*International Journal of Research and Review*
*[Indexed, Peer Reviewed Journal]*
*Volume 12; Issue: 1; January 2025*
*Website: www.ijrrjournal.com*
*Meta Analysis* *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

# Meta-Analysis: The Effect of Realistic Mathematics Education (RME) on Improving Mathematics Learning Outcomes

**Yunita Reza Amanda[1], Yuni Katminingsih[2], Suryo Widodo[3]**

[1]Student of Mathematics Education Study Program, [2,3]Lecturer of Mathemztics Education Study Program, PGRI University of Kediri, Indonesia

Corresponding Author: Yunita Reza Amanda

**DOI: https://doi.org/10.52403/ijrr.20250118**

## ABSTRACT

The PISA results indicate that the average mathematics score of Indonesian students is below the OECD average, with one in four 15-year-old students categorized as low performers in mathematics, reading, and science. Therefore, one alternative solution is to implement the Realistic Mathematics Education (RME) approach. This study aims to identify the impact of the RME approach on improving elementary school students' mathematics achievement. It addresses students' perceptions of difficulties in mathematics lessons, the tendency to merely memorize formulas, and limited understanding of mathematics learning, which lead to boredom and lack of comprehension. This research employs the Systematic Literature Review (SLR) method. From research articles published in SINTA 1-4 journals from 2015 to 2023, the articles discuss the Realistic Mathematics Education model's effect on mathematical problem-solving abilities.

***Keywords:*** Realistic Mathematics Education, Student Learning Outcomes, Mathematics

## INTRODUCTION

In this era of globalization, students' mathematics ability is one of the important indicators to assess the quality of a country's education. Low math learning outcomes are a serious concern, especially in Indonesia. Based on the PISA (Program for International Student Assessment) 2022 report, the average performance of Indonesian students in mathematics has decreased significantly. The average math score of Indonesian students is below the OECD average, indicating that one in four 15-year-old students in Indonesia is classified as a low performer in math, reading and science. This decline in performance is not only happening in Indonesia, but is also a global trend in OECD countries. However, the decline in Indonesia is sharper than in other countries. Some of the factors that influence low math learning outcomes in Indonesia include low parental involvement in the student learning process.

Socio-economic factors also play an important role in determining students' academic performance. Students from lower socio-economic backgrounds tend to have lower performance compared to students from higher socio-economic backgrounds (OECD, 2023). This indicates inequalities in access to and quality of education in Indonesia. The importance of math skills in everyday life and in various fields of work makes this problem need to be addressed immediately. Low math skills can have a negative impact on students' critical thinking and problem-solving skills, which in turn will affect their competitiveness in the world of work and in facing global challenges.

Improving the quality of mathematics learning in Indonesia must be improved immediately so that comprehensive and sustainable efforts are needed. According to Latifah and Luritawaty (2020), Improving student learning outcomes requires appropriate learning methods, such as the Realistic Mathematics Education approach. One of the advantages of RME is that students are given problems that are relevant to their lives so that they are motivated to solve them in their own way. This is reinforced by Alawiyah, Kartini and Siregar (2021) who stated that students often have difficulty understanding the intent and essence of the mathematical problems given, have difficulty starting to determine the answer, and sometimes forget mathematical rules, formulas, or simplification of an equation. There are also errors in making calculations that produce inappropriate answers. Sintawati, Berliana and Supriyanto (2020) stated that the delivery of material that is difficult to understand by the teacher hinders the improvement of learning outcomes, and Realistic Mathematics Education (RME) is not well implemented.

Through the RME approach, students can develop problem-solving skills, participate in group discussions, and produce creative solutions to problems faced, by interacting with both friends and teachers, and exchanging ideas. Thus, it is expected that Indonesian students' mathematics learning outcomes can improve and they can compete globally.

## MATERIALS & METHODS

This study uses the meta-analysis method with the PRISMA protocol to systematize the collection and analysis of data from published studies that are carried out systematically by following appropriate research steps or procedures. This method also aims to search, evaluate, and synthesize the best available evidence. According to Suherman (2022) in Udin, Sugiman and Munahefi (2024), the steps followed are as follows: (1) identify topics and conduct a search for relevant studies; (2) screen documents to identify significantly relevant studies; (3) evaluate the suitability of the selected studies; and (4) compile study documents for analysis, synthesis, and description. The inclusion criteria in this research article include the following:

**Table 1. Inclusion and Exclusion Criteria**

| No. | Inclusion Criteria: | Exclusion Criteria: |
|---|---|---|
| 1. | Article Source: Articles from Scopus and PubMed databases. | Articles Before Screening: Articles that were excluded before the screening process. |
| 2. | Publication Period: Articles published within the last 8 years. | Article Duplication: Articles that are duplicated. |
| 3. | Research Type: Quantitative study. | Subject Irrelevance: Articles that do not focus on the subject of elementary school. |
| 4. | Subject Focus: Articles that focus on elementary school subjects. | Non-selected Articles: Articles that were not selected according to the research criteria. |

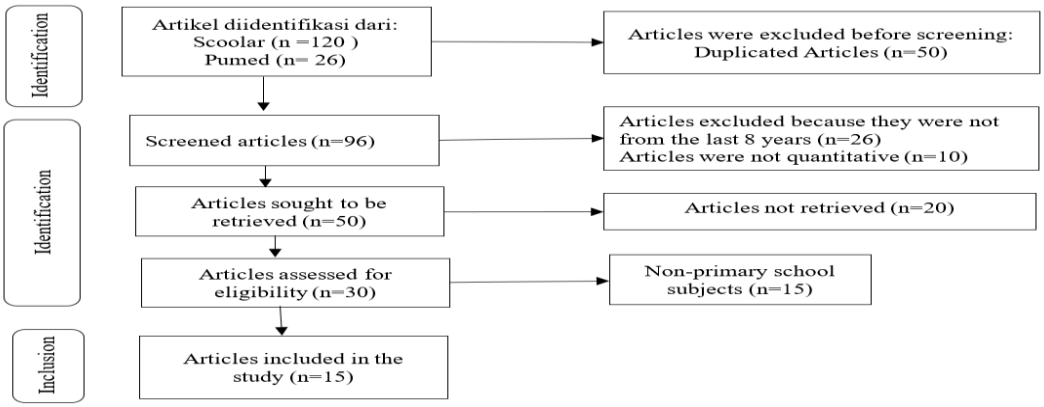


**Figure 1. Research Procedure**

The diagram provided by the author illustrates the article selection process for a study or review. The following is an explanation of each stage in the diagram:
1. Article Identification: Articles were identified from two sources, namely Scopus (120 articles) and PubMed (26 articles), giving a total of 146 articles.
2. Screening: Articles that were not relevant because they were published before the study period and duplicated articles were eliminated. Of the 146 articles, 50 articles were eliminated, leaving 96 articles.
3. Further Evaluation:Of the 96 articles, 26 were excluded because they were not from the last 8-year period, 10 because they were not quantitative studies, and 20 articles were not retrieved. This left 30 articles.
4. Final Selection: Of the 30 articles, 15 were excluded because they were not about primary school subjects.
5. Inclusion in Study: Finally, 15 articles that met all inclusion criteria were included in the study or analysis.

A check for publication bias was done to prevent misrepresentation of the findings. Studies that have been published are more likely to be included in meta-analyses than their unpublished counterparts, and this leads to concerns that meta-analyses may overestimate the true effect size (Borenstein *et al.*, 2009) and (Tamur *et al.*, 2020). All data collected were statistically analyzed. The statistical analysis included effect sizes and standard errors of each study, tests of heterogeneity, tests of mean effect sizes, differences in effect sizes of moderator variables, as well as publication bias analysis. All statistical analyses were conducted using the help of computer application programs, namely Microsoft Excel and JASP version 0.16.2.0. Microsoft Excel was used to analyze effect sizes and standard errors as well as effect sizes of moderator variables. The JASP application was used to test heterogeneity and mean effect sizes.

## RESULT

**Table 2. List of articles used in the study**

| No | Citation | Code | Journal/Proceedings |
|---|---|---|---|
| 1. | (Gistituati *et al.*, 2020) | RME 1 | Jurnal Basicedu, Vol. 4, No. 1, 2020. P: 203-209 |
| 2. | (Gustina, Syahrilfuddin and Noviana, 2019) | RME 2 | Tunjuk Ajar: Jurnal Penelitian Ilmu Pendidikan, Vol. 2, No. 1, 2019. P: 30-39 |
| 3. | (Sulastri, Asrin and Umar, 2023) | RME 3 | Jurnal Mandala Education, Vol. 9, No. 2, 2023. P: 1241-1251 |
| 4. | (Kusumawati, 2013) | RME 4 | Delta Jurnal Ilmiah Pendidikan Matematika FKIP Universitas Pekalongan. Hal: 104-113 |
| 5. | (Mursidik and Madiun, 2023) | RME 5 | Published by Universitas PGRI Madiun, Vol. 2, No. 2, 2023. P: 541-545 |
| 6. | (Mardiah *et al.*, 2020) | RME 6 | Jurnal Basicedu, Vol. 4, No. 2, 2020. P: 513-521 |
| 7. | (Setyawan, 2020) | RME 7 | Jurnal Bidang Pendidikan Dasar, Vol. 9, No. 2, 2020. P: 155-163 |
| 8. | (Hasan, Pomalato and Uno, 2020) | RME 8 | Jambura Journal of Mathematics Education, Vol. 1, No. 1, 2020. P: 13-20 |
| 9. | (Alfurqon, Karjiyati and Tarmizi, 2022) | RME 9 | Juridikdas Jurnal Riset Pendidikan Dasar, Vol. 5, No. 1, 2022. P: 106-118 |
| 10. | (Rosyada, Sari and Cahyaningtyas, 2019) | RME 10 | Jurnal Ilmiah Pendidikan Dasar, Vol. 6, NO. 2, 2019. P: 16-23 |
| 11. | (Putri and Ariani, 2020) | RME 11 | Jurnal Pendidikan Tambusai, Vol. 4, No. 3, 2020. P: 2453-2461 |
| 12. | (Syamsi, 2021) | RME 12 | Prosiding Seminar Nasional, 2021. P: 174-181 |
| 13. | (Istiana, Satianingsih and Yustitia, 2020) | RME 13 | Jurnal Ilmiah Pendidikan Matematika, Vol. 8, No. 3, 2020. P: 423-430 |
| 14 | (Haqina, Turmuzi and Saputra, 2022) | RME 14 | Jurnal Ilmiah Profesi Pendidikan, Vol.7, No. 1, 2022. P: 95-101 |
| 15. | (Ningsih and Qur'a, 2023) | RME 15 | Journal of Education ada Instruction, Vol. 6, No. 2, 2023. P: 679-692 |

Based on the search results, there were 15 publications relevant to this study. The data collected includes the Fisher's test value (F), correlation test (r), and the number of research subjects (N). Learning methods or media, as well as education level, can be used in further discussion or data analysis with certain conditions.

**Table 3. Research Data and Conversion Results of F and t Values to r**

| No | Author Name, Year | Level | Subject. | N | f-count | r-count |
|---|---|---|---|---|---|---|
| 1 | Gistituati *et al.*, 2020 | SD | Matematika | 48 | 4.258 | 0.281 |
| 2 | Gustina, Syahrilfuddin and Noviana, 2019 | SD | Matematika | 21 | 1.275 | 0.912 |
| 3 | Sulastri, Asrin and Umar, 2023 | SD | Matematika | 59 | 8.11 | 0.767 |
| 4 | Kusumawati, 2013 | SD | Matematika | 37 | 8.786 | 0.567 |
| 5 | Mursidik and Madiun, 2023 | SD | Matematika | 89 | 13.3 | 0.887 |
| 6 | Mardiah *et al.*, 2020 | SD | Matematika | 78 | 12.358 | 0.909 |
| 7 | Setyawan, 2020 | SD | Matematika | 60 | 1.707 | 0.186 |
| 8 | Hasan, Pomalato and Uno, 2020 | SD | Matematika | 90 | 2.83 | 0.400 |
| 9 | Alfurqon, Karjiyati and Tarmizi, 2022 | SD | Matematika | 120 | 2.189 | 0.307 |
| 10 | Rosyada, Sari and Cahyaningtyas, 2019 | SD | Matematika | 80 | 2.693 | 0.369 |
| 11 | Putri and Ariani, 2020 | SD | Matematika | 100 | 10.071 | 0.853 |
| 12 | Syamsi, 2021 | SD | Matematika | 45 | 5.771 | 0.731 |
| 13 | Istiana, Satianingsih and Yustitia, 2020 | SD | Matematika | 68 | 6.167 | 0.665 |
| 14 | Haqina, Turmuzi and Saputra, 2022 | SD | Matematika | 72 | 6.8 | 0.769 |
| 15 | Ningsih and Qur'a, 2023 | SD | Matematika | 85 | 3.45 | 0.601 |

The following table shows the results of converting F and t values to r values, and Table 2 shows the conversion of r values to ES and SE.

**Table 4. Research Data and Conversion Results to ES and SE**

| No | Author Name, Year | ES | SE |
|---|---|---|---|
| 1 | Gistituati *et al.*, 2020 | 0.138 | 0.141 |
| 2 | Gustina, Syahrilfuddin and Noviana, 2019 | 0.706 | 0.149 |
| 3 | Sulastri, Asrin and Umar, 2023 | 0.882 | 0.116 |
| 4 | Kusumawati, 2013 | 0.567 | 0.164 |
| 5 | Mursidik and Madiun, 2023 | 0.887 | 0.093 |
| 6 | Mardiah *et al.*, 2020 | 0.909 | 0.085 |
| 7 | Setyawan, 2020 | 0.186 | 0.123 |
| 8 | Hasan, Pomalato and Uno, 2020 | 0.400 | 0.118 |
| 9 | Alfurqon, Karjiyati and Tarmizi, 2022 | 0.307 | 0.089 |
| 10 | Rosyada, Sari and Cahyaningtyas, 2019 | 0.369 | 0.109 |
| 11 | Putri and Ariani, 2020 | 0.853 | 0.075 |
| 12 | Syamsi, 2021 | 0.731 | 0.087 |
| 13 | Istiana, Satianingsih and Yustitia, 2020 | 0.665 | 0.098 |
| 14 | Haqina, Turmuzi and Saputra, 2022 | 0.769 | 0.091 |
| 15 | Ningsih and Qur'a, 2023 | 0.601 | 0.112 |

After collecting the data, the authors conducted some further analysis, including hypothesis testing and publication bias analysis. Hypothesis testing was conducted to ascertain whether the results obtained from the study were significantly different from the null value or other comparison values. Publication bias analysis was conducted to ensure that the reported results were not influenced by the tendency to publish only statistically significant results. In this meta-analysis, the authors used JASP software to perform the statistical analysis. One of the main features examined in the inference is the z value and p-value presented in the Coefficient table. The z-value is used to measure how far the data obtained differs from the null value, while the p-value is used to determine the statistical significance of the results. If the p-value is less than a

predetermined significance level (e.g. 0.05), then the result is considered statistically significant. Using JASP, authors can easily calculate and interpret the z value and p-value for each study included in the meta-analysis. This helps to ensure that the conclusions drawn based on the available data are accurate and not influenced by publication bias or other factors that may affect the results.

**Table 5. Output JASP Coefficients**

Coefficients

| | Estimate | Standard Error | z | p |
|---|---|---|---|---|
| intercept | 0.648 | 0.027 | 24.457 | < .001 |

*Note.* Wald test.

The results shown on the coefficients above, show a z value of 24.457 and a p-value of 0.001 which means it is smaller than the significance value of 5% (0.05). This means that the H0 hypothesis is rejected, in this case the true effect size is not equal to 0, in other words, learning with the Realistic Mathematics Education (RME) method has a significant effect on improving student learning outcomes in mathematics. The distribution of effect size for each study is presented in Figure below,

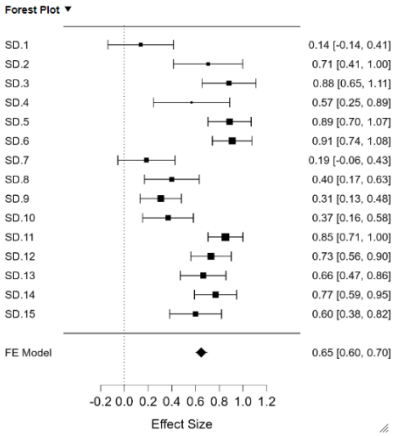


**Figure 2. Forest Plot**

Based on the publication plotting results in Fig. The summary effect value or RE Model is 0.65, in other words, the effect of learning with the RME Model on improving student learning outcomes in mathematics is 65%, while 35% is influenced by other factors.

File Drawer Analysis

| | Fail-safe N | Target Significance | Observed Significance |
|---|---|---|---|
| Rosenthal | 2921.000 | 0.050 | < .001 |

**Figure 3. Drawer Analysis**

Shows how many studies that have an average effect size equal to 0 must be added to the research sample so that the research results are free from publication bias. Based on the above, it can be seen that the Fail-safe N value is 2921,000 publication results that must be added. This value is not mandatory if based on the results of Rank Correlation and Regression Method there is no indication of publication bias. In addition, to test publication bias, it can be done with the provision that if N> 5K + 10 (K=Number of studies), it can be concluded that there is no publication bias. From table 6. obtained 2921,000> 5 x 15 + 10 ≈ 2921,000> 85. So the sample used in this study indicated no publication bias.

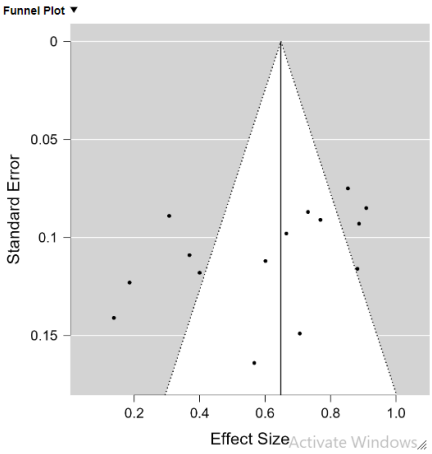


**Figure 4. Publication bias test using funnel plot**

Based on the above, it can be seen that there is no missing research marked by open circles, all circles are closed and the data distribution does not form a certain pattern. These results indicate that the sample used in

this study indicated the absence of publication bias.

## DISCUSSION

The effect of the Realistic Mathematics Education (RME) learning model has been proven to improve students' mathematics learning outcomes by 65%, while the remaining 35% is influenced by other factors. Overall, RME has a positive impact on students' mathematical learning outcomes. The following are explanations of 15 journal reviews that further examine this approach, Alfurqon, Karjiyati and Tarmizi (2022) showed that the development of RME-based teaching materials can improve students' mathematical connection skills, providing a better understanding of how mathematical concepts are related to each other in real situations. Gistituati *et al.*, (2020) found that the RME approach improved motivation and learning outcomes in elementary school mathematics, proving that students became more enthusiastic and successful in understanding mathematics materials. Gustina, Syahrilfuddin and Noviana (2019) highlighted that PMRI (Indonesian Realistic Mathematics Education) improved the mathematics learning outcomes of grade III students, where students showed significant improvement in concept understanding and application in problem solving. Haqina, Turmuzi and Saputra (2022) reported that RME improved mathematics learning outcomes of grade V students, facilitating students to understand and apply mathematics more effectively. Hasan, Pomalato and Uno (2020) showed that RME has a positive effect on math learning outcomes, especially when combined with high learning motivation. Istiana, Satianingsih and Yustitia (2020) demonstrated that RME improves mathematical literacy, giving students the ability to analyze and use mathematics in everyday contexts. Kusumawati (2013) revealed that communication and problem solving are important components in RME learning, where both contribute significantly to improving student learning outcomes. Mardiah *et al.*, (2020) found that the RME approach improved concept understanding and mathematical disposition, helping students not only understand mathematics but also appreciate its beauty and usefulness. Ningsih and Qur'a (2023) examined the effects of RME on the mathematics learning outcomes of grade V students in Jakarta, with the results showing significant improvements in their mathematics performance. Putri and Ariani (2020) discussed the implementation of RME in data presentation in elementary school, showing that students were better at presenting and analyzing data after the application of RME. Rosyada, Sari and Cahyaningtyas (2019) found that RME improved learning outcomes of mathematical problems, where students learned to approach mathematical problems with more creative and effective strategies. Setyawan (2020) described the use of concrete media in RME to improve math learning outcomes, showing that visual aids and practice helped students understand concepts better. Sulastri, Asrin and Umar (2023) examined the effect of RME on mathematics interest and learning outcomes, showing that students' interest in mathematics increased as their understanding improved. Syamsi (2021) examined the use of RME in Sulawesi, finding that this approach strengthened mathematical understanding and application among students. Markamah (2023), although not directly related to RME, examined an alternative learning approach that also showed improved learning outcomes.

## CONCLUSION

Based on the research results that have been described above, it can be concluded that there is an effect of the Realistic Mathematics Education (RME) method on student mathematics learning outcomes. We recommend that teachers can also apply the Realistic Mathematics Education (RME) learning model during the learning process.

***Declaration by Authors***
**Acknowledgement:** None
**Source of Funding:** None
**Conflict of Interest:** No conflicts of interest declared.

## REFERENCES

1. Alawiyah, T., Kartini and Siregar, S.N. (2021) 'Pengembangan Bahan Ajar Materi Lingkaran Berbasis Pendekatan Realistic Mathematics Education Untuk Siswa SMP/MTs', *Jurnal Pendidikan Matematika Universitas Lampung*, 9(4), pp. 373–385. Available at: https://doi.org/10.23960/mtk/v9i4.pp373-385.
2. Alfurqon, P., Karjiyati, V. and Tarmizi, P. (2022) 'Pengembangan Bahan Ajar Matematika Berbasis Realistic Mathematics Education Untuk Melatih Keterampilan Berpikir Kreatif Kelas IV SD Negeri Kota Bengkulu', *JURIDIKDAS: Jurnal Riset Pendidikan Dasar*, 5(2), pp. 163–175. Available at: https://doi.org/10.33369/juridikdas.v5i2.15710.
3. Borenstein, M. *et al.* (2009) 'How a Meta Analysis Works', *Introduction to Meta-Analysis*, pp. 1–6. Available at: https://doi.org/10.1002/9781119558378.ch1.
4. Gistituati, N. *et al.* (2020) 'Pengaruh Pendekatan Realistic Mathemathics Education Terhadap Motivasi dan Hasil Belajar Materi Matematika SD', *Jurnal Basicedu*, 4(1), pp. 203–209.
5. Gustina, H.T., Syahrilfuddin, S. and Noviana, E. (2019) 'Pengaruh Pendekatan Pendidikan Matematika Realistik Indonesia (PMRI) Terhadap Hasil Belajar Matematika Siswa Kelas III SD Negeri 144 Pekanbaru', *Tunjuk Ajar: Jurnal Penelitian Ilmu Pendidikan*, 2(1), pp. 30–40. Available at: https://doi.org/10.31258/jta.v2i1.30-39.
6. Haqina, F., Turmuzi, M. and Saputra, H.H. (2022) 'Pengaruh Model P embelajaran Realistic Mathematics Education (RME) terhadap Hasil Belajar Matematika Siswa Kelas V SDN 6 Cakranegara Tahun 2020/2021', *Jurnal Ilmiah Profesi Pendidikan*, 7(1), pp. 95–101. Available at: https://doi.org/10.29303/jipp.v7i1.453.
7. Hasan, F., Pomalato, S.W.D. and Uno, H.B. (2020) 'Pengaruh Pendekatan Realistic Mathematic Education (RME) Terhadap Hasil Belajar Matematika Ditinjau Dari Motivasi Belajar', *Jambura Journal of Mathematics Education*, 1(1), pp. 13–20. Available at: https://doi.org/10.34312/jmathedu.v1i1.4547.
8. Istiana, M.E., Satianingsih, R. and Yustitia, V. (2020) 'Pengaruh Realistic Mathematics Education Terhadap Kemampuan Literasi Matematika Siswa', *UNION: Jurnal Ilmiah Pendidikan Matematika*, 8(3), pp. 423–430. Available at: https://doi.org/10.30738/union.v8i3.8446.
9. Kusumawati, N. (2013) 'Pengaruh Kemampuan Komunikasi dan Pemecahan Masalah Matematika terhadap Hasil Belajar Siswa dengan Pembelajaran Realistic Mathematic Education (RME)', *Delta Jurnal Ilmiah Pendidikan Matematika FKIP Universitas Pekalongan*, 1(1), pp. 104–113. Available at: http://download.portalgaruda.org/article.php?article=104739&val=5106&title=Pengaruh Kemampuan Komunikasi dan Pemecahan Masalah Matematika terhadap Hasil Belajar Siswa dengan Pembelajaran Realistic Mathematic Education (RME).
10. Latifah, S.S. and Luritawaty, I.P. (2020) 'Think Pair Share Sebagai Model Pembelajaran Kooperatif Untuk Peningkatan Kemampuan Pemecahan Masalah Matematis', *Mosharafa: Jurnal Pendidikan Matematika*, 9(1), pp. 35–46. Available at: https://doi.org/10.31980/mosharafa.v9i1.641.
11. Mardiah, M. *et al.* (2020) 'Pengaruh Pendekatan Realistic Mathematic Education terhadap Pemahaman Konsep dan Disposisi Matematis Siswa Sekolah Dasar', *Jurnal Basicedu*, 4(2), pp. 513–521. Available at: https://doi.org/10.31004/basicedu.v4i2.340.
12. Markamah, U. (2023) 'Peningkatan Prestasi Belajar Dengan Model Pembelajaran Picture And Picture Pada Sekolah Menengah Pertama', *Jurnal Didaktika Pendidikan Dasar*, 7(1), pp. 197–218. Available at: https://doi.org/10.26811/didaktika.v7i1.1029.
13. Mursidik, M. and Madiun, U.P. (2023) 'Published by Universitas PGRI Madiun. This work is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.', 2(2), pp. 541–545.

14. Ningsih, T. and Qur'a, U. (2023) 'Pengaruh Pendekatan Realistic Mathematic Education (RME) Terhadap Hasil Belajar Matematika Siswa Kelas V SDN Cijanjantung 01 Jakarta Timur', *Journal of Education and Instruction*, 6(2), pp. 425–433. Available at: https://doi.org/10.31539/joeai.v6i2.7711.
15. OECD (2023) *PISA 2022 Insights And Interpretations (Volume 1), OECD*. OECD. Available at: https://www.oecd.org/pisa/.
16. Putri, T.Y. and Ariani, Y. (2020) 'Implementasi Pendekatan Realistic Mathematic Education (RME) terhadap Hasil Belajar Penyajian Data di Sekolah Dasar', *Jurnal Pendidikan Tambusai*, 4(3), pp. 2453–2452. Available at: https://doi.org/10.31004/jptam.v4i3.729.
17. Rosyada, T.A., Sari, Y. and Cahyaningtyas, A.P. (2019) 'Pengaruh Model Pembelajaran Realistic Mathematics Education (Rme) Terhadap Kemampuan Pemecahan Masalah Matematika Siswa Kelas V', *Jurnal Ilmiah Pendidikan Dasar*, 6(2), p. 116. Available at: https://doi.org/10.30659/pendas.6.2.116-23.
18. Setyawan, D. (2020) 'Meningkatan Hasil Belajar Siswa Menggunakan Realistic Mathematics Education (RME) Berbantuan Media Konkrit', *Jurnal Bidang Pendidikan Dasar*, 4(2), pp. 155–163. Available at: https://doi.org/10.21067/jbpd.v4i2.4473.
19. Sintawati, M., Berliana, L. and Supriyanto, S. (2020) 'Real Mathematics Education (RME) Untuk Meningkatkan Hasil Belajar Dan Kemampuan Pemecahan Masalah Matematika Siswa Sekolah Dasar', *Jurnal Penelitian Tindakan Kelas dan Pengembangan Pembelajaran*, 3(1), pp. 26–33. Available at: https://doi.org/10.31604/ptk.v3i1.26-33.
20. Sulastri, E., Asrin, A. and Umar, U. (2023) 'Pengaruh Pendekatan Realistic Mathematic Education (RME) Terhadap Minat Dan Hasil Belajar Matematika Siswa Kelas IV SDN Gugus 3 Sekarbela', *Jurnal Ilmiah Mandala Education*, 9(2), pp. 1241–1251. Available at: https://doi.org/10.58258/jime.v9i2.5065.
21. Syamsi, N. (2021) 'Pengaruh Model Pembelajaran Realistic Mathematics Education Terhadap Hasil Belajar Matematika Siswa Kelas V SDN 3 Tapa Bone Bolango', *Prosiding Seminar Nasional P*, (XI), pp. 174–181.
22. Tamur, M. *et al.* (2020) 'Assessing The Effectiveness Of The Contextual Teaching And Learning Model On Students' Mathematical Understanding Ability: A Meta-Analysis Study', *Journal of Physics: Conference Series*, 1657(1), pp. 1–8. Available at: https://doi.org/10.1088/1742-6596/1657/1/012067.
23. Udin, M.R., Sugiman and Munahefi, D.N. (2024) 'Systematic Literature Review : Kemampuan Pemecahan Masalah Siswa Ditinjau Dari Disposisi Matematis Siswa Dengan Model Problem Based Learning', *PRISMA : Prosiding Seminar Nasional Matematika*, 7, pp. 603–609. Available at: https://proceeding.unnes.ac.id/prisma.

How to cite this article: Yunita Reza Amanda, Yuni Katminingsih, Suryo Widodo. Meta-Analysis: the effect of realistic mathematics education (RME) on improving mathematics learning outcomes. *International Journal of Research and Review*. 2025; 12(1): 148-155. DOI: *https://doi.org/10.52403/ijrr.20250118*

******