Kognitif
Jurnal Riset HOTS Pendidikan Matematika
Volume - 6 No - 2 2026 Page 511 – 521
ISSN 2776-9704 P-ISSN 2776-9984
https://doi.org/10.51574/kognitif.v6i2.3957

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How to cite: Aprilia, C., Netriwati, N., & Andriani, S. (2026). Development of Interactive Learning Media with a Wordwall Platform to Improve Students' Mathematical Divergent Thinking Skills. *Kognitif: Jurnal Riset HOTS Pendidikan Matematika*, *6*(2), 511–521. https://doi.org/10.51574/kognitif.v6i2.3957

To link to this artcle: https://doi.org/10.51574/kognitif.v6i2.3957

Kognitif: Jurnal Riset HOTS Pendidikan Matematika
https://doi.org/10.51574/kognitif.v6i2.3957 Volume 6, No 2, April - June 2026, pp. 511 – 521

Development of Interactive Learning Media with a Wordwall Platform to Improve Students' Mathematical Divergent Thinking Skills

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Article Info

Article history:

Received Oct 09, 2025
Accepted Mar 22, 2026
Published Online May 09, 2026

Keywords:

Arithmetic and Geometric Sequences
Interactive Learning Media
Mathematical Divergent Thinking
Web Wordwall

ABSTRACT

Mathematical divergent thinking ability is one of the important skills of the 21st century that plays a role in developing students' problem-solving abilities. However, the results of pre-research indicate that students still have difficulty in linking mathematical concepts to real situations and consider mathematics as a difficult subject. This condition indicates the need for innovative, interactive, and interesting learning media to stimulate students' divergent thinking abilities. This study aims to develop a web-based interactive learning media Wordwall that is feasible, interesting, and effective in improving students' mathematical divergent thinking abilities in arithmetic and geometric sequences. This study uses a Research and Development (R&D) approach with the ADDIE model which includes the stages of analysis, design, development, implementation, and evaluation. The research subjects were grade X students of SMA Ma'arif NU 5 Purbolinggo. Data were collected through interviews, questionnaires, and tests with a One Group Pretest-Posttest design. Data analysis was carried out descriptively quantitatively through feasibility, attractiveness, and effectiveness tests with N-Gain calculations. The results of the study showed that the developed media was declared feasible with an assessment of 90.17% from material experts, 97.2% from test experts, and 90.625% from media experts, with a validation of the media's feasibility reaching 96.42%. Student responses reached 92% with a very interesting category, and the N-Gain analysis of the posttest results showed an increase in the average score of students compared to the pretest with an N-Gain value of 0.53 in the small group test and 0.62 in the large group in the "Medium" category. This study recommends the Wordwall web as an innovative learning medium to foster creativity and improve divergent thinking skills.

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Introduction

Mathematical divergent thinking is a crucial 21st-century skill emphasized by various international educational institutions, such as the OECD (2023) through the Programme for International Student Assessment (PISA). This skill is necessary for students to think flexibly, find multiple solutions to a single problem, and apply mathematical concepts in real-life contexts (Rahmawati et al., 2021). According to Runco, divergent thinking involves thinking fluently to generate many unique and detailed ideas (Rawlings et al., 2025). Divergent thinking is a diverse method of thinking by applying various approaches to achieve results from various options to create or formulate new, more effective ways (Izzati et al., 2021). Divergent thinking is the ability to generate various alternative solutions to a problem, where students are able to put forward many ideas from various perspectives. This ability does not only focus on one particular method, but encourages students to find various strategies, solution steps, and logical reasons that support the validity of the resulting answer (Prayitno, 2016).

If mathematical divergent thinking skills are low, students will have difficulty understanding the material and facing various challenges in solving mathematical problems (Akuba et al., 2020). However, the results of the 2022 PISA survey showed that Indonesian students' mathematical abilities are still relatively low, ranking 71st out of 81 countries with an average score of 379, far below the OECD average of 472 (OECD, 2023). This condition indicates that mathematics learning in Indonesia has not fully developed students' creative and divergent thinking skills in solving problems that require high-level reasoning (Fitriati & Lisa, 2015; Hasanah & Abdussakir, 2024).

Similar problems are also seen in the national context. The results of national assessments and various local studies indicate that many students have difficulty understanding mathematical concepts in depth because learning is still teacher-centered, results-oriented, and lacks innovation in interactive learning media (Febriyanti & Pratiwi, 2019). Based on the results of pre-research at SMA Ma'arif NU 5 Purbolinggo, it was found that students still have difficulty connecting mathematical concepts to real situations and are less able to generate diverse solution ideas. This indicates low mathematical divergent thinking abilities among students. The following are the results of the pre-test data at SMA Ma'arif NU 5 Purbolinggo:

Table 1. Pre-Test Results of Students' Divergent Thinking Skills at SMA Ma'arif NU 5 Purbolinggo

Item	Amount
Number of Students	45
Average	50
Standard Deviation	24,49
Highest Student Score	80
Lowest Student Score	35

The following is the percentage of indicators of students' divergent thinking abilities:

Kognitif: Jurnal Riset HOTS Pendidikan Matematika
https://doi.org/10.51574/kognitif.v6i2.3957 Volume 6, No 2, April - June 2026, pp. 511 – 521

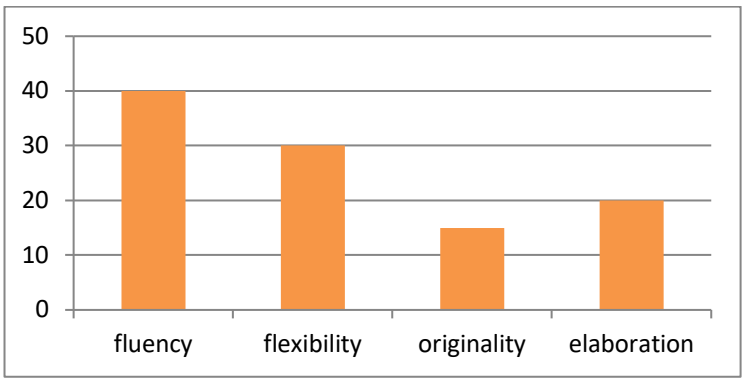


Figure 1. Percentage of Students' Mathematical Divergent Thinking Ability Indicators

Based on these data, it can be seen that students are still very lacking in originality (providing solutions to different mathematical problems) and elaboration (solving by providing detailed explanations of appropriate alternative answers). Only 15% of the 45 students demonstrated originality, and only 20% of the 45 students demonstrated elaboration. This indicates that students still have difficulty understanding the material presented.

Several previous studies have developed digital-based media to improve learning outcomes, such as Wafiqni & Putri (2021), which used the Wordwall application and demonstrated effective learning achievement with a percentage of 80.35%. Another study by Sudarsono & Mulyani (2021) showed that the development of interactive game learning media based on the Wordwall application in mathematics lessons has been declared a valid, effective, and practical learning medium. However, these studies focused more on improving motivation or cognitive learning outcomes and did not specifically measure mathematical divergent thinking skills, which require students' creative thinking. Thus, there is a research gap in the application of interactive Wordwall media to develop students' divergent thinking skills in mathematics.

Wordwalls are educational media available on websites and used for assessment in the learning process (Permana & Kasriman, 2022). Wordwalls provide quizzes, puzzles, and games to interact with the learning material (Listiana et al., 2023). Research conducted found that the use of wordwalls can substantially improve science education achievement and learning enthusiasm, as well as create an engaging and enjoyable learning environment for students.

The novelty of this research lies in the development of a web-based interactive learning media, Wordwall, which focuses on fostering students' mathematical divergent thinking skills in arithmetic and geometric sequences. This media is designed following the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model to produce valid, practical, and effective products for use in digital-based mathematics learning. Support from Piaget's constructivism theory serves as the foundation for this research, which emphasizes the importance of active and interactive learning experiences to build students' conceptual understanding (Nugraha & Herdiana, 2024).

The focus of this research is to develop interactive web-based learning media wordwall on the material of arithmetic and geometric sequences, determine the feasibility and attractiveness of the developed wordwall learning media, and analyze the effectiveness of interactive web-based learning media Wordwall in improving the mathematical divergent thinking ability of high school students. This research is expected to contribute to the innovation of digital technology-based mathematics learning media and become a strategic alternative to foster creative thinking and technology-based student learning outcomes. Based on the description, the hypothesis of this research is that interactive web-based learning media wordwall is effective in improving students' mathematical divergent thinking ability.

Method

Types of research

This research is a research and development (R&D) aimed at producing a product in the form of a web-based interactive learning media Wordwall to improve students' mathematical divergent thinking skills. This research approach is quantitative descriptive supported by qualitative data from observations, interviews, and student responses. The product trial design uses the One Group Pretest-Posttest Design model to determine the media's effectiveness in improving students' mathematical divergent thinking skills. The development model used is the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. This model was chosen because it provides systematic and flexible steps to produce valid, practical, and effective learning media.

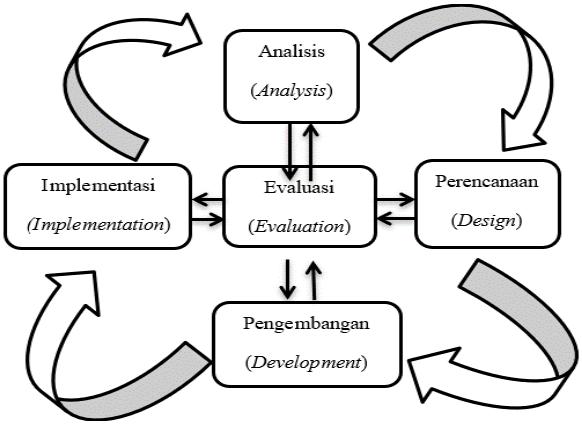


Figure 2. ADDIE Procedure Image

Population and Sample

Population is a general area consisting of objects or individuals who have characteristics and traits that have been determined by researchers to be analyzed, from which conclusions will be drawn (Mardiana et al., 2024). The population in this study was all grade X students of SMA Ma'arif NU 5 Purbolinggo in the 2024/2025 academic year. The location was selected purposively because the results of the pre-research showed low mathematical divergent thinking skills in the school. The sample is part of the population to be analyzed or part of the characteristics possessed by the population. The research sample consisted of two classes, each class consisting of 20-30 students..

Instrument

The research instrument was used to collect data related to the feasibility, attractiveness, and effectiveness of the Wordwall web-based interactive learning media on students' mathematical divergent thinking abilities. The Expert Validation Sheet was used to assess the feasibility of the learning media from three aspects, namely Material experts, assessing the suitability of content, conceptual accuracy, and material integration with indicators of divergent thinking abilities; Media experts assessing the interface appearance, interactivity, ease of navigation, and design quality, and test experts assessing the suitability of the test items with

Kognitif: Jurnal Riset HOTS Pendidikan Matematika
https://doi.org/10.51574/kognitif.v6i2.3957 Volume 6, No 2, April - June 2026, pp. 511 – 521

indicators of mathematical divergent thinking abilities with assessments carried out using a Likert scale of 1–4.

The Student Response Questionnaire was designed to determine the level of attractiveness of learning media based on students' perceptions after using Wordwall with aspects assessed including ease of use, visual appearance, clarity of instructions, relevance of content, and learning motivation using a Likert scale of 1–4. The Mathematical Divergent Thinking Ability Test was given in the form of a pretest and posttest using a One Group Pretest–Posttest design. The results were analyzed using the N-Gain formula to see the increase in students' abilities after using the media. The divergent thinking ability test was compiled based on four main indicators according to Munandar (2009), namely:

Table 2. Divergent Thinking Ability Indicators

Aspect	Indicator
Fluency	Finding a variety of answers/ideas in the same and relevant way.
Flexibility	Finding various different ways/methods of solving problems with the same answer and being logical in finding answers and relevant.
Originality	Provide solutions to mathematical problem solving that are different from other subjects and use new, unique and relevant perspectives.
Elaboration	Complete by providing detailed explanations of appropriate alternative answers.

Prior to use, all instruments were validated by experts to ensure content and construct suitability. The reliability of the questionnaires and tests was analyzed using Cronbach's Alpha, while the validity of the items was calculated using Pearson Product Moment correlation.

Data collection

The data collection techniques in this study were adapted to each stage of the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. In the Analysis stage, interviews and initial observations were conducted with educators and students in grade X of SMA Ma'arif Nu 5 Purbolinggo to identify mathematics learning problems, students' difficulties in linking concepts to real life, and the need for appropriate learning media. The design stage obtained data through curriculum studies and basic competency analysis to determine the material for arithmetic and geometric sequences, as well as the preparation of research instruments in the form of validation sheets, response questionnaires, and mathematical divergent thinking ability tests which became the basis for media design. In the development stage, data were collected through validation by material, media, and test experts to assess product feasibility, with each validator providing scores and suggestions for improvement using a Likert-based questionnaire from 1-4 which was used to revise the product. The implementation stage includes product trials on two scales: a small group trial involving 10 students to assess attractiveness and ease of use, and a large group trial involving 20 students to test effectiveness, with data collected through response questionnaires and pretest-posttest tests. The evaluation stage obtains data from questionnaire results, expert validation, and tests that are analyzed to determine the level of feasibility, attractiveness, and effectiveness, with feedback used to improve the final product.

Data Analysis

The research data was analyzed quantitatively and qualitatively. Quantitative analysis was used to calculate expert validation results, student responses, and improvements in divergent thinking skills using percentage formulas and N-Gain calculations. Quantitatively, expert validation data was analyzed using the feasibility percentage formula:

$$Percentage = \frac{Score\ obtained}{Maximum\ score} \times 100\%$$

The analysis results were then categorized based on feasibility criteria (Very Feasible, Feasible, Fairly Feasible, and Not Feasible). Furthermore, data from the student response questionnaire was analyzed in the same manner to determine the level of attractiveness and ease of use of the media.

To determine the effectiveness of media in improving students' mathematical divergent thinking abilities, a normalized gain test (Normalized Gain or N-Gain) was used, which is formulated as:

$$N - Gain = \frac{Posttest\ Score - Pretest\ Score}{Maximum\ score - Pretest\ Score}$$

The N-Gain value was then interpreted based on Hake's categories: high (≥ 0.7), medium ($0.3 \leq g < 0.7$), and low (< 0.3). This analysis aimed to measure the improvement in mathematical divergent thinking skills after learning using Wordwall media.

Qualitative data, including expert comments, student responses, and observation results, were analyzed descriptively through the stages of reduction, presentation, and conclusion drawing. This analysis process aimed to obtain a more in-depth picture of the quality of the developed learning media. The results of this analysis were used in an integrated manner to assess the feasibility, attractiveness, and effectiveness of the Wordwall-based learning media.

Research Findings

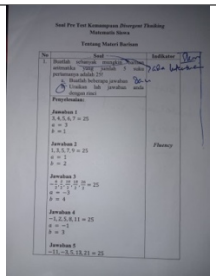
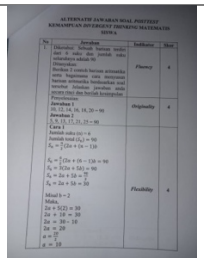
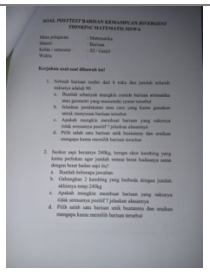
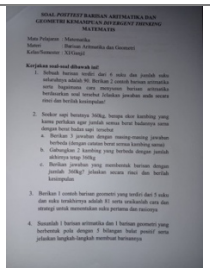
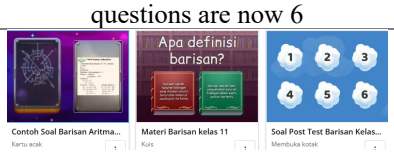
This research resulted in a product in the form of a Wordwall web-based interactive learning media designed to improve students' mathematical divergent thinking skills in arithmetic and geometric sequences. The development process followed the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. Each stage produced empirical data supporting the feasibility and effectiveness of the media.

The expert validation results show that the developed learning media meets the eligibility criteria very well. Validation by material experts obtained a percentage of 90.17% with a very feasible category, indicating that the content and suitability of the material with the curriculum are appropriate. Validation by media experts obtained a percentage of 90.625%, indicating that the display, navigation, and interactivity of the media are considered attractive and easy to use. Meanwhile, validation by divergent thinking test instrument experts obtained a result of 97.2%, indicating that the assessment instrument is relevant and able to measure students' mathematical divergent thinking abilities. In the questionnaire validation, the total media eligibility score was 96.42% with the criteria of "very interesting".

The following are the validation results for the development of interactive learning media before and after revision:

Kognitif: Jurnal Riset HOTS Pendidikan Matematika
https://doi.org/10.51574/kognitif.v6i2.3957 Volume 6, No 2, April - June 2026, pp. 511 – 521

Table 3. Comparison of learning media development before and after revision

Validation	Before Revision	After Revision
Material Expert	 Change the color to make it visible and provide information so that it is clear	 Have been helped and given explanations on each symbol
Question Test Expert	 There are provisions for creating questions and 1 question must cover 4 indicators according to mathematical divergent thinking abilities.	 It has been corrected and 1 question includes 4 indicators in it
	 Add questions not just 2 questions	 Questions have been added, total questions are now 6
Media Expert	 Only use 1 template, add other templates to make it interesting for students	 Already fixed and using 3 templates

The results of limited trials and field trials showed that the Wordwall media received a positive response from students. The average percentage of student questionnaire responses in the small group obtained a score of 92.25%, categorized as "Very Interesting." The large group obtained a score of 92%, categorized as "Very Interesting." Students assessed this media as being able to increase learning motivation, facilitate understanding of the material, and provide a more enjoyable learning experience. Game-based learning activities in Wordwall make students more active and challenged to think creatively. These results align with research which states that the use of web-based Wordwall can increase student engagement and learning outcomes.

The effectiveness of the learning media was measured using a One Group Pretest-Posttest design. The analysis results showed an increase in students' mathematical divergent thinking

skills after using the Wordwall media. The average N-Gain value above is in the moderate category, which means that this media is effective in improving students' divergent thinking skills. Students are able to generate more solution ideas, demonstrate strategic flexibility, and display originality in solving mathematical problems. This finding is supported by Piaget's constructivism theory which states that active and interactive learning experiences can strengthen students' concept formation and creative thinking. Thus, the research hypothesis is accepted, because the interactive web-based learning media Wordwall is proven to be effective in improving students' mathematical divergent thinking skills.

Discussion

The results of the study indicate that the interactive web-based learning media Wordwall is feasible, engaging, and effective in improving students' mathematical divergent thinking skills in arithmetic and geometric sequences. These findings confirm that the use of interactive digital media provides a more meaningful learning experience because it combines visual, audio, and game-based elements that can foster student motivation and active engagement.

Theoretically, the results of this study support Piaget's constructivist perspective, which emphasizes that knowledge is constructed through active interactions between students and their environment. Through interactive activities on the Wordwall, students are encouraged to think flexibly, generate multiple ideas, and find varied solutions to math problems. This aligns with Guilford's divergent thinking theory, which emphasizes four key indicators: fluency, flexibility, originality, and elaboration.

Empirically, the results of this study align with those of Wafiqni & Putri (2021), which showed that the use of Wordwalls improved learning achievement with an effectiveness of 80.35%. Similarly, Sudarsono & Mulyani (2021) found that interactive game media based on Wordwalls is valid, practical, and effective for use in mathematics learning. These findings confirm that Wordwalls play a positive role in improving learning outcomes and student motivation. However, this study provides a new contribution by focusing on measuring mathematical divergent thinking skills, not just cognitive learning outcomes.

The improvement in students' mathematical divergent thinking skills (average N-Gain = 0.53; Moderate category) indicates that this media can stimulate creative thinking processes. Through game-based activities, students are encouraged to explore various problem-solving strategies, broaden their perspectives on mathematical problems, and develop original ideas. These results align with Rahmawati et al. (2021) findings that learning that facilitates independent exploration can foster students' creativity and flexibility of thinking.

Furthermore, the average percentage of student questionnaire responses in the small group obtained a score of 92.25%, with the criteria "Very Interesting." The large group obtained a score of 92%, with the criteria "Very Interesting." This indicates that Wordwall is able to create a fun learning atmosphere and foster curiosity. These results support the findings of Febriyanti & Pratiwi (2019), who emphasized that digital-based interactive media can increase learning motivation due to its participatory and contextual nature.

In general, the results of this study align with various studies that emphasize the effectiveness of interactive media on mathematics learning outcomes and creative thinking skills. However, several other research findings show conflicting results. For example, found that the use of interactive digital media has not shown significant improvements in higher-order thinking skills due to a lack of teacher support and limited internet access. This suggests that the effectiveness of digital-based media, including Wordwall, is highly dependent on teacher preparedness and the learning resources available at the school.

Kognitif: Jurnal Riset HOTS Pendidikan Matematika
https://doi.org/10.51574/kognitif.v6i2.3957 Volume 6, No 2, April - June 2026, pp. 511 – 521

Furthermore, stated that interactive media tends to have a greater impact on motivation than creative thinking skills when not accompanied by reflective activities and in-depth discussions. This difference suggests that while Wordwall media is effective in stimulating students' ideas and creativity, optimal results still depend on the learning implementation strategies used by educators.

Conclusion

Based on the results of the research and data analysis, it can be concluded that the interactive web-based learning media Wordwall is declared feasible, interesting, and effective to improve the mathematical divergent thinking ability of high school students. In terms of feasibility, the validation results of material experts (90.17%), media experts (90.625%), and test experts (97.2%) and a questionnaire of 96.42% indicate a very feasible category, so that the media meets the standards of content, appearance, and suitability of learning instruments. In terms of attractiveness, student responses reached 92.25% for small groups and 92% for large groups with the category of "Very Interesting". Wordwall media is considered capable of increasing enthusiasm, curiosity, and motivation to learn students through interactive activities. In terms of effectiveness, the results of the N-Gain test of 0.53 in small groups and 0.62 in large groups indicate an increase in mathematical divergent thinking abilities in the Medium category, thus, wordwall media is proven to be able to support learning that is oriented towards the development of mathematical divergent thinking abilities.

Implementasi wordwall media in mathematics learning has been proven to help students think more creatively, engagingly, enjoyably, flexibly, and openly to various solutions in developing divergent thinking skills, as well as encouraging teachers to innovate by utilizing digital technology in learning. The main success factor lies in the active involvement of students during learning and easy access to web-based media. However, the media's effectiveness can be reduced if the internet connection is unstable or if educators do not guide reflection activities after playing learning games.

The limitations of this study are that the effectiveness testing was only conducted in one school and one grade level, so the generalizability of the results is still limited, the mathematical divergent thinking ability test instrument only focuses on four main indicators without considering differences in individual learning styles, and the use of media still depends on the availability of devices and adequate internet network. Therefore, it is recommended for future researchers to develop Wordwall-based media for other materials or different levels by involving more samples to make the results more general. It is also recommended to integrate Wordwall media with a project-based or collaborative learning approach so that students' divergent thinking activities are more honed in depth. Thus, this study not only produces a feasible and interesting learning product, but also provides a new direction for the development of digital media oriented towards improving divergent thinking skills in 21st-century mathematics learning.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

C.A. conceived the research idea presented and collected the data. The other two authors (N and S.A.) actively participated in the development of the theory, methodology, organization

and analysis of the data, discussion of the results, and final approval of the work. All authors declare that the final version of this paper has been read and approved. The total percentage of contributions to the conceptualization, preparation, and correction of this paper is as follows: C.A.: 60%, N.: 20%, and S.A.: 20%.

Data Availability Statement

The authors declare that the data supporting the findings of this study are available from the corresponding author (C.A.) upon reasonable request.

References

Akuba, S. F., Purnamasari, D., & Firdaus, R. (2020). Pengaruh Kemampuan Penalaran, Efikasi Diri dan Kemampuan Memecahkan Masalah Terhadap Penguasaan Konsep Matematika. *JNPM (Jurnal Nasional Pendidikan Matematika*, *4*(1), 44. https://doi.org/10.33603/jnpm.v4i1.2827

Febriyanti, & Pratiwi, H. K. (2019). Analisis Kesulitan Belajar Matematika Siswa Ditinjau Dari Gaya Kognitif. *Diskusi Panel Nasional Pendidikan Matematika*, *5*, 175–180. https://doi.org/10.31004/cendekia.v8i1.3063

Fitriati, & Lisa, S. (2015). Jurnal Pendidikan Matematika Jurnal Pendidikan Matematika. *Jurnal Pendidikan Matematika*, *2*(3), 41–60.

Hasanah, S. R., & Abdussakir, A. (2024). Kemampuan Berpikir Divergen Siswa dalam Menyelesaikan Soal Open-Ended Barisan dan Deret Ditinjau dari Adversity Quotient. *Jurnal Analisa*, *10*(1), 1–12. https://doi.org/10.15575/ja.v10i1.32597

Izzati, G. N., Waluya, S. B., & Mastur, Z. (2021). Kemampuan Berpikir Divergen Ditinjau Dari Math Anxiety Dan Gender Pada Pembelajaran Matematika. *Primatika : Jurnal Pendidikan Matematika*, *10*(2), 69–78. https://doi.org/10.30872/primatika.v10i2.583

Listiana, T. A. I., Suneki, S., Suliyanto, J., & Poncowati, L. (2023). Analisis Dalam Menerapkan Media Interaktif Wordwall Pada Pembelajaran Tematik Di Kelas Iii Sdn Wonotingal. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang*, *9*(2), 5224–5232. https://doi.org/10.36989/didaktik.v9i2.1307

Mardiana, Y., Anggoro, B. S., & Andriani, S. (2024). *Dampak Model Pembelajaran ECIR dan Adversity Quotient Terhadap Kemampuan Representasi Matematis dan Berpikir Kritis* (Vol. 10, Issue 2, pp. 132–140). https://doi.org/10.52657/je.v10i2.2454

Munandar. (2009). Kemampuan Berpikir Kreatif Dalam Pembelajaran Matematika. *Journal Of Education and Teaching*, *4*(1). https://doi.org/10.31004/cendekia.v8i1.2532

Nugraha, W., & Herdiana, D. (2024). Teori Belajar Konstruktivisme dan Implikasinya dalam Pembelajaran. *Journal of Education*, *1*(28), 245–259. https://jurnaledu.com/index.php/je

Permana, S. P., & Kasriman, K. (2022). Pengaruh Media Pembelajaran Wordwall terhadap Motivasi Belajar IPS Kelas IV. *Jurnal Basicedu*, *6*(5), 7831–7839. https://doi.org/10.31004/basicedu.v6i5.3616

Prayitno, E. (2016). Pengembangan Divergent Thinking (Berpikir Divergent) dan Kritis Melalui Soal Terbuka. *Jurnal Kajian PendidiKan MateMatiKa*, *3*(1), 15–26. https://citeus.um.ac.id/cgi/viewcontent.cgi?article=1108&context=jpg

Rahmawati, F., Pamungkas, M. D., & Ardiyanto, B. (2021). No Title. In *Jurnal Didactical Mathematics Pengembangan E-Modul Logika Matematika berbasis HOTS untuk Meningkatkan Divergent Thinking Skill* (Vol. 3, pp. 68–74). https://doi.org/10.31949/dm.v3i2.1629

Rawlings, B. S., Chetwynd-Talbot, D., Husband, E., Nuttall, A., Quinn, E., Taggart, R., &

Kognitif: Jurnal Riset HOTS Pendidikan Matematika
https://doi.org/10.51574/kognitif.v6i2.3957 Volume 6, No 2, April - June 2026, pp. 511 – 521

Roome, H. E. (2025). Divergent thinking is linked with convergent thinking; implications for models of creativity. In *Thinking and Reasoning*. https://doi.org/10.1080/13546783.2025.2485059

Sudarsono, S., & Mulyani. (2021). Pengembangan Media Pembelajaran Game Interaktif Berbasis Aplikasi Web Wordwall Pada Pelajaran Matematika Materi Bilangan Ganjil Genap Kelas II SD. *Jpgsd*, *9*(8), 3059–3068. https://ejournal.unesa.ac.id/index.php/jurnal-penelitian-pgsd/article/view/42148

Wafiqni, N., & Putri, F. M. (2021). Efektivitas Penggunaan Aplikasi Wordwall dalam Pembelajaran Daring (Online) Matematika pada Materi Bilangan Cacah Kelas 1 di MIN 2 Kota Tangerang Selatan. *Elementar : Jurnal Pendidikan Dasar*, *1*(1), 68–83. https://doi.org/10.15408/elementar.v1i1.20375

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