



Journal of Educational Sciences

Journal homepage: <https://jes.ejournal.unri.ac.id/index.php/JES>



P-ISSN
2581-1657

E-ISSN
2581-2203

Literature Review 2020–2025: Deep Learning-Based Educational Game Media for Mathematics Learning in Elementary Schools

Sri Wulandari*, Tri Astuti, Arif Widiyatmoko, Bambang Subali

Elementary Education Study Program, Semarang State University, Semarang, 50229, Indonesia

ARTICLE INFO

Article history:

Received: 02 Dec 2025

Revised: 03 Feb 2026

Accepted: 27 Feb 2026

Published online: 05 March 2026

Keywords:

Critical Thinking Skills,
Deep Learning,
Educational Games,
Mathematics,
Systematic Literature Review (SLR)

* Corresponding author:

E-mail: wn322954@students.unnes.ac.id

Article Doi:

<https://doi.org/10.31258/jes.10.3.p.142-156>

This is an open access article under the [CC BY-SA](#) license.



ABSTRACT

Mathematics education in elementary schools plays an important role in developing students' critical thinking skills. However, the dominance of conventional methods often results in a superficial understanding of concepts, leading to poor learning outcomes. One innovative alternative is to integrate educational games with a deep learning approach to create a more effective and enjoyable learning environment. However, its implementation still faces obstacles, particularly the limited competence of teachers in managing learning. This study aims to conduct a systematic review of trends in the development of deep learning-based learning media focused on mathematics. The method used is a Systematic Literature Review (SLR) with the PRISMA framework of 37 articles published between 2020 and 2025, analyzed using VOSviewers. The results show an increasing trend in publications, mostly using experimental methods and R&D research. The educational games developed are generally digital-based and have been proven effective in improving students' critical thinking skills. The conclusion of this study confirms that the integration of educational games and deep learning is a relevant innovation with potential for application in mathematics learning in elementary schools.

1. Introduction

Mathematics education at the elementary school level plays an important role in building the foundation of logical, analytical, critical thinking, and problem-solving skills for students (Lastuti & Khatimah, 2025). It is at this stage of basic education that mathematical thinking patterns are first instilled, so the quality of the learning process greatly determines students' cognitive development at the next level of education (Huda & Susdarwono, 2023). However, mathematics learning practices in schools are still dominated by conventional patterns, where teachers are the sole source of information while students only play a passive role in receiving material

(Sutopo et al., 2022). This one-way learning model often does not provide opportunities for students to develop conceptual understanding, resulting in their low ability to apply mathematical concepts in real-life contexts (Eismawati et al., 2019)

This problem has escalated due to the current curriculum, which requires comprehensive mastery of mathematical concepts (Fauziyyah & Harisman, 2025). The current curriculum is oriented toward the development of higher competencies, including critical thinking, problem solving, and mathematical reasoning skills (Rohmatulloh et al., 2023). However, the teacher-centered learning approach has not been able to meet these demands (Azis et al., 2025). The mismatch between curriculum demands and classroom learning strategies exacerbates the barriers to learning mathematics. In a teacher-centered approach, opportunities for discussion, collaboration, and independent concept building are very limited (Badri, 2024). As a result, students often memorize formulas rather than understanding their meaning and application. This condition makes it difficult for students when faced with non-routine problems or challenges that require deep reasoning (Diro et al., 2024).

To bridge this gap, reforms in mathematics education are urgently needed, and one approach that is beginning to attract attention is the integration of educational games with deep learning (Adiputra et al., 2025). Educational games are digital or non-digital learning media designed with specific rules and measurable outcome indicators based on the player's efforts (Fachruraji et al., 2025). In the context of education, educational games aim to support the achievement of more optimal learning outcomes (Sintaro et al., 2020). Various studies show that the use of educational games can create a more enjoyable and interactive learning atmosphere and motivate students in the mathematics learning process (Sari & Arta, 2025). Through games, students are encouraged to relate new knowledge to previous experiences, construct more meaningful understanding, and at the same time develop critical thinking skills and creativity (Adnyana et al., 2025).

Although proven to be effective, the effectiveness of educational games is greatly influenced by the learning approach that underlies them. Educational games will be optimal when integrated with a learning framework that emphasizes deep understanding and provides space for students to actively explore concepts (Nugroho & Ma'arif, 2022). One of the most relevant approaches in the era of the Merdeka Curriculum is deep learning. Deep learning prioritizes a more essential understanding of concepts, active student involvement, and the ability to connect mathematical ideas to various contexts (Asyhad Sadiq, 2025). However, the application of this approach at the elementary school level still faces many challenges. Although educational games are increasingly developing, mathematics learning practices in elementary schools still tend to rely on conventional methods (Ginjar, 2023). Teachers also do not yet fully understand the concept of deep learning or how to integrate it into mathematics lessons (Simanjuntak & Murniarti, 2024)

The biggest obstacle in implementing deep learning lies in teachers' limited competencies, lack of relevant training, and the demanding curriculum. In addition,

many schools face limitations in supporting facilities, so that the implementation of innovative approaches is often hampered (Efendi et al., 2025). Teachers' difficulties in designing deep learning-based models result in learning processes that are less engaging and less effective in stimulating higher-order thinking skills (Novita, 2025). The replacement of teaching modules with Deep Learning Designs (RPM) has also not been implemented evenly in various schools. This makes it difficult for teachers to translate deep learning objectives into daily learning practices (Rahayu et al., 2025)

Based on these conditions, this study aims to conduct a systematic review of publication trends in the 2020–2025 period related to the development of mathematics learning models based on deep learning approaches and educational games. The focus of the study includes the types of learning media developed, deep learning integration patterns, and mathematics subjects at the primary school level that are the targets of the research. The uniqueness of this study lies in its attempt to present a comprehensive mapping and comparative analysis of the various learning media that have been developed. Through this mapping, this study is expected to provide strategic recommendations for the development of mathematics learning innovations that are in line with the demands of 21st-century learning and the Merdeka Curriculum policy, as well as providing practical contributions for educators and developers in designing interactive, meaningful learning that is oriented towards strengthening students' critical thinking skills.

2. Methodology

Research Design

This study utilised the Systematic Literature Review (SLR) method, which is a planned and standardised scientific approach to collecting, evaluating, and interpreting various relevant research results. The SLR framework is based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which aim to ensure that the review process is transparent, measurable, and replicable. This approach was chosen because it provides an objective mapping of the relationship between educational games, deep learning, and mathematics learning approaches in primary schools, resulting in an academically valid analysis.

Data Sources, Time Range and Literature Search Strategy

This study utilised secondary data from scientific articles published between 2020 and 2025. The data sources were obtained from Harzing's Publish or Perish software through the Google Scholar and Semantic Scholar databases using the keywords 'Educational Games,' 'Deep Learning,' 'Mathematics,' and 'Higher-Order Thinking.'

Inclusion and Exclusion Criteria

Inclusion criteria include articles discussing media development, game-based learning, and deep learning approaches in the context of education, particularly in mathematics. Articles published between 2020 and 2025 are also included. Exclusion criteria include duplicate articles, articles not focused on education, non-scientific publications such as opinions and editorials, and articles without abstracts and that are inaccessible.

Data Collection Techniques

The data collection steps used followed the stages of systematic review research, namely Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and network meta-analysis, which included four stages, namely Identification, Screening, Eligibility, and abbreviated as PRISMA. The data collection process was carried out in accordance with Table 1:

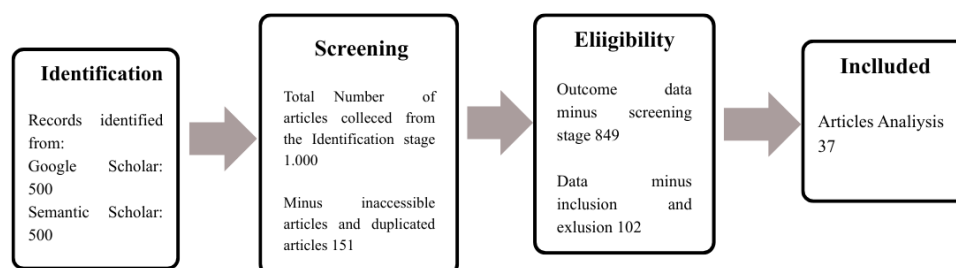


Table 1. Stages of the Prisma Model

Data Extraction Techniques

The data extracted from each article included the year of publication, type of publication, research model, media category, and type of instrument. Key results and findings, keywords (for semantic analysis), implications for mathematics learning. All data were entered into a spreadsheet to facilitate descriptive and semantic analysis.

Data Analysis

This research analysis was conducted in two main stages, namely bibliometric analysis and semantic analysis. Bibliometric analysis was used to identify the characteristics and trends of scientific publications based on year, type of publication, publication method, type of media, and instrument with the help of VOSviewer and Bibliometrik software. Furthermore, semantic analysis aimed to explore the structure and conceptual relationships in keywords and article abstracts through text pre-processing, word frequency analysis, and co-word analysis to identify the main theme clusters. The results of the analysis are interpreted conceptually and presented in the form of thematic maps, topic trend graphs per year, and matrices of relationships between themes to provide a comprehensive overview of the development and structure of knowledge in the field of study.

3. Results and Discussion

A study of scientific publications discussing trends in research on educational games based on deep learning in mathematics subjects in primary schools was analysed based on a number of key indicators, namely the number of publications, types of publications, research methods, and research instruments used. The analysis was conducted bibliometrically using VOSviewer software, which covers three main approaches, namely network visualisation to identify the interrelationships between research topics, overlay visualisation to illustrate research developments based on publication time, and density visualisation to show the level of intensity and dominance of research themes. In addition, the distribution of publications by year was analysed to reveal the dynamics and trends in research development over time, which is presented visually in Figure 1.

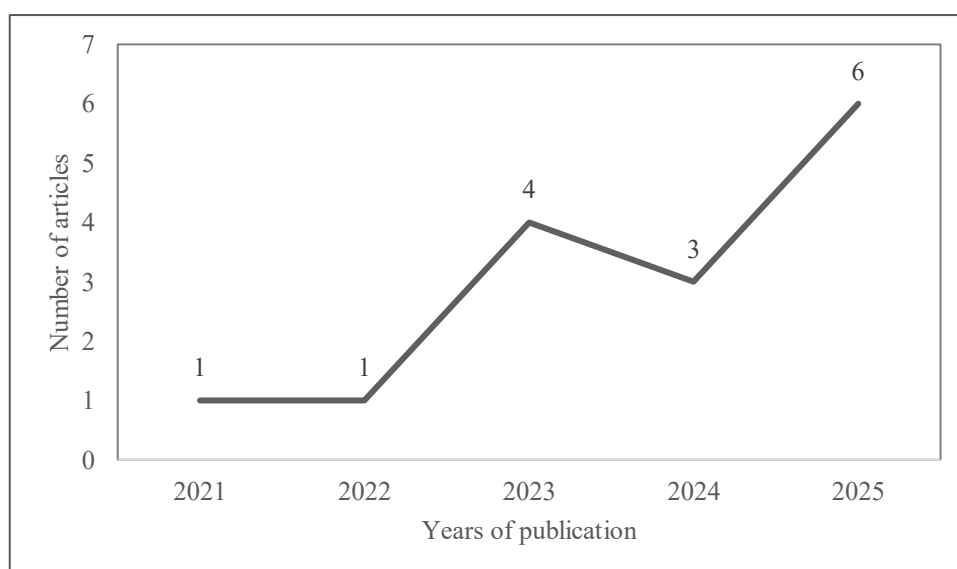


Figure 1. Year of publication

Based on Figure 1, the trend of publications on the use of educational games in mathematics shows fluctuating developments throughout the 2020–2025 period. In 2020 and 2021, the number of publications was still very limited, with only one article each. Publication activity began to increase in 2022 but declined again in 2023. However, from 2024 to 2025, there was a significant surge in the number of publications. Overall, the accumulation of publications throughout this period shows an increase in interest and intensity of research in this field, especially in the last two years. These findings confirm that the development and application of deep learning-based educational games need more attention, especially at the elementary school level. Furthermore, this study analyses the distribution of publication types to identify trends in the forms of publication used, the results of which are presented visually in Figure 2.

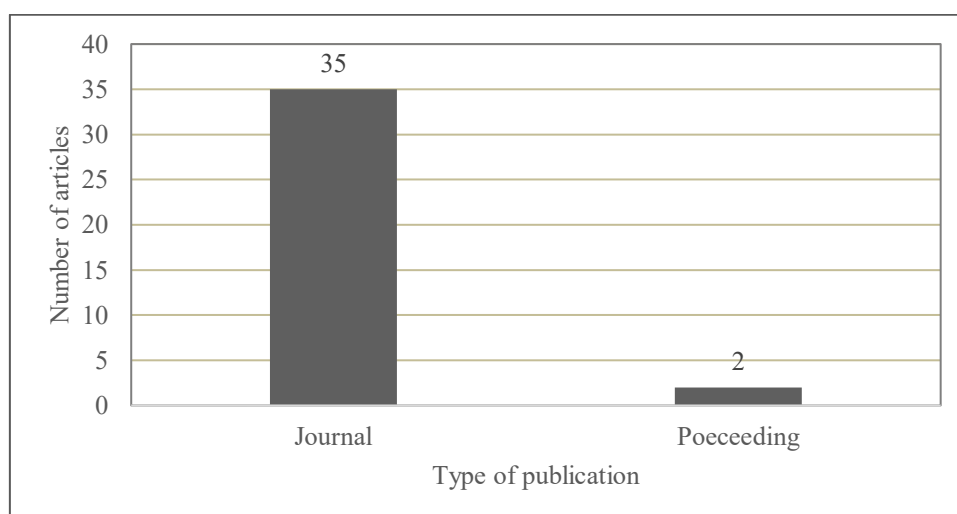


Figure 2. Type of publication

Figure 2. Analysis of publication types shows that articles published in journals have a much larger proportion than articles in proceedings. Of all publications found, 35 articles were published in scientific journals, while only 2 articles appeared in proceedings. This imbalance shows that journals are the most popular medium chosen by researchers to publish their research results. This preference can be attributed to the characteristics of journals, which generally offer a more comprehensive review process, a high level of credibility, and the potential for wider dissemination of information among academics. Next, the distribution of publications based on research methods was analysed to identify trends in the methodological approaches used, as presented in Figure 3.

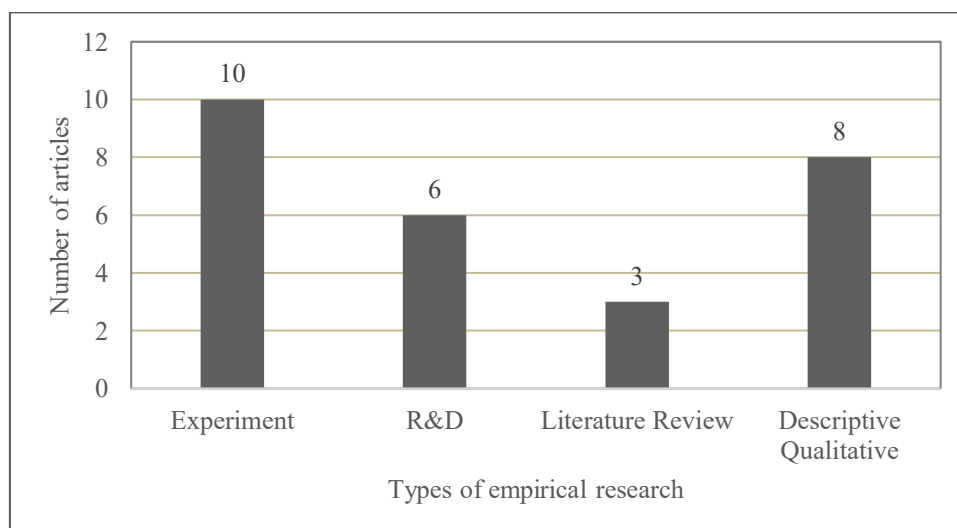


Figure 3. Types of empirical research

Based on Figure 3, data on the types of empirical research shows the variety of methods used by researchers. There were 10 studies that used experimental methods, 6 studies that applied a Research and Development (R&D) approach, 3 articles based on literature reviews, and 8 studies using descriptive qualitative

methods. This distribution indicates that experimental research is the most widely used type of research compared to other methods. The dominance of experimental research reflects the tendency of researchers to test the effectiveness of interventions directly through controlled and systematic measurements. Next, the analysis focused on the educational game model used in the study, as presented in Figure 4.

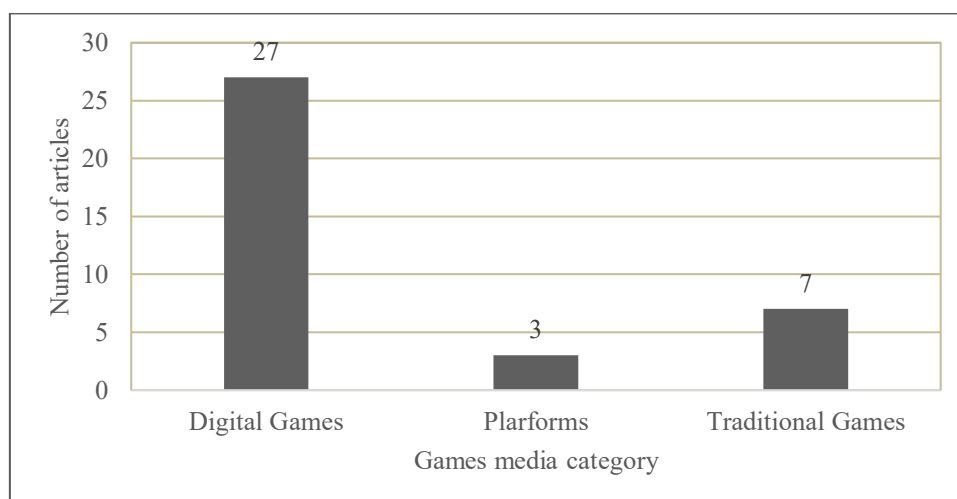


Figure 4. Games media category

Based on Figure 4, the analysis of game media categories reveals that digital games occupy the most dominant position, as reflected in the number of publications reaching 27 articles. The traditional games category ranks next with a total of 7 articles, while the platform category shows the lowest frequency, with only 3 articles. Based on the total of 37 game models identified, it can be concluded that research during that period significantly focused on the development and application of digital-based game media. Next, the analysis focused on the research instruments used in these studies, as presented in Figure 5.

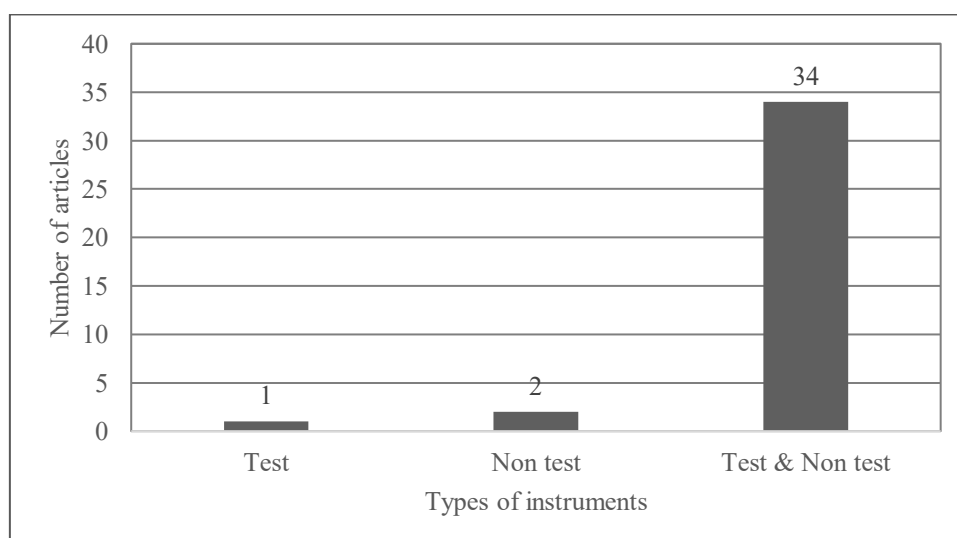


Figure 5. Type of instruments

Based on Figure 5, the data shows that the use of a combination of test and non-test instruments is the most widely applied approach in research, with a total of 34 articles. Meanwhile, there was only one study that used test instruments, and two studies that used non-test instruments. These findings indicate that the use of a combination of test and non-test instruments is considered more effective in obtaining comprehensive data and supporting the quality of analysis in each study. Next, the discussion focuses on network visualisation using VOSviewer to identify the interrelationships between research concepts, as presented in Figure 6.

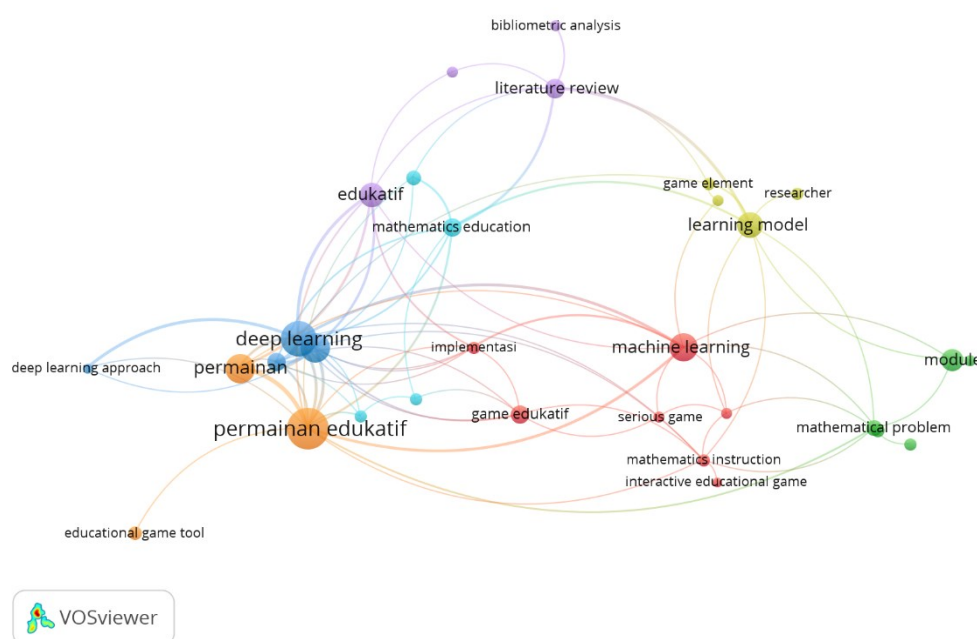


Figure 6. Network Visualization

Based on Figure 6, the results of network visualization analysis show that a number of topics have high citation rates and strong connections with other topics. Six main groups were identified, each marked with orange, blue, purple, red, green, and yellow colors. The topic of educational games appears to have the most dominant connections, as reflected in the large number of inter-keyword relationships associated with this topic. This condition indicates that educational games are a frequently appearing theme, popular in various research articles, and play an important role as a link between clusters in the analyzed research network. Furthermore, the analysis was supplemented with overlay visualisation using VOSviewer to illustrate the development of topics based on publication time, as shown in Figure 7.

Based on Figure 7, the visualization of the relationship between keywords shows that “deep learning” and “educational games” occupy a central position in the research network, with strong connections to other terms such as “machine learning,” “mathematics education,” and “learning media.” This pattern of interconnection indicates that much of the research focus is directed at the use of educational games integrated with deep learning approaches in the context of education. The color variations in the network illustrate the temporal dimension of

development, where topics related to deep learning and educational games emerge as more recent studies compared to other topics.

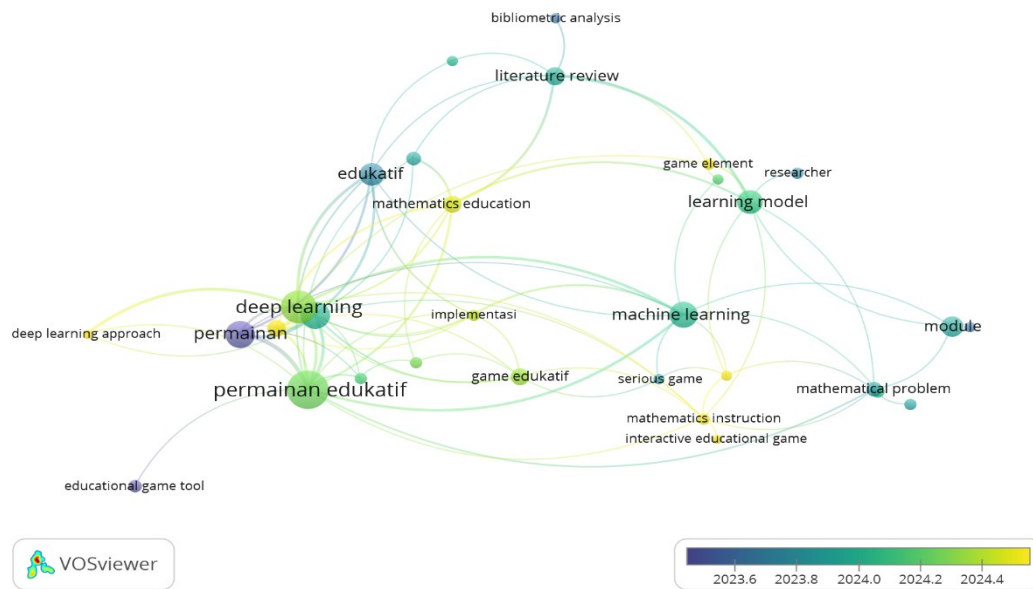


Figure 7. Overlay visualization

Overall, these findings confirm that the integration of deep learning in the development of educational game media is becoming an increasingly prominent research direction and has the potential to strengthen learning innovation in the field of education. Next, the analysis continued with density visualisation using VOSviewer to show the intensity and dominance of research topics, as presented in Figure 8.

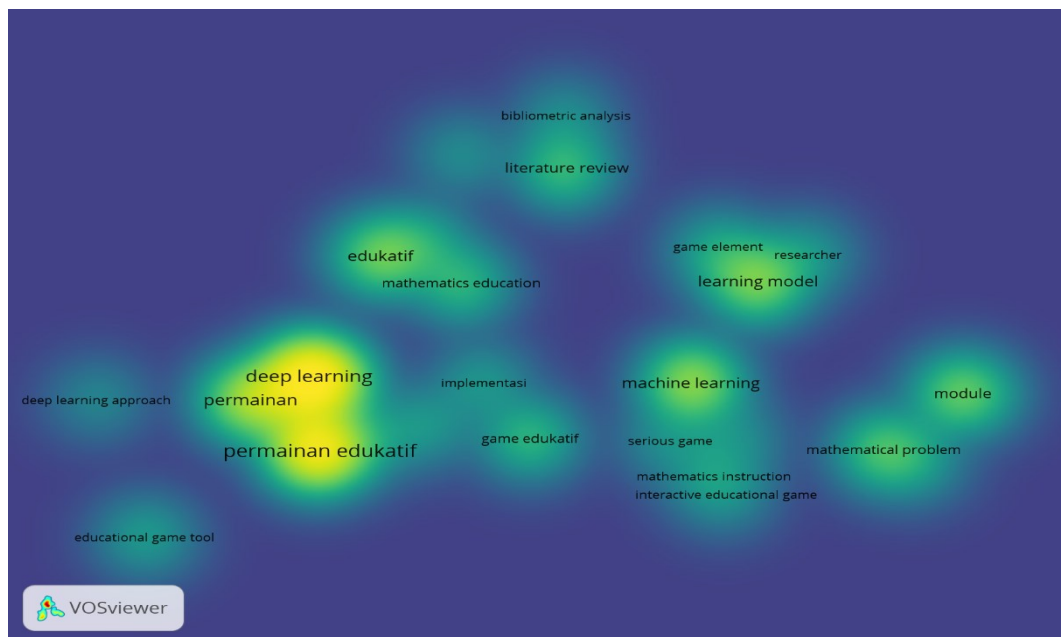


Figure 8. Density Visualization

Based on Figure 8, the visualization of research intensity depicts the frequency distribution of keywords through color gradation, where yellow indicates the highest level of relevance and frequency, while green to blue represents lower intensity. The keywords “deep learning” and “educational games” appear to dominate the visual map, indicating that these two concepts play a major role in the research landscape analyzed. Surrounding these two keywords are other terms such as “machine learning,” “mathematics education,” and “learning media,” which indicate strong and consistent thematic connections. Overall, this visual pattern indicates that the application of deep learning approaches in the development of educational games is a prominent research direction and a significant trend in the development of learning innovations in the field of education.

Discussion

This study was conducted with the aim of comprehensively examining research trends on deep learning-based educational games in mathematics. Research trend analysis was conducted to obtain a comprehensive picture of the development of research interest, methodological approaches used, and the collective knowledge constructed by researchers in this field (Martiani & Subali, 2024). Based on the publication data analyzed, it can be seen that the number of studies discussing this topic has increased gradually from 2020 to 2025. However, this increase was not linear but showed a fluctuating pattern influenced by the dynamics of researcher productivity and the availability of research resources. In an academic context, scientific publications are an important component that serves as a medium for the widespread dissemination of research results through journals and proceedings (Mulyani et al., 2024), so that the upward trend in publications indicates a high level of interest in this research theme.

When viewed from the type of research conducted, empirical research dominates most publications. Empirical approaches, both quantitative and qualitative, were chosen to assess the effectiveness of educational game models in mathematics learning, as well as to examine the influence of deep learning integration on students' thinking skills. This shows an emphasis on direct testing in the classroom and in controlled learning environments. The topic of educational games has proven to attract the attention of researchers because it is seen as capable of increasing student engagement in mathematics learning, which is often considered abstract and difficult (Sukmawati et al., 2025). In addition, most studies emphasize that teachers have a strategic role in creating a learning environment that supports students' epistemological growth (Pinandito et al., 2025). Teachers not only act as facilitators but also as designers of meaningful learning experiences by combining relevant technology and pedagogy (Widiyati et al., 2025).

Various research instruments were used in these studies to obtain accurate and comprehensive data, including tests and non-tests. Rubric-based instruments are among the most widely used because they are able to measure the quality of argumentation, critical thinking skills, and students' cognitive processes in greater depth. In the studies by (Wiyani, 2025), (Lakzmi et al., 2025), (Suseno et al., 2020), (Enstein et al., 2022), (Juliangkary et al., 2024), (Hartanti et al., 2026), (Amiro et

al., 2023) and, (Inda et al., 2026), the use of rubrics was used as a basis for evaluating the development of students' skills when using educational games. In line with the development of research aimed at strengthening critical thinking skills, the development of assessment rubrics based on constructivism theory has also been increasingly carried out. However, research findings show that the integration of deep learning concepts in the development of these instruments is still limited, so there is room to enrich evaluation tools that are able to capture higher-order thinking processes more comprehensively.

Deep learning in the context of mathematics education is seen as an approach that aims to develop students' critical thinking skills, creativity, and conceptual understanding (Dwijantie, 2025). This approach is operationalized through three main pillars, namely mindful learning, meaningful learning, and joyful learning (Taye, 2023). Mindful learning encourages students to be more focused, aware, and reflective of their learning process. Meaningful learning ensures that the material being studied is relevant to real life and provides practical benefits for students. Meanwhile, joyful learning plays a role in creating a pleasant learning atmosphere that encourages student motivation and active participation (Mu'ti Abdul, 2025). These three pillars are an important foundation in the development of educational game models, because pedagogically designed games can support a more in-depth, focused, and meaningful learning experience (Dari et al., 2025).

Educational media in the form of deep learning-based educational games are important to use because they can create an interactive, adaptive, and learner-centered learning process (Nadilah et al., 2025). Through exploratory activities that encourage cognitive engagement, this media helps students build conceptual understanding, improve critical thinking skills, and practice problem solving (Ifrianingsih et al., 2025). Their engaging nature also contributes to increased learning motivation. Therefore, educational games are a relevant tool for supporting the strengthening of numeracy and higher-order thinking skills in mathematics learning (Alkhusufiah & Utami, 2026).

Research findings indicate that research trends on deep learning-based educational games have an important contribution in providing an empirical basis for the direction of future research (Nurhikmah et al., 2024). The integration of deep learning in mathematics education has been proven to improve scientific concept understanding and higher-order thinking skills (Maromi & Fitri, 2024). In addition, the results of bibliometric analysis using VOSviewer show that topics related to educational games are strongly linked to a number of other research themes, thus demonstrating a significant interdisciplinary relationship in this study. Deep learning also appears to be increasingly becoming the focus of researchers, especially since the implementation of a curriculum that emphasizes strengthening competencies through an approach that encourages deep understanding. Considering all of these findings, research on deep learning-based educational games has great potential for further development in the future. This field offers broad research opportunities, both in game design development, evaluation of students' cognitive abilities, application of learning technologies, and integration of relevant pedagogical approaches. In the context of mathematics learning, the

integration of deep learning through educational games is expected to support the achievement of scientific numeracy while strengthening students' higher-order thinking skills in the digital age.

4. Conclusion

Deep learning-based educational games are highly significant in improving the effectiveness of the learning process, especially in mathematics. This medium not only serves as a means of delivering material, but also as a pedagogical tool that can facilitate more active, adaptive, and learner-centered learning interactions. Through structured exploration and activities, educational games encourage the development of conceptual understanding, critical thinking skills, and problem-solving skills. In addition, their attractive and enjoyable characteristics contribute to increased learning motivation, which is an important factor in long-term learning success. Thus, the use of deep learning-based educational games is a relevant and potential approach to support the achievement of numeracy competencies and higher-order thinking skills needed in the context of modern education.

References

- Adiputra, D. K., Yuningsih, Y., Mustofa, N., & ... (2025). Penerapan Pendekatan Deep Learning pada Kurikulum SDN 1 Jatimulya melalui Integrasi Coding dan Artificial Intelligence. *Jurnal PkM Serumpun Mengabdi*, 2(2). <https://pkm.edusm.id/index.php/sm/article/view/32>
- Adnyana, P. E. S., Juansa, A., Rianty, E., Saputro, D. R. S., & ... (2025). *Pendidikan Abad Ke-21: Tantangan, Strategi dan Inovasi Pendidikan Masa Depan*. PT. Star Digital Publishing.
- Alkhusufiah Adinda Nihlah, & Utami Ratnasari Dyah. (2026). Utilization of the Educaplay Website Application as a Learning Medium to Enhance Elementary School Students' Creative Thinking. *Journal of Educational Sciences*, 10(1), 1364–1378.
- Amiro, Mariatun, I. L., & Sholeh, Y. (2023). Development of Canva Application Learning Media Increase Learning Outcomes Class X Economic Studies at SMAN 3 Bangkalan. *Journal of Educational Sciences*, 7(4), 574–587.
- Asyhad Sadiq, M. & A. A. (2025). Assesment Pembelajaran Dalam Kurikulum Deep Learning. *Jurnal Penelitian Ilmu-Ilmu Sosial*, 2(11). <https://doi.org/10.5281/zenodo.15568889>
- Azis, N. A., Wijaya, E. S., Sugiyanto, S., & Pinandita, T. (2025). Math Challenger: Game Edukasi Pembelajaran Matematika Dasar bagi Siswa SD Kelas 5 dan 6 Berbasis Android. *Jurnal Informatika Teknologi Dan Sains (JINTEKS)*, 7(3), 1398–1408. <https://doi.org/https://doi.org/10.51401/jinteks.v7i3.6157>
- Badri, F. (2024). Pemanfaatan Artificial Intelligence dalam Pembelajaran Matematika. *Galois: Jurnal Penelitian Pendidikan Matematika*, 3(2), 52–59. <https://urj.uin-malang.ac.id/index.php/gjppm/article/view/12319>
- Dari, R. K., Hamidah, A., & Anggreini, E. (2025). Integrasi Pembelajaran Berbasis Etnosains Terhadap Keterampilan Proses Sains Siswa Menggunakan Model

-
- Pembelajaran Project Based Learning:(Integration of Ethnoscience-Based Learning on Students' Science Process Skills Using the Project Based Learning Model). *BIODIK*, 11(03), 485-493. <https://doi.org/10.22437/biodik.v11i03.45834>
- Diro, A., Saprin, M., Kodri, S., Larawati, L., Sari, W., Universitas Pahlawan Tuanku Tambusai, P., Tuanku Tambusai No, J., Bangkinang, K., & Kampar, K. (2024). Sigma: Jurnal Pendidikan Matematika Problematika Pembelajaran Matematika Kelas Tinggi Di Sekolah Dasar. 16(20), 73–83. <https://doi.org/10.26618/sigma.v16i1.14348>
- Dwijantie, J. S. (2025). Pendekatan Deep Learning Dalam Pembelajaran PAUD. *Edukasiana: Jurnal Inovasi Pendidikan*, 4(3), 1238–1246. <https://doi.org/10.56916/ejip.v4i3.1666>
- Efendi, R., Inayah, S., Mardhotillah, B., Sholeh, R. N., Kulimbang, E., & Panjaitan, A. T. (2025). *Belajar dan Pembelajaran Matematika*. U ME Publishing.
- Eismawati, E., Koeswanti, H. D., & Radia, E. H. (2019). Peningkatan hasil belajar matematika melalui model pembelajaran problem based learning (PBL) siswa kelas 4 SD. *Jurnal Mercumatika : Jurnal Penelitian Matematika Dan Pendidikan Matematika*, 3(2), 71–78. <https://doi.org/https://doi.org/10.26486/jm.v3i2.694>
- Enstein, J., Bulu, V. R., & Nahak, R. L. (2022). Pengembangan Media Pembelajaran Game Edukasi Bilangan Pangkat dan Akar menggunakan Genially. *Jurnal Jendela Pendidikan*, 2(01), 101–109. <https://doi.org/10.57008/jjp.v2i01.150>
- Fachrurroji, F., Auliana, S., Pratama, G. U., Halim, A., & Aryono, G. D. P. (2025). Perancangan Game Edukasi Matematika Dasar Berbasis Construct 3 Dalam Meningkatkan Pemahaman Siswa Terhadap Konsep Matematika Secara Efektif. *JATI (Jurnal Mahasiswa Teknik Informatika)*, 9(1). <https://doi.org/https://doi.org/10.36040/jati.v9i1.12589>
- Fauziyyah, F., & Harisman, Y. (2025). An Analysis of Prospective Mathematics Teachers' Knowledge about Zeno's Paradox of Motion. *Jurnal Pendidikan Matematika (JPM)*, 10(1), 74–85. <https://doi.org/htt/doi.org/10.33474/jpm.v11i1.23128>
- Ginanjari, A. Y. (2023). Pentingnya Penguasaan Konsep Matematika dalam Pemecahan Masalah Matematika di SD. *Jurnal Pendidikan Tambusai*, 7(3), 29930–29934. <https://doi.org/https://doi.org/10.52434/jp.v13i1.822>
- Hartanti R, Markhamah, & Ambarwati. (2026). The Use of the Wordwall Application as a Game-Based Learning Media to Overcome Multiplication Learning Difficulties in IV Students of Muhammadiyah Elementary School. *Journal of Educational Sciences*, 10(1), 1431–1440.
- Huda, S. T., & Susdarwono, E. T. (2023). Hubungan antara teori perkembangan kognitif Piaget dan teori belajar Bruner. *Jurnal Muassis Pendidikan Dasar*, 2(1), 2827–8437. <https://doi.org/https://doi.org/10.55732/jmpd.v2i1.58>
- Ifrianingsih, Syarifudin, & Fitrianiingsih Nur. (2025). Development of Interactive Learning Media Based on Genially in Informatics Subjects to Improve Digital Literacy of SMPN 4 Madapangga Students. *Journal of Educational Sciences*, 9(6), 5414–5425.
-

-
- Inda, L., Aisyah, S., & Adriantoni. (2026). Kahoot-Based Team Quiz Strategy to Improve Elementary School Students' Mathematics Learning Activity and Outcomes. *Journal of Educational Sciences*, 10(1), 100–111.
- Juliangkary, E., Yuntawati, Y., Nissa, I. C., Pujilestari, P., Masjudin, M., Nitiasih, P. K., Ristiani, P. N., & Sudartha, I. G. W. (2024). Strengthening Conceptual Understanding Through Critical Pedagogical Approaches in Mathematics Education in. *Proceedings of the International Conference on Mathematics and Science Education (ICoMSE 2023)*. https://doi.org/https://doi.org/110.2991/978-2-38476-275-0_5
- Lakzmi, P. P., Prasetya, R. P., & Wahyuni, F. S. (2025). Rancang Bangun Game Edukasi Berbasis Android 2D "Nawa Sanga" dengan Penerapan Multimedia Development Life Cycle (MDLC). *Jurnal Indonesia: Manajemen Informatika Dan Komunikasi*, 6(1). <https://doi.org/10.35870/jimik.v6i1.1304>
- Lastuti, S., & Khatimah, H. (2025). Pengembangan Game Kalba Berbasis Digital untuk Meningkatkan Kemampuan Berpikir Kritis Siswa pada Pembelajaran Matematika Kelas IV SDN 1 Kaleo. 09(2), 589–602. <https://doi.org/https://doi.org/10.31004/cendekia.v9i2.3975>
- Maromi, C., & Fitri, R. (2024). Pembelajaran Matematika yang Menyenangkan bagi Anak Usia Dini melalui Game Edukasi Digital. *Jurnal Program Studi PGRA*, 10(2), 85–95. <https://doi.org/https://doi.org/10.29062/seling.v10i2.2468>
- Martiani, N. P., & Subali, B. (2024). Unnes Physics Education Journal Kajian Literatur Trend Penelitian E-LKPD Berbasis STEM pada Bidang Fisika Tahun. *Unnes Physics Education Journal*, 13(2), 107–116. <https://doi.org/https://doi.org/10.15294/upej.v13i2.9299>
- Mu'ti Abdul. (2025). *PEMBELAJARAN MENDALAM Menuju Pendidikan Bermutu Untuk Semua*. Pusat Kurikulum dan Pembelajaran.
- Mulyani, A., Hartono, H., & Subali, B. (2024). Literature Review: A Snapshot of Research on the Argumentation of Bibliometric Analysis in the Period 2015-2023. *International Journal of Cognitive Research in Science, Engineering and Education*, 12(2), 451–465.
- Nadilah, P., Hakim, L., & Utomo, B. (2025). Efektivitas Media Educaplay Sebagai Game Edukasi Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa Kelas V dalam Pembelajaran Tata Surya. *Edukasiana: Jurnal Inovasi Pendidikan*, 4(4), 1528–1538.
- Novita, B. & U. M. (2025). Transformasi Pembelajaran Matematika SD Melalui Deep Learning: Strategi untuk Meningkatkan Motivasi dan Prestasi. *Bilangan : Jurnal Ilmiah Matematika, Kebumihan Dan Angkasa*, 3(3), 48–61. <https://doi.org/10.62383/bilangan.v3i3.521>
- Nugroho, A. W., & Ma'arif, S. (2022). Pengembangan Media Game Edukasi "Marbel Fauna" pada Siswa Sekolah Dasar. *Jurnal Basicedu*, 6(4), 6686–6694. <https://doi.org/https://doi.org/10.31004/basicedu.v6i4.3326>
- Nurhikmah, N., Rustiani, S., & Nurdin, N. (2024). Literature Review: Media Game Edukasi Interaktif dalam Pembelajaran Matematika. *Journal of Education Research*. <https://www.jer.or.id/index.php/jer/article/view/1573>
- Pinandito, A., Kharisma, A. P., & Akbar, M. A. (2025). Penerapan Teori Meaningful Learning Pada Pengembangan Media Pembelajaran Kit-Build
-

- Concept Map Berbasis Knowledge Reconstruction Dengan Sistem Evaluasi dan Feedback Otomatis. *Jurnal Teknologi Informasi Dan Ilmu Komputer*, 12(2), 379–390. <https://doi.org/10.25126/jtiik.2025129435>
- Rahayu, C., Setiani, W. R., Yulindra, D., & Azzahra, L. (2025). Pendidikan Matematika Realistik Indonesia dalam Pembelajaran Mendalam (Deep Learning): Tinjauan Literatur. *Jurnal Pendidikan Matematika Universitas Lampung*, 13(1), 9–25. <https://doi.org/10.23960/mtk/v13i1.pp9-25>
- Rohmatulloh, Novaliyosi, Nindiasari, H., & Fatah, A. (2023). Pembelajaran Matematika Pada Era Merdeka Belajar. *Jurnal Pendidikan Matematika*, 7(1), 286–295. <https://doi.org/10.31100/histogram.v7i1.2510>
- Sari, A. W., & Arta, D. J. (2025). Implementasi Deep Learning: Suatu Inovasi Pendidikan. *WASPADA (Jurnal Wawasan Pengembangan Pendidikan)*, 13(1). <https://doi.org/https://doi.org/10.61689/waspada.v13i1.727>
- Simanjuntak, R. E. C., & Murniarti, E. (2024). Peran Guru dalam Mengintegrasikan Kurikulum Merdeka Mata Pelajaran Matematika pada Siswa Sekolah Dasar Fase A. *JiIP-Jurnal Ilmiah Ilmu Pendidikan*, 7(9). <https://doi.org/https://doi.org/10.54371/jiip.v7i9.5381>
- Sintaro, S., Ramdani, R., & Samsugi, S. (2020). Rancang Bangun Game Edukasi Tempat Bersejarah Di Indonesia. *Jurnal Informatika Dan Rekayasa Perangkat Lunak*, 1(1).
- Sukmawati, Syafiullah, M., Lastuti, S., & Akbar, M. R. (2025). Pengembangan Media Kartu Interaktif Menggunakan Wordwall untuk Meningkatkan Kemampuan Berpikir Kritis Peserta Didik pada Mata Pelajaran IPAS Kelas IV SDN Naganuri Sape. 5(2), 805–815.
- Suseno, P. U., Ismail, Y., & Ismail, S. (2020). Pengembangan Media Pembelajaran Matematika Video Interaktif berbasis Multimedia. *JAMBURA (Journal of Mathematics Education)*, 1(2), 59–74. <https://doi.org/https://doi.org/10.31004/obsesi.v9i4.6937>
- Sutopo, A. H., Dewi, H. I., Antar, Y., Asmawati, L., Agustian, M., & ... (2022). *Pemikiran Pendidikan Prof. Dr. Conny R. Semiawan*. TopazArt, Jakarta.
- Taye, M. M. (2023). Understanding of Machine Learning with Deep Learning: Architectures, Workflow, Applications and Future Directions. In *Computers* (Vol. 12, Issue 5). MDPI. <https://doi.org/10.3390/computers12050091>
- Wiyani, J. (2025). Pengembangan Media Scratch-MIT Dalam Kurikulum Merdeka Untuk Pemahaman Vegetatif-Generatif Di SDN 3 Taruman (Scratch-MIT-Vege-Gen). *Jurnal Guru Sekolah Dasar*, 2(1), 38–49. <https://doi.org/https://doi.org/10.70277/jgsd.v2i1.4>

How to cite this article:

Wulandari, S., Astuti, T., Widiyatmoko, A., & Subali, B. (2026). Literature Review 2020–2025: Deep Learning-Based Educational Game Media for Mathematics Learning in Elementary Schools. *Journal of Educational Sciences*, 10(3), 142-156.