EduMa: Mathematics Education Learning And Teaching
December 2025, Vol 14 No 2 Page 472– 482
https://journal1.uinssc.ac.id/index.php/eduma/article/view/24750
p-ISSN: 2086-3918, e-ISSN: 2503-5309
Published by Tadris Matematika UIN SIber Syekh Nurjati cirebon

EduMa
MATHEMATICS EDUCATION LEARNING AND TEACHING

The Influence of STEM Learning Approach on Mathematical Literacy Skills

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article info

How to cite this article:

Abdulah, A., Isnarto, Mariani, S., & Rosyida, I. (2025). The influence of STEM learning approach on mathematical literacy skills. *Eduma : Mathematics Education Learning And Teaching*, 14 (2), 463 - 473. doi: http://dx.doi.org/10.24235/eduma.v144i2.24750

Article history:

Received: 11 05, 2025

Accepted: 11 25, 2025

Published: 12, 2025

abstract

Mathematical literacy is an essential competency that students need to develop in the twenty-first century. However, the 2022 Programme for International Student Assessment (PISA) results indicate that Indonesian students continue to demonstrate relatively low levels of mathematical literacy. Therefore, effective instructional innovations are required to improve this competency, one of which is the Science, Technology, Engineering, and Mathematics (STEM) learning approach. This study aimed to examine the effectiveness of the STEM learning approach in improving students' mathematical literacy through a meta-analysis. Three relevant empirical studies were analyzed. The findings revealed that two studies produced high effect sizes, while one study produced a moderate effect size. The combined effect size was 1.220507, indicating a high overall effect of the STEM learning approach on students' mathematical literacy. Furthermore, the t-test results showed a statistically significant difference between students' pretest and posttest scores. The mean pretest score was 30.15, whereas the mean posttest score increased to 62.59. These findings demonstrate that the STEM learning approach has a significant positive effect on improving students' mathematical literacy.

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Keywords:
STEM-based mathematics learning, Mathematical Literacy, PISA-oriented literacy, Indonesian students

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INTRODUCTION

Mathematical literacy is widely recognized as a fundamental competency required for success in the twenty-first century, particularly because it supports problem-solving, critical thinking, creativity, communication, and informed decision-making (Daniel, 2025). According to OECD (2018), mathematically literate individuals are able to understand the role of mathematics in everyday life and make constructive and reflective decisions in various contexts. Mathematical literacy involves the ability to formulate, use, and interpret mathematical concepts, procedures, facts, and tools to explain and predict phenomena (Arfiyanti et al., 2018). It also encompasses the knowledge and competencies needed to respond to mathematical demands in personal and social life and to participate actively as informed and reflective citizens (Ubaidah et al., 2022).

Despite its importance, the level of mathematical literacy among Indonesian students remains a major concern. Evidence from the Programme for International Student Assessment (PISA) consistently indicates that Indonesian students perform below the international average in mathematics. Since 2000, Indonesian students have demonstrated achievement levels that remain below the OECD average (Ahmad et al., 2018). In PISA 2018, Indonesia obtained a mathematics score of 379 compared with the OECD average of 489. The situation became more concerning in PISA 2022, where Indonesia achieved a score of 366, substantially lower than the international average of 472. These results indicate a persistent gap between the expected and actual levels of mathematical literacy among Indonesian students, highlighting the need for effective instructional innovations.

One educational approach that has gained considerable attention in addressing contemporary learning challenges is the integration of Science, Technology, Engineering, and Mathematics (STEM) (Hasanah et al., 2020). STEM emphasizes interdisciplinary learning by connecting mathematical ideas with scientific investigation, technological applications, and engineering design. Such integration encourages students to apply mathematical knowledge in authentic situations, thereby creating learning experiences that are closely aligned with the goals of mathematical literacy. Previous studies have shown that STEM learning supports the development of problem-solving abilities, innovation, independent learning, logical reasoning, and technological literacy (Afriana et al., 2016). Furthermore, STEM integration has been reported to improve students' academic achievement and literacy in mathematics, science, and technology-related domains (Tati et al., 2017).

Empirical evidence also supports the contribution of STEM to mathematical literacy development. Mujib et al. (2019) found that students who learned through STEM-based instruction demonstrated higher mathematical literacy than those who experienced conventional learning approaches. Similarly, Hanafi and Riyanto (2025) reported that instructional materials integrating contextual and STEM-oriented learning experiences contributed positively to students' conceptual understanding and mathematical literacy. These findings suggest that STEM has considerable potential to address the ongoing challenge of low mathematical literacy.

Although numerous studies have investigated the relationship between STEM and mathematical literacy, the reported findings are dispersed across different educational contexts, participant characteristics, and instructional designs. Consequently, a comprehensive synthesis is needed to determine the overall magnitude of STEM's impact on mathematical literacy. Meta-analysis provides a systematic approach for integrating empirical findings from multiple studies and generating a more robust conclusion regarding the effectiveness of an educational intervention.

Therefore, this study aims to conduct a meta-analysis of previous research examining the influence of the STEM approach on students' mathematical literacy skills. By synthesizing empirical evidence from relevant studies, this research seeks to provide a clearer understanding of the effectiveness of STEM-based learning in improving mathematical literacy and to contribute evidence-based recommendations for mathematics education practice.

METHODS

The study to be conducted aims to analyze students' mathematical literacy through the STEM approach. The inclusion criteria for this research include articles published between 2020 and 2025, sourced from journals indexed in Sinta and Google Scholar, written in either Indonesian or English. The articles must explicitly discuss mathematical literacy and STEM. The exclusion criteria include articles published before 2020, as well as those that do not explicitly address mathematical literacy. Articles that do not employ the STEM approach are also excluded from the analysis. In this review, three articles relevant to the research topic were identified. These articles were then analyzed to identify key aspects related to improving mathematical literacy through the STEM approach.

This research is a meta-analysis study. Meta-analysis is a type of research conducted by reviewing, summarizing data, and statistically analyzing several existing research findings (Saputri & Wardani, 2021). The data analysis in this meta-analysis study follows sixs tages: (1) Identifying the problem or topic to be investigated. The issue in this study concerns the effect of the STEM approach on students' mathematical literacy;(2) Searching for and collecting data in the form of articles related to the research topic or problem; (3) Gathering as much information as possible from research reports. Data related to the average mathematical literacy score, the indicators of mathematical literacy used, and the standard deviation were obtained from six articles;(4) Calculating significance using a *t-test*;(5) Calculating the effect size for each research report based on the obtained data;(6) Analyzing previously published research reports based on the research methods and data analysis used, in order to draw conclusions (Rossytasari & Setyaningtyas, 2021).

Effect Size Formula

$$ES = \frac{\bar{x}_E - \bar{x}_C}{SD_G}$$

Where:

- ES= Effect Size
- $\bar{x}_E$= posttest mean
- $\bar{x}_C$= pretest mean
- SD_G= pooled standard deviation

The formula for the pooled standard deviation is as follows:

$$SD_G = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Where:

- SD_G= pooled standard deviation
- n_1= sample size of pretest
- n_2= sample size of posttest
- s_1^2= pretest variance
- s_2^2= posttest variance

According to Cohen (1988), the results of the *effect size* can be interpreted into categories as shown in table 1 below:

Table 1

Effect Size Category

Effect Size	Interpretation
$0 \leq ES \leq 0{,}2$	Small
$0{,}2 \leq ES \leq 0{,}8$	Medium
$ES > 0{,}8$	Large

This study aims to determine the effect of the STEM approach on students' mathematical literacy skills; therefore, it is necessary to test the hypothesis using a t-test. The formula for the t-test used in this study is as follows:

$$t_{count} = \frac{\bar{x}_2 - \bar{x}_1}{\sqrt{\left(\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where:

- $\bar{x}_1$= pretest mean
- $\bar{x}_2$= posttest mean
- n_1= sample size of pretest
- n_2= sample size of posttest
- s_1^2= pretest variance
- s_2^2= posttest variance

The hypotheses in this study are as follows:

$$H_0 : \mu_1 = \mu_2$$

There is no significant difference between the mean pretest and posttest scores of mathematical literacy before and after implementing the STEM approach.

$$H_1 : \mu_1 \neq \mu_2$$

There is a significant difference between the mean pretest and posttest scores of mathematical literacy before and after implementing the STEM approach.

RESULT AND DISCUSSION

Result

Based on the predetermined inclusion criteria, three studies were identified as eligible for inclusion in this meta-analysis. These studies were published between 2021 and 2025 and investigated the implementation of STEM-based learning in different educational contexts. Two studies were conducted at the secondary school level, while one study involved prospective mathematics teachers at the university level. In addition, the selected studies represented different forms of STEM implementation, including STEM-based instruction, Ethno-STEM integrated with Project-Based Learning, and integrated STEM learning in a Pre-Calculus course. The characteristics of the selected studies are presented in Table 2.

Table 2
Information on Articles that Meet the Criteria

No	Article Title	Author	Journal Description
1	Pengaruh Pendekatan Science, Technology, Engineering, And Mathematics (STEM) Terhadap Kemampuan Literasi Matematis Siswa Kelas VIII SMP Negeri 4 Satu Atap Purba	Obi Oki Sembiring, Ropinus Sidabutar, Yoel Octobe Purba	JURNAL PEMBELAJARAN DAN MATEMATIKA SIGMA (JPMS) Vol. 8, No. 2 (2022)
2	Keefektifan Model Project Based Learning Berintegrasi Etno STEM terhadap Kemampuan Literasi Matematis Siswa	Titik Pitriani Muslimin, Bahar.	Jurnal Pembelajaran IPA Terpadu: PELITA 5(2), Juli - Desember 2025.
3	Pembelajaran Terintegrasi STEM untuk Meningkatkan Literasi Matematis Mahasiswa Calon Guru Matematika Pada Perkuliahan Pra-Kalkulus 1	Sulistiawati, Dadang Juandi, Ricky Yuliardi	Teorema: Teori dan Riset Matematika, 6(1), 82–97, Maret 2021

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Table 3
Quantitative Analysis Results of Pretest and Posttest

Artikel	*Pretest*			*Posttest*		
	N	Rata-rata	SD	N	Rata-rata	SD
1.	36	22,83	10,1686	36	75,53	12,28
2.	25	54,32	9,08167	25	87,56	6,90459
3.	6	13,3	7,2	6	24,7	7,4

As shown in Table 3, all reviewed studies demonstrated higher posttest scores than pretest scores after the implementation of STEM-based learning. In the first study, the mean score increased from 22.83 to 75.53, representing an improvement of 52.70 points. The second study showed an increase from 54.32 to 87.56, corresponding to a gain of 33.24 points. Meanwhile, the third study reported an increase from 13.30 to 24.70, resulting in a gain of 11.40 points. These findings indicate a consistent positive trend across all studies, suggesting that STEM-based learning was associated with improved mathematical literacy performance regardless of educational level or learning design.

To determine the magnitude of the effect of STEM-based learning on mathematical literacy, Effect Size values were calculated using the extracted data. The resulting Effect Size values were interpreted according to Cohen's (1988) classification and are presented in Table 4.

Table 4
Effect Size Analysis Results

No	Effect Size	Interpretation
1	1,982351	Large
2	1,250348	Large
3	0,42882	Medium
Mean	1,220507	Large

The Effect Size analysis revealed that two studies produced large effects, whereas one study produced a medium effect. The highest Effect Size was observed in Study 1 (ES = 1.982351), followed by Study 2 (ES = 1.250348), while Study 3 yielded a medium Effect Size (ES = 0.428820). The mean Effect Size across all studies was 1.220507, which falls within the large category according to Cohen's classification. These results indicate that the implementation of STEM-based learning was associated with substantial improvements in students' mathematical literacy skills.

The distribution of Effect Size values also demonstrates that positive effects were consistently observed across different educational settings. Although the magnitude of the effect varied among studies, none of the reviewed articles reported a negligible or negative effect. This pattern suggests that STEM-based learning has the potential to improve mathematical literacy under a variety of instructional conditions.

To further examine whether the observed improvement was statistically significant, a t-test was conducted using the aggregated pretest and posttest data. The results are presented in Table 5.

Table 5
t-Test Results

	Mean	dk	T count	T table	Kriteria	Conclusion
Pretest	30,15					There is a significant effect
Posttest	62,59667	67-2=65	2,720	1,669	t count > t table	

The t-test analysis showed that the calculated t-value (t = 2.720) exceeded the critical t-value (t = 1.669) at a degree of freedom of 65. Therefore, the null hypothesis (H_0) was rejected. These findings indicate a statistically significant difference between students' mathematical literacy scores before and after the implementation of STEM-based learning.

A comparison of the aggregated mean scores further supports this result. The overall average pretest score was 30.15, whereas the overall average posttest score increased to 62.60. This represents an average increase of 32.45 points following STEM implementation. When considered together with the large mean Effect Size (ES = 1.220507), these findings provide quantitative evidence that STEM-based learning was associated with a substantial and statistically significant improvement in students' mathematical literacy skills.

DISCUSSION

The findings of this meta-analysis demonstrate that the STEM (Science, Technology, Engineering, and Mathematics) approach has a positive and substantial influence on students' mathematical literacy skills. As shown in Table 4, the average Effect Size across the reviewed studies was 1.220507, which is categorized as large according to Cohen (1988). This result indicates that the improvement in mathematical literacy is not merely a statistical phenomenon but reflects a meaningful educational impact. Furthermore, the t-test results revealed a significant difference between pretest and posttest scores, with the average score increasing from 30.15 to 62.59. These findings provide empirical evidence that STEM-based learning contributes significantly to the development of students' ability to formulate, interpret, and apply mathematical ideas in solving contextual problems.

A closer examination of the individual studies reveals variations in the magnitude of the effect while maintaining a consistent positive trend. The study conducted by Sembiring et al. (2022) produced the highest Effect Size (ES = 1.982351), indicating a very strong influence of STEM learning on mathematical literacy. This substantial effect is reflected in the increase in students' average scores from 22.83 in the pretest to 75.53 in the posttest. Such a remarkable improvement suggests that STEM learning creates opportunities for students to actively engage with mathematical concepts through authentic and interdisciplinary problem-solving activities. When students are required to connect mathematical reasoning with scientific inquiry, technological applications, and engineering design processes, they are more likely to develop a deeper understanding of mathematical concepts and their practical relevance. This interpretation is consistent with the finding that technology-supported and pedagogically aligned learning environments can significantly enhance students' mathematical understanding and engagement (Haqq et al., 2025).

Similarly, the study conducted by Muslimin and Bahar (2025) reported a large Effect Size (ES = 1.250348), demonstrating that STEM remains highly effective when integrated with Project-Based Learning and ethnomathematical contexts. The average score increased from 54.32 before the intervention to 87.56 after the intervention, indicating a substantial improvement in students' mathematical literacy. This finding suggests that the effectiveness of STEM may be strengthened when learning activities are embedded within meaningful cultural and real-life contexts. Ethnomathematics allows students to connect mathematical ideas with their lived experiences, while project-based learning encourages investigation, collaboration, and problem solving. The combination of these elements creates a learning environment in which mathematical literacy develops through active knowledge construction rather than through routine procedural practice. Consequently, students are encouraged to interpret mathematical situations, justify solutions, and communicate reasoning in ways that closely resemble the competencies emphasized in mathematical literacy frameworks.

In contrast, the study conducted by Sulistiawati et al. (2021) produced a moderate Effect Size (ES = 0.42882). Although the magnitude of the effect was smaller than that observed in the other studies, the findings still indicate a meaningful improvement in mathematical literacy, with the average score increasing from 13.3 to 24.7. The lower Effect Size may be associated with differences in participant characteristics, educational level, sample size, learning context, or implementation procedures. Unlike the other studies, this research involved prospective mathematics teachers in a Pre-Calculus course at the university level. At this level, students generally possess more advanced mathematical knowledge, making substantial gains more difficult to achieve within a limited intervention period. Nevertheless, the positive Effect Size confirms that STEM learning remains beneficial even in higher education settings, suggesting that its effectiveness is not restricted to school-level mathematics instruction.

The variation in Effect Size across the three studies highlights an important implication. The effectiveness of STEM learning appears to depend not only on the integration of science, technology, engineering, and mathematics but also on how these components are implemented pedagogically. Learning environments that provide authentic problems, encourage inquiry, facilitate collaboration, and connect mathematics with meaningful contexts tend to generate stronger improvements in mathematical literacy. Therefore, the large average Effect Size identified in this meta-analysis should be interpreted as evidence that STEM is most effective when accompanied by instructional strategies that actively engage students in constructing and applying mathematical knowledge.

Another important finding is the consistency of positive outcomes across different educational levels. Two studies involved secondary school students, while one focused on prospective mathematics teachers at the university level. Despite differences in participant characteristics and instructional settings, all studies reported improvements in mathematical literacy after STEM implementation. This pattern suggests that STEM possesses a high degree of adaptability and can support literacy development across various educational contexts. The consistency of these findings strengthens the argument that STEM learning provides an effective pathway for addressing the persistent challenge of low mathematical literacy, particularly in educational systems where students continue to experience difficulties in applying mathematics to real-world situations.

Overall, the findings of this meta-analysis indicate that STEM learning is an effective instructional approach for improving mathematical literacy at both school and university levels. The significant increase in pretest and posttest scores, the large combined Effect Size, and the consistent positive results across studies collectively suggest that STEM facilitates meaningful engagement with mathematics through contextual, interdisciplinary, and problem-oriented learning experiences. These characteristics make STEM a promising approach for fostering the competencies required for mathematical literacy in contemporary education.

CONCLUSION AND IMPLICATION

Conclusion

This meta-analysis examined the effectiveness of the Science, Technology, Engineering, and Mathematics (STEM) approach in improving students' mathematical literacy skills by synthesizing findings from three eligible studies conducted at both secondary and higher education levels. The results revealed a consistently positive impact of STEM-based learning on mathematical literacy across all reviewed studies. Two studies demonstrated large effect sizes, while one study showed a moderate effect size, resulting in an overall mean Effect Size of 1.220507, which falls within the large category according to Cohen's classification.

The findings further indicated a statistically significant improvement in mathematical literacy following the implementation of STEM-based learning. This result was supported by the t-test analysis, which showed that the calculated t-value exceeded the critical t-value ($t = 2.720 > 1.669$), leading to the rejection of the null hypothesis. In addition, the average mathematical literacy score increased from 30.15 in the pretest to 62.59 in the posttest. These findings provide empirical evidence that STEM-based learning contributes substantially to the development of students' mathematical literacy.

Overall, the results suggest that STEM is an effective instructional approach for fostering mathematical literacy because it promotes the application of mathematical ideas in authentic and interdisciplinary contexts. The consistency of positive outcomes across different educational settings further indicates that STEM has the potential to support mathematical literacy development at multiple levels of education.

Implication

The findings of this meta-analysis have important implications for mathematics education practice and curriculum development. Given the substantial effect of STEM-based learning on mathematical literacy, educators are encouraged to design learning experiences that integrate mathematics with science, technology, and engineering through contextual and problem-oriented activities. Such learning environments can provide students with opportunities to apply mathematical reasoning in meaningful situations, thereby strengthening their ability to interpret, formulate, and solve real-world problems.

For curriculum developers and educational policymakers, the results support the wider integration of STEM-oriented learning frameworks into mathematics education. Considering the persistent challenge of low mathematical literacy performance, particularly in Indonesia, STEM-based approaches may serve as a promising strategy for enhancing students' readiness to meet the demands of twenty-first-century learning and problem solving.

From a research perspective, the present study provides empirical support for the effectiveness of STEM in promoting mathematical literacy. However, because the meta-analysis was based on a limited number of studies, future research should include a broader range of empirical evidence and investigate how different STEM implementation models, educational levels, and learning contexts influence the magnitude of literacy improvement. Such investigations would contribute to a more comprehensive understanding of the conditions under which STEM learning produces the greatest educational benefits.

Disclosure statement

No potential conflict of interest was reported by the authors.

ACKNOWLEDGMENTS

The authors would like to thank the Postgraduate Program of Universitas Negeri Semarang for the support provided during the completion of this study.

REFERENCES

Ahmad, D., Suherman, S. & Maulana, H. (2018). Teacher mathematical literacy: Case study of junior high school teachers in pasaman. ICOMSET: IOP Conf. Series: Material science and engineering 335, 4-5. doi:10.1088/1757-899X/335/1/011001.

Afriyanti, I., Wardono, W., & Kartono, K. (2018). Pengembangan Literasi Matematika Mengacu PISA Melalui Pembelajaran Abad Ke-21 Berbasis Teknologi. *PRISMA, Prosiding Seminar Nasional Matematika*, *1*, 608-617. Retrieved from https://journal.unnes.ac.id/sju/prisma/article/view/20202

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Lawrence Erlbaum Associates.

Fointuna, Daniel Williams. (2025). Kesamaan Gender Pada Literasi Matematis Siswa: Implikasi Bagi Kesetaraan Gender di Bidang STEM. Jurnal Matematika dan Pendidikan Matematika, 6(1), 33. doi: https://doi.org/10.35508/fractal.v6i1.21158

Hasanah, H., Wirawati, S.M., & Sari, F.A. (2020). Pengembangan Bahan Ajar Matematika berbasis STEM pada Materi Bangun Ruang. Indonesian Journal of Learning Education and Counseling, 3(1), 91-100. Doi: https://doi.org/10.31960/ijolec.v3i1.582

J. Afriana, A. Permanasari, and A. Fitriani. (2016). Penerapan project based learning terintegrasi STEM untuk meningkatkan literasi sains siswa ditinjau dari gender. Jurnal Inovasi Pendidikan IPA, 2(2), 202. doi: https://doi.org/10.21831/jipi.v2i2.8561

Mujib, Mardiyah, & Suherman. (2019). STEM: Pengaruhnya terhadap literasi matematis dan kecerdasan multiple inteligences. Indonesian Journal of Science and Mathematics Education, 3(1), 66-37. doi: https://doi.org/10.24042/ijsme.v3i1.5448.

OECD. (2018). PISA 2021 Mathematics Framework (Draft). OECD Publishing.

Rossytasari, I. O., & Setyaningtyas, E. W. (2021). Meta Analisis Model Problem Based Learning (PbL) terhadap Kemampuan Berpikir Kritis Siswa Sekolah Dasar. Edukatif: Jurnal Ilmu Pendidikan, 3(4), 2067–2080. doi: https://doi.org/10.31004/edukatif.v3i4.1135.

Saputri, Y., & Wardani, K. W. (2021). Meta Analisis: Efektivitas Model Pembelajaran Problem Solving dan Problem Based Learning Ditinjau Dari Kemampuan Pemecahan Masalah Matematika SD. 05, 935–948. https://doi.org/10.31004/cendekia.v5i2.577

T. Tati, H. Firman, and R. Riandi. (2017). The Effect of STEM Learning through the Project of Designing Boat Model toward Student STEM Literacy. In International Conference on Mathematics and Science Education (ICMScE), pp. 1–8. 10.1088/1742-6596/895/1/012157

Haqq, A. A., Handoko, H., & Al Farizi, R. (2025). Developing Pedagogically Aligned AR Media for Teaching Polyhedra in Junior Secondary Education. ITEJ: Information Technology Engineering Journals, 10(1), 174–192. doi: https://doi.org/10.24235/itej.v10i1.260

Hanafi, S., & Riyanto, O. R. (2025). Development of Teaching Devices Based on Ethnomathematics and RME to Enhance Mathematical Literacy: Bibliometric. Eduma: Mathematics Education Learning And Teaching, 14(1), 298–316. doi: http://dx.doi.org/10.24235/eduma.v14i1.20127.

Ubaidah, N., Rochmad, Isnarto, & Zaeni, A. (2022). Application of Infinity in Mathematical Literacy. Prosiding Galuh Mathematics National Conference (GAMMA NC) 2022. ISBN: 978-623-95169-7-0, 315–319.