

Effectiveness of problem-based learning classical guidance in reducing students' instagram use guidance action research

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Abstract

The development of digital technology has influenced adolescents' social behavior patterns, including their use of social media platforms such as Instagram. Excessive use may negatively affect students' learning concentration, social interactions, and self-control. This study aimed to implement a classical guidance service using the Problem-Based Learning (PBL) method to reduce the tendency of Instagram use among Grade X TKL 2 students of SMK Negeri 4 Semarang in the 2025/2026 academic year. This study employed Guidance and Counseling Action Research (PTBK), conducted in two cycles. Each cycle consisted of planning, action implementation, observation, and reflection stages as an effort to evaluate the service process. The participants were 30 students selected based on their high intensity of Instagram use. A Likert-scale instrument was utilized to measure the level of social media use tendency. The findings revealed that the mean score of students' Instagram use tendency decreased from 79.10 in the pre-test to 61.30 in the post-test after Cycle II, representing an average reduction of 17.80 points. In addition, the proportion of students categorized as having low Instagram use increased from 3% to 70%, while the paired-sample effect size analysis yielded a Cohen's d_z value of 1.52, indicating a very large intervention effect. These findings suggest that Problem-Based Learning-based classical guidance is an effective intervention for reducing students' tendency toward excessive Instagram use and promoting more responsible digital behavior. This approach may serve as an alternative basic Guidance and Counseling service strategy that is relevant to addressing students' digital behavioral challenges in the modern era.

Keywords: Classical guidance; Higher Education; Problem based learning; Instagram use

How to Cite (APA): Hasan, B. A., Saputra, W. N. E., Santosa, H. (2026). Effectiveness of problem-based learning classical guidance in reducing students' instagram use guidance action research. *Jurnal Penelitian Ilmu Pendidikan*, 19(2), 211—220. <https://doi.org/10.21831/jpip.v19i2.99022>

Received 06-06-2026; Received in revised from 16-10-2026; Accepted 21-10-2026

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INTRODUCTION

Advances in digital technology have significantly influenced people's lives, particularly in changing the ways adolescents communicate and interact socially. Indonesia is among the countries with a high level of social media usage (Hanifah et al., 2025; Lidyasari et al., 2023). Through smart devices such as smartphones, individuals can easily access various social media platforms anytime and anywhere. Social media is utilized as a means of sharing information, building relationships, expressing oneself, and seeking entertainment. In the educational context, social media also affects students' behavioral patterns and interactions within the school environment (Desyandri et al., 2024). Uncontrolled social media use may reduce the quality of direct social interactions between students and teachers as well as among peers, even though social interaction plays a crucial role in character development and students' learning

dynamics (Yusnitarini & Firdaus, 2025). From a Guidance and Counseling perspective, adolescents' digital behavior reflects their social needs and self-actualization, which continue to develop rapidly in the technological era (Rohmawati et al., 2024)

One of the most widely used social media platforms among adolescents today is Instagram. This platform is popular due to its features that allow users to share photos, short videos, reels, and Instagram Stories, all of which are interactive and highly engaging (Correia et al., 2024). However, excessive Instagram use may lead to various negative consequences for students, including impulsive behavior, decreased learning concentration, emotional disturbances, and difficulties in time management (Almajali et al., 2024). Students who spend excessive time on Instagram tend to focus more on social media activities than on learning activities or direct social interactions. Furthermore, individuals who exhibit tendencies toward social media addiction may demonstrate unstable emotions, obsessive behaviors, and reduced concern for their surrounding environment (Wang, 2023). These conditions indicate that excessive Instagram use can affect students' personal, social, and academic development.

Previous studies have demonstrated that Instagram use is associated with various behavioral outcomes among adolescents. According Desyandri et al. (2024) reported that intensive Instagram use significantly influences consumptive behavior among Generation Z. Sutisna et al. (2022) found that Instagram use affects students' tolerance and social interaction. Although these studies have provided valuable insights into the consequences of Instagram use, they primarily focused on identifying relationships between variables rather than developing intervention strategies to address excessive social media use. Research investigating the effectiveness of Guidance and Counseling interventions, particularly classical guidance services employing the Problem-Based Learning (PBL) approach within Guidance and Counseling Action Research (PTBK), remains scarce. Therefore, this study seeks to fill this gap by examining the effectiveness of PBL-based classical guidance services in reducing students' tendency toward excessive Instagram use among vocational high school students.

Based on the results of the Student Needs Assessment conducted at SMK Negeri 4 Semarang, Grade X TKL 2 students experienced difficulties in managing their study time and social media use. Guidance and Counseling teachers also observed behaviors such as difficulty concentrating during lessons, emotional instability, and smartphone use during class hours. These findings indicate the need for innovative Guidance and Counseling services that can help students develop better self-control and digital responsibility. Despite previous studies examining the impacts of Instagram use, empirical evidence regarding the implementation of Problem-Based Learning-based classical guidance services through Guidance and Counseling Action Research remains limited, particularly in vocational high school settings. Therefore, this study aims to investigate the effectiveness of Problem-Based Learning-based classical guidance services in reducing students' tendency toward excessive Instagram use. This study is expected to contribute empirical evidence supporting the development of innovative Guidance and Counseling interventions for addressing students' digital behavior in the modern educational context.

METHODS

Research Design and Context

This study was grounded in a pragmatist paradigm, which justifies the use of action research as a design oriented toward solving practical problems in a specific educational setting rather than toward establishing generalizable causal laws. Accordingly, the design employed was Guidance and Counseling Action Research, selected because it aligns with the study's objective of improving Guidance and Counseling services based on actual issues experienced by students. The PTBK model followed four stages within each cycle planning, action implementation, observation, and reflection (Rizalia et al., 2025) implemented across two cycles focusing on classical guidance services using the Problem-Based Learning (PBL) method to reduce students' tendency toward excessive Instagram use. The primary purpose of this action research was to

improve service practices within a specific context; the study therefore does not aim to establish generalizable causal effects, and interpretation of outcomes is limited to the contextual improvements observed during the intervention cycles. The research was conducted at SMK Negeri 4 Semarang, located at Jl. Pandonan 2 No. 7, South Semarang, Central Java, Indonesia, a public vocational high school.

Participants and Sampling

The target population consisted of all students actively participating in the learning process at SMK Negeri 4 Semarang. The participant-selection process was carried out transparently: an initial screening was administered to 30 students from Grade X TKL 2. Of these, 30 students who met all of the following inclusion criteria were selected through purposive sampling: (1) having an active Instagram account, (2) using social media for more than three hours per day, and (3) obtaining moderate to high scores on the pre-test measuring Instagram use tendencies. Students who did not meet all three criteria were excluded. The sample size of 30 was determined because this represented the students who fully satisfied the selection criteria and constituted a feasible group size for classical guidance service delivery within one class setting. Participant selection was based on the results of the initial assessment administered before the intervention. All 30 participants completed both intervention cycles and both the pre-test and post-test assessments; there was no attrition.

Instruments and Materials

Three instruments were used in this study: (1) an Instagram Use Tendency Scale, (2) a structured observation checklist, and (3) the PBL-based classical guidance intervention module. Instagram Use Tendency Scale. The scale was adapted from modified to fit the research context. It consisted of both favorable and unfavorable statements with four response options: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The blueprint comprised three indicators: (1) intensity of Instagram use (2) difficulties in controlling usage, and (3) impact on learning activities and social interactions, totaling 30 items. Reverse scoring was applied to unfavorable items so that higher total scores indicated a stronger tendency toward excessive Instagram use; total scores were categorized into high, moderate, and low levels based on the ideal mean and standard deviation. Content validity was established through expert judgment, construct validity was examined through item-total correlation analysis and Internal consistency reliability was high, Cronbach's $\alpha = .903$ (30 items).

Table 1. Reliability Instrument

Reliability Test Result of the Instagram Use Tendency Scale	
Cronbach's Alpha	N of items
.903	30

PBL-Based Classical Guidance Intervention. The intervention was delivered through classical guidance services based on the Problem-Based Learning approach, selected because it actively engages students in problem-solving through critical thinking, discussion, and reflection. During implementation, students identified problems related to excessive Instagram use, understood its negative consequences, and developed strategies for managing social media use more wisely. Each cycle comprised service planning, action implementation, observation of both process and behavioral changes, and reflection; the reflection results of Cycle 1 served as the basis for improving Cycle 2.

Procedure and Data Collection

The study proceeded through the following phases (1) pre-intervention phase, Initial screening was administered to Grade X TKL 2 students; 30 students meeting the inclusion criteria were selected; (2) Cycle 1, Planning of the classical guidance service; implementation of PBL-based sessions; observation using the structured checklist during each session; administration

of reflection at the end of the cycle; (3) Cycle 2. Revision of the service based on Cycle 1 reflection; implementation of the improved PBL-based sessions; observation; end-of-cycle reflection. Observation findings for Cycle 2; (4) post-intervention phase, Administration of the post-test to all 30 participants. Potential biases were controlled as follows: the same observer and rubric were used across cycles to maintain rating consistency; observations were recorded immediately during sessions to minimize recall bias; and the researcher's dual role as facilitator and investigator was mitigated through observer debriefing and reflective notes. It should be noted that the observation checklist captured students' engagement during guidance sessions only; changes in Instagram-use behavior outside the sessions were measured solely through the self-report scale and were not directly observed. The changes measured therefore reflect self-reported tendencies rather than actual device-recorded usage; where possible, scale results were triangulated with although no device-use records were accessed.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistics IBM SPSS 26. Data cleaning included checking for missing values and univariate outliers no missing data, and assumptions of normality were tested using the Shapiro–Wilk test.

Table 2. Descriptive and Inferential statistics

Assessment	Mean	SD	Min	Max
Pre-test	82.40	8.15	68	98
Post-test	71.30	7.90	58	86

Ethical Considerations

This study comprised with ethical research standards. Ethical approval was obtained from Universitas Ahmad Dahlan. Information consent was obtained from all participants and their parents/guardians prior to data collection; students were informed of the study's purpose, procedures, and their right to withdraw at any time without penalty. Anonymity and confidentiality were ensured by using coded identifiers on all data forms and storing data in a password-protected, encrypted file accessible only to the research team. Data will be retained for five years and then securely destroyed. Participants were debriefed at the end of the study and provided with information about school counseling services should they experience any distress related to social media us.

RESULTS AND DISCUSSION

Results

The findings of this Guidance and Counseling Action Research indicate that the implementation of classical guidance services using the Problem-Based Learning (PBL) method was associated with a reduction in students' self-reported tendency toward excessive Instagram use among Grade X TKL 2 students at SMK Negeri 4 Semarang. Based on the Likert-scale instrument, students' self-reported Instagram-use tendency shifted from predominantly moderate (87%) and high (10%) levels before the intervention to predominantly low levels (70%) after two intervention cycles. These findings suggest that PBL-based classical guidance was associated with a shift toward more responsible and controlled self-reported digital behavior among students.

Prior to the intervention, students completed a pre-test to determine their initial level of Instagram-use tendency. The comparison of results across the pre-test, Cycle I, and Cycle II is presented in Table 3.

Table 3. Distribution of Students' Instagram Use Across Cycles

Category	Interval	Pretest		Cycle I		Cycle II	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
High	≥80	3	10	2	7	0	0
Moderate	70 - 89	26	87	17	57	9	30
Low	≤70	1	3	11	36	21	70
Total		30	100	30	100	30	100

Based on Table 1, a substantial improvement can be observed from the initial condition to the final condition. The number of students in the low Instagram-use tendency category increased from 1 student (3%) during the pre-test to 11 students (36%) in Cycle I and reached 21 students (70%) in Cycle II. Meanwhile, the moderate category decreased from 26 students (87%) in the pre-test to 17 students (57%) in Cycle I and further declined to 9 students (30%) in Cycle II. Similarly, the high category decreased from 3 students (10%) in the pre-test to 2 students (7%) in Cycle I and was eliminated in Cycle II (0%). Overall, compared with the pre-test, the number of students in the low category increased by 20 students (67 percentage points), while the moderate and high categories decreased by 17 students (57 percentage points) and 3 students (10 percentage points), respectively. Furthermore, the mean score decreased from 79.10 in the pre-test to 61.30 after Cycle II, representing an average reduction of 17.80 points. These findings provide quantitative evidence of the association between the PBL-based classical guidance intervention and reduced self-reported tendency toward excessive Instagram use. The progressive improvement across the two intervention cycles also indicates that repeated implementation of PBL-based classical guidance contributed to gradual behavioral change rather than an immediate effect.

Cycle I Implementation

1. Planning Stage

At this stage, the researcher prepared the Service Implementation Plan. In Cycle I, the materials delivered to students focused on the wise use of social media and case analyses derived from students' own experiences.

2. Action Implementation Stage

The intervention was conducted in a single meeting. During this stage, the researcher provided a classical guidance service focusing on the topic of responsible social media use. Students were encouraged to reflect on and write about their personal experiences regarding inappropriate or unwise social media usage.

3. Observation Stage

Following the planning and implementation stages, the next step involved observation. During this stage, the researcher conducted direct observations using a previously prepared observation sheet to assess the outcomes of the intervention. The observer monitored various aspects of students' behavior that emerged throughout the classical guidance service. At this meeting, students had not yet demonstrated an adequate level of respect for their peers, as indicated by a lack of enthusiasm when classmates expressed opinions and by students being preoccupied with their own activities.

4. Reflection Stage

Based on the implementation of the classical guidance service in Cycle I, the activities were conducted smoothly, although several aspects still required improvement for Cycle II. The quantitative results of Cycle I are presented in Table 1. In Cycle I, 17 students (57%) were categorized as having a moderate tendency toward Instagram use, 11 students (36%) were in the low category, and 2 students (7%) remained in the high category. Compared with the pre-test, the number of students in the low category increased from 1 student (3%) to 11 students (36%), indicating an initial positive response to the intervention. Findings suggest that the first cycle of Problem-Based Learning-based classical guidance began to reduce students' self-reported tendency toward excessive Instagram use, although further improvement was still required in Cycle II.

Cycle II Implementation

1. Planning Stage

At this stage, the researcher prepared the Service Implementation Plan (RPL) for the second cycle. The material focused on continuing the previous topic of responsible Instagram use. However, different media were utilized, namely posters and case-analysis activities, to enhance students' engagement and understanding.

2. Action Implementation Stage

The intervention was conducted in one meeting. During this session, the researcher provided a classical guidance service by reviewing the previous material concerning wise and responsible Instagram use. Students were encouraged to analyze cases and discuss practical strategies for managing their social media behavior.

3. Observation Stage

Observations conducted during Cycle II revealed a significant improvement in the implementation of the classical guidance service. This improvement was reflected in various student behaviors, including higher enthusiasm, increased participation, better concentration, deeper engagement in discussions, more active involvement in learning activities, and greater attention to the counselor's explanations. Overall, these improvements demonstrated a clear difference compared to Cycle I.

4. Reflection Stage

The overall implementation of the classical guidance service in Cycle II was effective and proceeded smoothly. Furthermore, this cycle demonstrated significant positive changes and improvements. These findings indicate that the implementation of Problem-Based Learning through classical guidance services, supported by poster media, contributed substantially to enhancing the effectiveness of the intervention. The quantitative results of Cycle II are presented in Table 1. Based on the post-test results, 21 students (70%) were categorized as having a low tendency toward Instagram use, while 9 students (30%) remained in the moderate category, and no students (0%) were classified in the high category. Compared with the pre-test, the number of students in the low category increased by 20 students (from 1 to 21), whereas the moderate and high categories decreased by 17 and 3 students, respectively. These findings demonstrate a substantial improvement in students' self-reported Instagram-use tendency following the implementation of Problem-Based Learning-based classical guidance services.

Overall Improvement of Students Instagram Use

The overall improvement of students' Instagram use was examined by comparing the pre-test and post-test scores obtained by the participants. The comparison was intended to determine whether the implementation of problem-based learning in classical guidance led to a reduction in students' Instagram use intensity. The results of this comparison are summarized in Table 3, which presents the pre-test and post-test scores, the gain scores, and the category of improvement for each participant. As shown in the table, most students experienced a decrease in their Instagram use scores after the intervention, indicating a positive change in their behavior. A more detailed description of these findings is presented in the following section.

Table 4. Distribution of Students' Instagram Use Across Research Cycle

Category	Pre-test	Post-test	Charge
Low	1 (3%)	21 (70%)	+ 20 (67)
Moderate	26 (87%)	9 (30%)	-17 (-57)
High	3 (10%)	0 (0%)	-3 (-10)

Overall, the intervention was associated with substantial improvements in students' self-reported tendency toward Instagram use. The proportion of students in the low-tendency category increased from 3% (1 student) to 70% (21 students), an increase of 67 percentage

points. Meanwhile, the moderate and high categories decreased by 57 and 10 percentage points, respectively. In addition, the mean score on the Instagram-use tendency scale decreased from 79.10 before the intervention to 61.30 after Cycle II, with an average reduction of 17.80 points. These findings provide quantitative evidence supporting the association between Problem-Based Learning-based classical guidance and reduced self-reported tendency toward excessive Instagram use among students. However, because the study did not include a control group and relied on self-report rather than device-recorded usage, causal claims about actual Instagram usage should be made with caution.

Discussion

This improvement suggests that the implementation of Problem-Based Learning may be the improvement observed in students Instagram use suggests that the implementation of Problem-Based Learning (PBL) within classical guidance services can be understood through the lens of self-regulation theory. According to this theory, individuals who actively engage in problem-solving activities are more likely to develop self-awareness and behavioral control (Ahmad et al., 2024) This interpretation aligns with (Rotar, 2022) who found that adolescents with lower self-control are more vulnerable to problematic social media use and emphasized the importance of school-based interventions to prevent problematic digital behavior.

The effectiveness of the intervention was further reflected in students' active participation, enthusiasm, concentration, and engagement throughout the guidance sessions. These observations suggest that the PBL approach, supported by poster media, created (Ahmad et al., 2024; Nurohmah, 2025) a more interactive learning environment that encouraged students to reflect on and manage their digital behavior more responsibly. These findings are consistent with previous international evidence indicating that school-based interventions contribute to healthier digital behavior and reduce problematic social media use among adolescents (Rotar, 2022)

PBL has been widely recognized for enhancing students' problem-solving skills and promoting effective learning behaviors through (Yasa et al., 2024) authentic learning experiences (Aydin & Mutlu, 2023). A scoping review by (Bächtold et al., 2023; Riimalen et al., 2025) further highlighted that PBL improves proactive learning, organization, time management, collaboration, and self-directed learning, thereby supporting positive behavioral change. In the present study, Instagram-related issues served as authentic cases that encouraged critical reflection and collaborative discussion during classical guidance sessions. The use of poster media further reinforced the guidance messages by facilitating visual understanding and student engagement. These findings are also consistent with previous studies reporting that creative media can enhance the effectiveness of guidance and counseling services (Correia et al., 2024)

To enhance replicability and transparency, the intervention protocol is described operationally for each cycle. In Cycle I, the PBL stages were implemented as follows: (1) *Orientation to the problem* the counselor presented authentic cases of excessive Instagram use among vocational high school students and facilitated initial discussion (15 minutes); (2) *Organizing students for learning* students were divided into small groups and assigned specific aspects of the problem to investigate (10 minutes); (3) *Guiding individual and group investigation* each group explored the problem using poster media and supporting resources, while the counselor provided scaffolding (25 minutes); (4) *Developing and presenting work* groups presented their findings and proposed solutions through posters (20 minutes); and (5) *Analyzing and evaluating the problem-solving process* the counselor and students reflected on the inquiry process and identified lessons learned (15 minutes). The total time allocation was approximately 85 minutes per session.

Following Cycle I, a structured reflection was conducted to identify strengths and areas for improvement. The reflection revealed that students required more explicit scaffolding during the investigation stage and that group discussions needed tighter time management. Consequently, Cycle II incorporated the following concrete changes: (1) the counselor provided a more detailed

problem-orientation phase with guided questions to stimulate critical thinking (20 minutes); (2) group investigation was restructured with clearer role assignments and a more structured poster template (30 minutes); (3) an additional peer-feedback session was introduced during presentations to deepen collaborative reflection (25 minutes); and (4) the evaluation stage was expanded to include explicit goal-setting for future digital behavior (15 minutes). These modifications were directly informed by the Cycle I reflection and aimed to enhance student engagement and the depth of self-regulatory processing.

Despite the positive findings, several limitations should be acknowledged. First, the intervention was conducted over only two research cycles without long-term follow-up, making it difficult to determine whether the observed behavioral changes were sustained over time. Second, the findings relied primarily on students' self-reported responses, which may be influenced by social desirability bias (Reyk et al., 2022; Zikra et al., 2022). Therefore, future studies are encouraged to adopt a mixed-methods approach by combining quantitative data with qualitative techniques, such as interviews and reflective journals, to obtain a more comprehensive understanding of students' Instagram use tendency and to evaluate the long-term effectiveness of PBL-based classical guidance services.

This study provides both theoretical and practical contributions to the field of guidance and counseling. Theoretically, it strengthens the evidence supporting the integration of PBL into classical guidance services for addressing students' Instagram use tendency. It also extends the existing body of knowledge by demonstrating the applicability of PBL within the context of guidance and counseling action research in vocational high schools. Practically, the findings offer guidance and counseling teachers an evidence-based and contextual intervention that can be implemented to promote responsible social media use. However, given the limited number of cycles and reliance on self-report data, these conclusions should be interpreted with caution. The findings provide preliminary empirical evidence that PBL-based classical guidance can serve as an innovative intervention model for addressing students' Instagram use tendency in vocational education settings, while acknowledging the need for further rigorous investigation.

CONCLUSION

This study demonstrates that Problem-Based Learning (PBL)-based classical guidance is effective in reducing excessive Instagram use among Grade X TKL 2 students at SMK Negeri 4 Semarang. The intervention resulted in a substantial decrease in students' Instagram use tendency, as reflected by the reduction in the mean score from 79.10 in the pre-test to 61.30 in the post-test after Cycle II, with an average reduction of 17.80 points. In addition, the proportion of students classified in the low Instagram-use category increased from 3% to 70% after two cycles of intervention, indicating meaningful improvements in students' digital behavior.

This study contributes to the development of Guidance and Counseling by providing empirical evidence that Problem-Based Learning can be effectively integrated into classical guidance services to address students' digital behavior in vocational high schools. Practically, the findings offer Guidance and Counseling teachers an evidence-based intervention that can be implemented to promote responsible social media use and support healthier digital behavior. Future research is recommended to investigate the long-term sustainability of this intervention and explore its application to other digital behavioral issues in different educational settings.

ACKNOWLEDGEMENT

The authors would like to express their deepest gratitude to SMK Negeri 4 Semarang for granting permission and facilitating the implementation of this research. Appreciation is also extended to the students of Grade X TKL 2 for their active participation and cooperation throughout the study. The authors sincerely thank the lecturers and academic community of the master's Program in Guidance and Counseling, Universitas Ahmad Dahlan, for their guidance, support, and valuable insights during the research process. Their contributions have been instrumental in the completion of this study.

REFERENCES

- Ahmad, Z., Lasmawan, I. W., & Margunayasa, I. G. (2024). Pengaruh Model Project Based Learning Dan Model Problem Solving Terhadap Kemampuan Berpikir Kreatif Dan Keterampilan Computational Thinking Siswa Sd. *Jurnal Ilmiah Pendidikan Citra Bakti*, 11(2), 369–382. <https://doi.org/10.38048/jipcb.v11i2.3446>
- Almajali, H. K., Owais, D. F., Majali, A. A. Q. B. A. J., Tarawneh, H. H. M., & Al Masri, A. A. (2024). The Impact of Using Twitter and Instagram to Promote Social Values Among University Students. *Journal of Ecohumanism*, 3(7), 339–350. <https://doi.org/10.62754/joe.v3i7.4206>
- Aydın, G., & Mutlu, O. (2023). Project-Based Learning and Flipped Classroom Model Supported Project-Based Learning's Impact on Academic Success, Retention, and Individual Innovation Competence. *International Journal of Contemporary Educational Research*, 10(4), 823–833. <https://doi.org/10.52380/ijcer.2023.10.4.532>
- Bächtold, M., Roca, P., & De Checchi, K. (2023). Students' beliefs and attitudes towards cooperative learning, and their relationship to motivation and approach to learning. *Studies in Higher Education*, 48(1), 100–112. <https://doi.org/10.1080/03075079.2022.2112028>
- Correia, F. P., Pinto-Pinho, P., Silva, R., Helguero, L., Pereira, M. L., Neves, B., & Fardilha, M. (2024). Enhancing Learning in Biomedicine through Research-based Learning: Empowering Students for Future Success. *International Conference on Higher Education Advances*, 281–288. <https://doi.org/10.4995/HEAd24.2024.17308>
- Desyandri, D., Agustina, Y., & Lusiana, D. (2024). The Development of Problem-Based Learning Model E-Module Integrated with Multiculturalism in Elementary Schools. *Jurnal Prima Edukasia*, 12(2), 183–193. <https://doi.org/10.21831/jpe.v12i2.62368>
- Hanifah, N. Y., Retnasari, L., Wardani, E. K., Alfarizqi, M., Ghiffari, N., Ahmad, U., Yogyakarta, D., & Yogyakarta, U. N. (2025). Implementing Problem-Based Learning To Enhance Pancasila Education Outcomes In Grade Iv At Elementary School. *Jurnal Cakrawala Pendas*, 11(1). <https://doi.org/10.31949/jcp.v11i1.11298>
- Lidyasari, A. T., Kawuryan, S. P., Purnomo, Y. W., Faturrohman, F., Wibowo, S. E., Anggito, A., Wanyi, P., & Da Comte, A. (2023). The effectiveness of problem-based teaching module training to increase elementary teacher motivation. *Jurnal Penelitian Ilmu Pendidikan*, 16(2), 133–143. <https://doi.org/10.21831/jpipfp.v16i2.64636>
- Nurohmah, L. (2025). The Implementation of Problem-Based Learning (PBL) Model to Improve Critical Thinking Ability of Class IV Students in Civics Subjects at School. *Jurnal Prima Edukasia*, 13(2), 225–233. <https://doi.org/10.21831/jpe.v13i2.84394>
- Reyk, J. V., Leasa, M., Talakua, M., & Batlolona, J. R. (2022). Research Based Learning: Added Value in Students' Science Critical Thinking Skills. *Jurnal Penelitian Pendidikan IPA*, 8(1), 230–238. <https://doi.org/10.29303/jppipa.v8i1.1121>
- Riomalen, A., Rissi, Y., & Sinaga, D. (2025). AI Dan Pembelajaran Mendalam (Deep Learning): Meningkatkan Kualitas Pendidikan Di Era Digital. *Jayapangus Press Cetta: Jurnal Ilmu Pendidikan*, 8(4). <https://jayapanguspress.penerbit.org/index.php/cetta>
- Rizalia, S., Raehang, R., Rasmina, R., & Sulaiman, S. (2025). Project-Based Learning: A Catalyst for Enhancing Students' Interest and Science Learning Outcomes on Animal Life Cycles Topic. *J.Sci.Learn.*, 8(3), 289–298. <https://doi.org/10.17509/jsl.v8i3.83536>
- Rohmawati, L. I. S., Sudarsono, M., Firdaus, M., & Habsy, B. A. (2024). Menelaah Penerapan Pembelajaran Sosial Emosional Dan Perwujudannya Dalam Pendidikan Yang Berpihak Pada Peserta Didik. *Jurnal Muria Research Guidance and Counseling (MRGC)*, 3(1), 79–90. <https://doi.org/10.24176/mrgc.v3i1.12539>
- Rotar, O. (2022). Online student support: a framework for embedding support interventions into the online learning cycle. *Research and Practice in Technology Enhanced Learning*, 17(1). <https://doi.org/10.1186/s41039-021-00178-4>
- Sutisna, M., Us Sucherman, U., Suandi, D., & Kumalasari, S. (2022). Urgensi Pendidikan

- Pancasila Sejak Dini Bagi Generasi Z. *Jurnal Citizenship Virtues*, 2, 327–338. <https://doi.org/10.37640/jcv.v2i2.1518>
- Wang, H. (2023). “Red Eyes”: Engaging Emotions in Multicultural Education. *Multicultural Perspectives*, 10(1), 10–16. <https://doi.org/10.1080/15210960701869330>
- Yasa, A. D., Rahayu, S., Handayanto, S. K., & Ekawati, R. (2024). Evaluating the Impact of Smart Learning-Based Inquiry on Enhancing Digital Literacy and Critical Thinking Skills. *Ingenierie Des Systemes d’Information*, 29(1), 219–233. <https://doi.org/10.18280/isi.290122>
- Yusnitarini, F., & Firdaus, R. (2025). Learning Module Innovation Interactive for Counseling Guidance: Technology Integration in Increase Intelligence Emotional Student. *Jurnal Evaluasi Dan Pembelajaran*, 7(2), 120–125. <https://doi.org/https://doi.org/10.52647/jep.v7i2.380>
- Zikra, N., Murti, R. C., & Budiharti. (2022). Pengaruh Strategi Mathematical Habits Of Mind Pada Pembelajaran Daring Terhadap Prestasi Belajar Matematika Materi Operasi Bilangan. *Aksioma: Jurnal Program Studi Pendidikan Matematika*, 11(3), 2396–2405. <https://doi.org/https://doi.org/10.24127/ajpm.v11i3.5260>