

The Effectiveness of the Self-Organized Learning Environment (SOLE) Model in Enhancing Students' Learning Activeness in Fiqh Learning

Alvia Damayanti*, Wan Jamaluddin, Uswatun Hasanah

Universitas Islam Negeri Raden Intan Lampung, Indonesia

* alviahaha@gmail.com (Primary Contact)

ABSTRACT

This study examines the impact of the Self-Organized Learning Environment (SOLE) model on students' learning activeness in Fiqh at MTs Al-Ma'ruf Margodadi. The research emerged from classroom conditions that were largely teacher-centered, with limited technology integration and minimal student participation in discussion and problem-solving. A quasi-experimental design was employed, involving class VIII.B as the control group and VIII.A as the experimental group applying SOLE. Data were collected using a learning activeness questionnaire covering five indicators; 20 items were declared valid, with a reliability coefficient of $\alpha = 0.607$. This coefficient meets the minimum 0.60 standard considered acceptable by several researchers in social science studies, particularly for context-based instruments. The findings indicate that SOLE significantly enhances students' participation, especially in questioning, discussion, and problem-solving activities, demonstrating its potential as an effective approach in Islamic Education to cultivate more independent and engaged learners.

Keywords

Fiqh, Learning Activeness, Learning Model, Self-Organized Learning Environment (SOLE)

Article History

Received: 2026-02-12

Accepted: 2026-03-02

Copyright © 2026, Damayanti et al.
Published by MAN 4 Kota Pekanbaru
DOI: [10.56113/takuana.v4i4.414](https://doi.org/10.56113/takuana.v4i4.414)

1. INTRODUCTION

Learning activeness is a key determinant in achieving educational goals, as it requires students' physical and mental involvement through active interaction with both teachers and peers (Maharani et al., 2023; Prasetyo & Abduh, 2021; Wulandari et al., 2021; Yustiara et al., 2023). Dynamic two-way interactions, whether in the form of group discussions, presentations, or problem-solving activities, can train students to think critically, express their opinions confidently, and comprehend the material from multiple perspectives (Alawiyah et al., 2023). A conducive learning atmosphere, supported by a sense of togetherness and solidarity, also fosters an inclusive and collaborative environment that enhances students' motivation and understanding of the subject matter (Hadi et al.2022; Mufidah et al., 2022).

However, the preliminary findings indicate that such ideal conditions have not yet been fully realized. Most students remain relatively passive, merely listening to explanations without actively engaging in discussions or problem-solving activities. Their learning motivation is also low, both intrinsically and extrinsically, compounded by teachers' limited use of varied instructional methods and minimal provision of motivational feedback. This situation underscores the need for more contextual and interactive learning strategies that can challenge students according to their abilities, while simultaneously fostering open communication to encourage them to express their opinions more confidently (Hasanah & Himami, 2021).

Based on a preliminary study conducted through observation and interviews with the Fiqh teacher at MTs Al-Ma'ruf Margodadi on January 1, 2025, several issues were identified, including monotonous teaching methods, limited use of technology and media, teacher-centered dominance that leaves little room for discussion, and an unengaging approach that causes students to become passive, easily bored, and demotivated in their learning.

The Self-Organized Learning Environment (SOLE) model is believed to enhance students' activeness, creativity, and learning motivation, as it places their learning experiences at the center of the educational process (Kurnia & Ikhsan, 2023). Through the use of technology, group discussions, and problem-solving activities, students are not only required to understand the material but also to relate it to real-life contexts. In its implementation, the teacher acts as a facilitator who guides without restricting creativity, while project-based evaluation and reflection can be employed to assess deeper levels of understanding (Kesumawardani et al., 2025). This approach aligns with the demands of modern education, including online learning, which requires interactive strategies to ensure that students remain active and engaged even in distance learning settings (Fitriyani et al., 2023; Rahayu, 2021; Tiara & Dena, 2024).

In addition, SOLE offers several advantages that contribute to improved learning outcomes, including fostering learning independence, critical thinking skills, and collaboration among students (Dimiyati et al., 2024; Fariha, 2021; Indriani & Ramadhan, 2025). By utilizing the internet, students can search for information, discuss it, and deepen their understanding. Sugata Mitra's research, in Nuraini et al., (2024) His research demonstrates that this model can accelerate the learning process, make knowledge more enduring, and create an enjoyable exploratory atmosphere. Accordingly, the implementation of SOLE is highly relevant in the context of Fiqh learning as well as other subjects, both in face-to-face and online settings, as it enhances students' activeness, engagement, and learning outcomes in a self-directed, collaborative, and technology-based manner.

The findings of the study conducted by Arum Putri Rahayu (2021), Jusman (2023) and Wan Muhammad Fariq (2024) The findings indicate that the SOLE model holds considerable potential for enhancing students' learning activeness, particularly in the subject of Islamic Cultural History. Earlier research on the SOLE has mostly been carried out in science classrooms, with greater attention given to cognitive results such as academic achievement and critical thinking skills. Far fewer studies have explored how SOLE affects affective aspects, especially students' learning activeness, in Fiqh classes. In addition, research employing a quasi-experimental approach to assess specific indicators of activeness in Fiqh learning is still limited. In response to these gaps, the present study investigates the effectiveness of SOLE in improving clearly identified dimensions of learning

activeness in Fiqh, a subject that demands not only theoretical understanding but also the ability to apply Islamic legal principles in everyday practice. (Gafrwai & Mardianto, 2023). This study seeks to fill this gap by highlighting the implementation of the SOLE model in Fiqh learning as an innovation that integrates computers and the internet, enabling students to become more active, independent, and creative in problem-solving (Firdaus & Mutmainah, 2022). The novelty of this research lies in its focus on formulating strategies for implementing SOLE in Fiqh learning, including the teacher's role as a facilitator, students' readiness to use technology, and group dynamics in understanding Fiqh concepts in an applied manner, thereby enhancing learning activeness that is relevant to real-life contexts (Wahyuni & Ramadhani, 2024).

The urgency of this research lies in the need for innovation in Fiqh learning, which is often perceived as difficult and lacking contextual relevance to everyday life. The implementation of the SOLE model carries significant implications, namely the creation of a more active, engaging, and practical learning atmosphere, enabling students not only to understand theoretical concepts but also to connect them with real-life practices. In addition to enhancing self-confidence and the courage to ask questions, this approach also develops social skills, problem-solving abilities, and critical thinking through group collaboration. Thus, this study affirms that the SOLE model can serve as an effective strategy to strengthen the teacher's role as a facilitator while encouraging students to be more independent, interactive, and creative in understanding Islamic law.

2. METHOD

This study was conducted at MTs Al-Ma'ruf Margodadi during the odd semester of the 2025/2026 academic year. This study employed a quasi-experimental method using a nonequivalent control group post-test only design. The research subjects were eighth-grade students, with class VIII.B assigned as the control group receiving conventional instruction and class VIII.A as the experimental group implementing the SOLE model. The two intact classes were selected without random assignment. To minimize initial group differences, both classes were drawn from the same grade level, followed the same curriculum, and were taught within the same academic semester. Data were collected after the intervention through a learning activeness questionnaire administered to both groups. The implementation of SOLE followed three steps: first, the teacher posed a trigger question to stimulate students' curiosity; second, students were guided to work in groups to solve the problem; and third, the teacher facilitated the presentation of findings from each group. Through these steps, the researcher observed an increase in students' learning activeness in the subject of Fiqh.

The instrument employed was a learning activeness questionnaire developed based on five indicators: (1) actively completing learning tasks, (2) engaging in problem-solving during the learning process, (3) asking questions when experiencing difficulties or lacking understanding of the material, (4) seeking information to solve problems, and (5) participating in group discussions as instructed. The questionnaire consisted of 20 items and was initially piloted with 50 students who were not included in the research sample. The results of the validity testing indicated that all items met the required validity criteria, as their correlation coefficients exceeded the r-table value. Therefore, all 20 items were retained and used for data collection in this study.

Next, a reliability test was conducted using Cronbach's Alpha formula. The calculation yielded a value of $\alpha = 0.607$, which exceeds the minimum reliability threshold (0.60), indicating that the questionnaire instrument was reliable and appropriate for use in this study. Once the final instrument was obtained, the researcher distributed the questionnaire to both the control and experimental classes, each consisting of 25 students, after the learning process was completed. The collected data were then analyzed through prerequisite tests (normality and homogeneity), followed by hypothesis testing using an independent sample t-test to determine whether the SOLE learning model had a significant effect on students' learning activeness in the subject of Fiqh.

3. RESULTS AND DISCUSSION

3.1. Results

In this study, a normality test was performed using the Shapiro-Wilk test. This test was selected because the number of respondents did not exceed 100. The results of the normality analysis are presented in Table 1.

Table 1. Shapiro-Wilk Normality Test Results

Group	W	df	p
Experimental	0.949	25	0.24
Control	0.966	25	0.554

A normality test was conducted using the Shapiro-Wilk test because the sample size in each group was fewer than 50 participants. The results indicated that the experimental group was normally distributed, $W(25) = .949$, $p = .240$, as well as the control group, $W(25) = .966$, $p = .554$. Since both p-values were greater than .05, the assumption of normality was met.

Variance homogeneity was assessed using Levene's test, as summarized in Table 2. The results indicated that the assumption of equal variances was met, $F(1, 48) = 1.578$, $p = .215$. Since the p-value was greater than .05, there was no significant difference in variance between the experimental and control groups. Therefore, the data were considered homogeneous, and the independent samples t-test was conducted under the assumption of equal variances.

Table 2. Levene's Test of Homogeneity of Variance

Variable	F	df1	df2	p
Learning Activeness	1.578	1	48	0.215

The homogeneity test using Levene's method yielded a significance value of 0.215 ($p > 0.05$) (Andini & Fitria, 2021), indicating that the variance across the data groups is equal. Consequently, an independent samples t-test was performed under the "equal variances assumed" condition to evaluate the learning activity of students in the experimental class (8A) and the control class (8B). The analysis revealed a significant difference between the two groups, with a 2-tailed significance value of 0.005, which falls well below the 0.05 threshold. With a t-statistic of -2.959 and a mean difference of -3.680, these results lead to the rejection of the null hypothesis (H_0), confirming that the teaching intervention applied in Class 8A significantly enhanced student learning activity compared to the conventional

approach used in Class 8B. To assess the magnitude of this effect, Cohen’s *d* was calculated using $d = \frac{2t}{\sqrt{df}}$ ($t = 2.959$; $df = 48$), yielding a value of 0.85. This large effect size indicates that the improvement in learning activeness is not only statistically significant but also practically meaningful.

Table 3. Sample t-test results

With the homogeneity of variances established, further analysis was conducted using an independent samples t-test. The results are presented in (Table 3).

Variable	t	df	p	Mean Diff	95% CI [LL, UL]
Learning activeness	2.959	48	0.005	3.68	[1.180, 6.180]

3.2. Discussion

The results of the study indicate that the implementation of the SOLE model has a positive impact on enhancing students’ learning activeness in the subject of Fiqh (Hartini et al., 2024). Students became more confident in asking questions, actively engaged in group discussions, and were able to express their opinions with self-assurance (Manggus et al., 2023; Rahmadani et al., 2023). This finding affirms that the SOLE model is capable of transforming the learning paradigm from a teacher-centered approach to a student-centered approach (Budyaningsih & Arigiyati, 2024; Handayani, 2023; Putri et al., 2025). Such activeness is not merely physical but also mental, as students are engaged in critical thinking processes to solve problems related to everyday Islamic jurisprudence (Agustin & Sitika, 2025; Ermita, 2021; Zukin, 2022).

These findings are consistent with Sugata Mitra’s research, which demonstrates that SOLE enables students to learn more rapidly, retain knowledge for a longer period, and enjoy the exploration-based learning process. Similarly, the study conducted by Lestari & Rinda (2020) has proven that SOLE enhances student engagement and active participation through collaboration and the utilization of technology (Budyaningsih & Arigiyati, 2024). However, this study makes a novel contribution by examining the effectiveness of SOLE within the context of Fiqh instruction, a subject area that has received relatively little attention compared to disciplines such as Science or Biology.

Another novelty of this study lies in its focus on applying SOLE to foster students’ courage to ask questions as well as their independence in seeking information (Febriani & Faizah, 2025). The observational results indicate that the indicator of asking questions when encountering difficulties achieved the highest percentage, whereas the indicator of seeking information remained relatively low. This condition demonstrates that, although SOLE successfully enhanced interaction and confidence, additional strategies are still required to strengthen digital literacy and independent learning. This constitutes the applied aspect that distinguishes the present study from previous research (I. Armenia & Irsadi, 2023; Niode et al., 2022).

In addition, this study reveals that the role of the educator as a facilitator is crucial in determining the effectiveness of SOLE (Safitri & Murdiyani, 2022). Educators who are able to formulate thought-provoking questions effectively have been shown to stimulate students’ curiosity, which in turn encourages them to explore answers through group discussions (Aditama et al., 2023; Lesmana et al., 2023; Ula & Jamilah, 2023). This finding is consistent with the perspective of Azizah & Putra, (2024); Elisa et al., (2024); Suwandi et

al., (2021) that the success of SOLE is highly influenced by the teacher's ability to create an engaging and interactive learning environment, both in face-to-face and online settings.

An important implication of these findings is that SOLE enhances not only the cognitive dimension of students' learning, but also their affective and social dimensions. The development of confidence in expressing opinions, group collaboration, and critical thinking skills demonstrates the integration of multiple domains of learning. In the context of Fiqh instruction, this is particularly significant, as students are not merely expected to understand Islamic legal norms but also to communicate, deliberate upon, and apply these values in their everyday lives.

Nevertheless, this study also identified certain challenges in the implementation of SOLE, particularly concerning the limited availability of technological facilities within schools. Students' readiness to use digital devices and the accessibility of stable internet connections emerged as tangible obstacles. This underscores the necessity of adopting adaptive strategies in applying SOLE, such as integrating both digital and non-digital learning resources to ensure inclusivity. These challenges have rarely been addressed in previous studies, thereby constituting an important contribution of the present research.

Overall, this study underscores the novelty of applying SOLE within the context of Fiqh instruction, with its principal contribution lying in the effort to enhance student engagement through collaborative and technology-based approaches. The findings broaden the scope of SOLE research, which has previously been dominated by the sciences, by demonstrating its relevance within Islamic studies. In practical terms, Fiqh teachers are expected to integrate SOLE as an innovative strategy to foster active, interactive, and contextual learning, thereby addressing the demands of twenty-first-century education.

4. CONCLUSION

Based on the findings, it can be concluded that the implementation of the Self-Organized Learning Environment (SOLE) model has a positive and significant effect on students' learning engagement in Fiqh at MTs Al-Ma'ruf Margodadi. This model successfully shifts the learning paradigm from teacher-centered to student-centered, thereby enhancing students' questioning skills, participation in discussions, and critical thinking abilities. In addition, SOLE fosters learner autonomy and group collaboration, although challenges remain in the area of independent information-seeking. These findings highlight the novelty of the study, namely the effectiveness of SOLE within the context of Fiqh instruction, a domain rarely explored in previous research, while also demonstrating its relevance as an innovative strategy for creating active, collaborative, and applicative learning environments aligned with the demands of twenty-first-century education.

Based on the findings, it is recommended that Fiqh educators at MTs Al-Ma'ruf Margodadi as well as in other schools consistently implement the SOLE model to enhance students' learning engagement. Teachers should optimize their role as facilitators by posing thought-provoking questions, guiding discussions, and supporting students in information-seeking processes to foster learner autonomy. Schools are also expected to provide adequate learning resources, both digital and non-digital, to address existing technological constraints. Furthermore, future research may expand the investigation of SOLE implementation to other subjects or within online learning contexts, thereby broadening its contribution to improving the quality of education in the modern era

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to their parents for their prayers, support, and encouragement throughout the research process. Their patience, sacrifices, and unwavering support provided essential motivation for the completion of this research and the preparation of this manuscript. The authors respectfully extend their deepest thanks to Prof. Wan Jamaluddin Z, S.Ag., M.Ag., Ph.D. as the first supervisor and Uswatun Hasanah, M.Pd.I. as the second supervisor for their guidance, direction, and valuable academic input during the research process. Their dedication and careful supervision significantly contributed to the quality and completion of this study. Finally, the authors acknowledge that the completion of this research was achieved through a sustained process of academic discipline, commitment, and learning. The challenges encountered throughout the study constituted valuable experiences that supported the preparation of this article.

REFERENCES

- Aditama, D. A., Astutik, S., Pangastuti, E. I., Kurniawan, F. A., & Apriyanto, B. (2023). Pengaruh model pembelajaran self-organized learning environment (SOLE) berbasis scaffolding terhadap kemampuan berpikir kreatif dan hasil belajar geografi siswa di SMA. *JPIG (Jurnal Pendidikan dan Ilmu Geografi)*, 8(2), 85–91. <https://doi.org/10.21067/jpig.v8i2.8301>
- Agustin, C., & Sitika, A. J. (2025). Analisis faktor yang mempengaruhi keaktifan belajar siswa pada mata pelajaran pendidikan agama Islam di kelas VIII E SMPN 1 Karawang. 32(1), 7–38.
- Alawiyah, A., Sukron, J., & Firdaus, M. A. (2023). Penerapan model pembelajaran kooperatif teams games tournament untuk meningkatkan keaktifan belajar siswa pada pembelajaran pendidikan agama Islam. *Fitrah: Journal of Islamic Education*, 4(1), 69–82. <https://doi.org/10.53802/fitrah.v4i1.188>
- Andini, S. R., & Fitria, Y. (2021). Pengaruh model RADEC pada pembelajaran tematik terhadap hasil belajar peserta didik sekolah dasar. 5(3), 1435–1443.
- Azizah, S. N., & Putra, F. R. (2024). Reframing a self-organized learning environment (SOLE) to accommodate Indonesian EFL students' learning loss. *Journal of Educational Learning and Innovation (ELIa)*, 4(1), 1–17. <https://doi.org/10.46229/elia.v4i1.776>
- Budyarningsih, I., & Arigiyati, T. A. (2024). Self-organized learning environment (SOLE) untuk meningkatkan hasil dan keaktifan belajar peserta didik dalam pembelajaran IPA. 3(1).
- Dimiyati, A., Fatra, M., & Hafiz, M. (2024). Pengembangan e-modul media & teknologi pendidikan berbasis self-organized learning environment berorientasi pada literasi digital. *Jurnal Riset dan Inovasi Pembelajaran*, 4(3), 1801–1818. <https://doi.org/10.51574/jrip.v4i3.2161>
- Elisa, S., Yanti, Y., & Amriyah, C. (2024). Pengaruh model pembelajaran self-organized learning environment (SOLE) terhadap berpikir kritis peserta didik kelas V SD Negeri 1 Harapan Jaya Bandar Lampung. *AR-RIAYAH: Jurnal Pendidikan Dasar*, 8(1), 165–176.

- Ermita. (2021). Make a-match: Sebuah metode untuk meningkatkan keaktifan siswa. *Jurnal Studi Guru dan Pembelajaran*, 4(2), 429–436. <https://doi.org/10.30605/jsgp.4.2.2021.1286>
- Fariha, A. (2021). Pembelajaran SOLE dalam membangun keefektifan belajar pada peserta didik. *Edudikara: Jurnal Pendidikan dan Pembelajaran*, 6(3), 152–157. <https://doi.org/10.32585/edudikara.v6i3.245>
- Fariq, W. M., Murhayati, S., & [Data penulis perlu diklarifikasi]. (2024). Inovasi model self-organized learning environments (SOLE) dalam pembelajaran materi sejarah kebudayaan Islam menuju kurikulum merdeka belajar. *Journal of Education and Culture*, 2(3), 364–372.
- Febriani, A. H., & Faizah, S. N. (2025). Pengaruh model pembelajaran self-organized learning environment terhadap kemandirian belajar sekolah dasar. *Ibtidai: Jurnal Kependidikan Dasar*, 12(1), 11–26. <https://doi.org/10.32678/ibtidai.v12i1.10442>
- Firdaus, A. H., & Mutmainah, S. (2022). Pembelajaran self-organized learning environment (SOLE) dalam mata pelajaran sketsa jurusan DKV di SMK Al-Ihsan Krian. *Jurnal Seni Rupa*, 10(4), 1–10.
- Fitriyani, T., Nugraha, U., & Sofwan, S. (2023). Meningkatkan keaktifan belajar matematika menggunakan model pembelajaran problem-based learning. *JlIP: Jurnal Ilmiah Ilmu Pendidikan*, 6(4), 2450–2456. <https://doi.org/10.54371/jiip.v6i4.1639>
- Gafrawai, G., & Mardianto, M. (2023). Konsep pembelajaran fikih di madrasah aliyah. *Al-Gazali Journal of Islamic Education*, 2(1), 79.
- Hadi, M. F., Mariono, A., & Kristanto, A. (2022). Pengaruh model project-based learning terhadap keaktifan belajar siswa pada kelas X di MAN 1 Lombok Tengah. *Jurnal Ilmiah Mandala Education*, 8(4), 2992–3001. <https://doi.org/10.58258/jime.v8i4.3971>
- Handayani, D. R. (2023). Pengaruh model self-organized learning environment terhadap keterampilan berpikir kritis dan hasil belajar geografi di SMA. *Geodika: Jurnal Kajian Ilmu dan Pendidikan Geografi*, 7(1), 108–117. <https://doi.org/10.29408/geodika.v7i1.12231>
- Hartini, S., Hartati, S. J., & Purnamasari, H. (2024). Pengaruh model pembelajaran self-organized learning environment terhadap keaktifan dan literasi membaca bahasa Inggris siswa kelas VII. *10(23)*, 908–917.
- Hasanah, Z., & Himami, A. S. (2021). Model pembelajaran kooperatif dalam menumbuhkan keaktifan belajar siswa. *IRSYADUNA: Jurnal Studi Kemahasiswaan*, 1(1), 1–13.
- I. Armenia, & Irsadi, A. (2023). Penerapan model pembelajaran self-organized learning environment (SOLE) pada materi perubahan lingkungan untuk meningkatkan hasil belajar kelas X SMA. In *Prosiding Seminar Nasional Biologi XI Tahun 2023 FMIPA Universitas Negeri Semarang* (pp. 206–210).
- Indriani, N. E. P., & Ramadhan, S. (2025). The effect of SOLE (self-organized learning environment) model and reading interest on writing skills. *Al-Ishlah: Jurnal Pendidikan*, 17(1), 1186–1198. <https://doi.org/10.35445/alishlah.v17i1.6489>
- Kesumawardani, A. D., Sada, H. J., & Putri, A. Y. (2025). Pengaruh model pembelajaran self-organized learning environment (SOLE) berbantuan Kahoot terhadap berpikir

- kritis dan kemandirian belajar peserta didik kelas XI. *Jurnal Ilmiah Pendidikan Dasar*, 10(3), 301–316.
- Kurnia, Y., & Ikhsan, J. (2023). Pengaruh model pembelajaran self-organized learning environment (SOLE) terhadap sikap ilmiah dan hasil belajar kognitif peserta didik pada materi koloid SMA/MA. *Jurnal Penelitian Pendidikan IPA*, 9(11), 9307–9312. <https://doi.org/10.29303/jppipa.v9i11.5277>
- Lesmana, W., Sutisnawati, A., & Maulana, L. H. (2023). Model pembelajaran kooperatif tipe team assisted individual untuk meningkatkan keaktifan belajar siswa. *Jurnal Educatio FKIP UNMA*, 9(3), 1305–1308. <https://doi.org/10.31949/educatio.v9i3.5671>
- Lestari, R. D. (2020). Peningkatan keaktifan bertanya dengan penerapan model pembelajaran SOLE (self-organized learning environments) pada materi gangguan sistem pencernaan siswa kelas V SDN 013 Palaran. 69–73.
- Maharani, F., Asrin, & Widodo, A. (2023). Pengaruh model project-based learning terhadap kemampuan belajar siswa. *SENTRI: Jurnal Riset Ilmiah*, 2(2), 426–430.
- Manggus, M. Y., Inggo, M. S., Bhena, M. M. O., Weo, M. S., Baka, M. Y., Tai, Y., & Lawe, Y. U. (2023). Implementasi metode ceramah dalam pembelajaran bahasa Indonesia untuk meningkatkan keaktifan belajar siswa kelas 1 sekolah dasar. *Jurnal Citra Pendidikan Anak*, 2(1), 82–88. <https://doi.org/10.38048/jcpa.v2i1.1545>
- Mufidah, A., Hadi, N., & Muhammad, F. (2022). Penerapan model pembelajaran PJB� untuk meningkatkan keaktifan belajar pada mata pelajaran bahasa Indonesia. *Jurnal Cahaya Mandalika*, 10(1), 1–52.
- Niode, N., Zakaria, P., & Resmawan, R. (2022). Implementasi model pembelajaran self-organized learning environment untuk meningkatkan kemampuan berpikir kritis matematis. *Indiktika: Jurnal Inovasi Pendidikan Matematika*, 4(2), 62–75. <https://doi.org/10.31851/indiktika.v4i2.7615>
- Nuraini, A. G., Putrie, C. A. R., & Widodo, A. (2024). Pengaruh keaktifan belajar terhadap hasil belajar IPS pada siswa kelas VIII SMP Negeri 3 Kota Bekasi. *Arus Jurnal Sosial dan Humaniora*, 4(3), 1351–1359. <https://doi.org/10.57250/ajsh.v4i3.710>
- Prasetyo, A. D., & Abduh, M. (2021). Peningkatan keaktifan belajar siswa melalui model discovery learning di sekolah dasar. *Jurnal Basicedu*, 5(4), 1717–1724. <https://doi.org/10.31004/basicedu.v5i4.991>
- Putri, G., Irwandani, I., & Hidayah, N. (2025). Systematic literature review: The effectiveness of the self-organized learning environment (SOLE) model in science education. *Jurnal Penelitian Pendidikan IPA*, 10(1), 1–11. <https://doi.org/10.26740/jppipa.v10n1.p1-11>
- Rahayu, A. P. (2021). Penerapan model pembelajaran SOLE (self-organized learning environments) dalam meningkatkan hasil belajar bahasa Inggris mahasiswa. *Jurnal Paradigma*, 12, 88–106.
- Rahmadani, S., Mufarizuddin, M., & Kusuma, Y. Y. (2023). Analisis faktor-faktor yang mempengaruhi keaktifan belajar siswa sekolah dasar. *Jurnal Muassis Pendidikan Dasar*, 2(1), 45–53. <https://doi.org/10.55732/jmpd.v2i1.37>

- Safitri, L., & Murdiyani, N. M. (2022). Efektivitas penerapan model pembelajaran SOLE terhadap kemandirian belajar dan hasil belajar matematika. *Jurnal Pedagogi Matematika*, 8(1), 101–113.
- Suwandi, M. S. D., Asnar, & Warman. (2021). Implementation of the self-organized learning environment (SOLE) model in an effort to increase creativity in learning outcomes in class VIII C civics learning at SMP Negeri 28 Samarinda. *Unmul Civic Education Journal*, 4(1), 60–67.
- Tiara, T. R. Z., & Dena, L. S. (2024). Penerapan media pembelajaran berbasis Kahoot menggunakan model kooperatif teams games tournament untuk meningkatkan keaktifan belajar siswa. *Jurnal Petik*, 10(1), 115–127. <https://doi.org/10.31980/petik.v10i1.1391>
- Ula, N. S. S., & Jamilah, M. (2023). Meningkatkan keaktifan belajar siswa kelas V dengan menggunakan model TGT. *Jurnal Pendidikan Guru*, 4(3), 194–204.
- Wahyuni, N., & Ramadhani, I. D. (2024). Peran guru dalam memanfaatkan teknologi sebagai media pembelajaran untuk meningkatkan keaktifan belajar siswa. *Edukasia: Jurnal Pendidikan*, 1(September), 53–59.
- Wulandari, R., Mustadi, A., & Rahayuningsih, Y. (2021). Pengaruh project-based learning berbantuan lapbook terhadap keaktifan belajar siswa. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 6(2), 300. <https://doi.org/10.17977/jptpp.v6i2.14511>
- Yustiara, D., Kusumastuti, M. N., & Ramdhani, S. (2023). Pengaruh model cooperative learning terhadap peningkatan pemahaman konsep matematika dan keaktifan belajar. *Nuansa Akademik: Jurnal Pembangunan Masyarakat*, 8(2), 519–534. <https://doi.org/10.47200/jnajpm.v8i2.2003>
- Zukin, A. (2022). Strategi guru PAI dalam meningkatkan keaktifan belajar siswa. *Edukasi: Jurnal Pemikiran Keislaman*, 6(1), 15–29. <https://doi.org/10.36835/edukais.2022.6.1.15-29>