemecahan Masalah Matematis Siswa. *Jurnal Amal Pendidikan*, 3(3), 223–233. https://doi.org/http://doi.org/10.36709/japend.v3i3.19

Sani, L. (2018). Pengaruh Penerapan Model Pembelajaran Think Talk Write Terhadap Kemampuan Berpikir Kritis Matematis Siswa Smp. *Jurnal Al Ta'dib*, 11(2).

Sutama, Sofia, & Novitasari, M. (2019). Analysis of the Ability to Solve PISA-Oriented Mathematics Problems in the Content of Changes and Relationships in Junior High Schoo Students. *Jurnal Varidika*, 31(2), 29–36. https://doi.org/10.23917/varidika.v31vi2i.10216

Triandini, E., Jayanatha, S., Indrawan, A., Werla Putra, G., & Iswara, B. (2019). Metode Systematic Literature Review untuk Identifikasi Platform dan Metode Pengembangan Sistem Informasi di Indonesia. *Indonesian Journal of Information Systems*, 1(2), 63. https://doi.org/10.24002/ijis.v1i2.1916

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095

Wijaya, R. (2022). Perbedaan Antara Penerapan Model Pembelajaran Think Talk Write Dan Model Pembelajaran Double Loop Problem Solving Terhadap Hasil Belajar IPA Siswa Kelas IV SDN Tapos 2. *Educatif: Journal of Education Research*, 4(2), 111–115. http://pub.mykreatif.com/index.php/educatif

Yadih, A., Salsabila, E., & Murdiyanto, T. (2023). Pengaruh Pendekatan Kontekstual dengan Strategi Think Talk Write terhadap Kemampuan Pemecahan Masalah Matematis Siswa SMA Negeri 1 Jakarta. *JRPMS (Jurnal Riset Pembelajaran Matematika Sekolah)*, 7(1), 56–61. https://journal.unj.ac.id/unj/index.php/jrpms/article/view/33545

Yuhani, A., Zanthy, L. S., & Hendriana, H. (2018). Pengaruh Pembelajaran Berbasis Masalah Terhadap Kemampuan Pemecahan Masalah Matematis Siswa Smp. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, 1(3), 445.https://doi.org/10.22460/jpmi.v1i3.p445-452

DOI: http://doi.org/10.17509/j-mer.v7i1.886
e- ISSN 3047-1095