

Analysis of Metacognition among Pre-Service Elementary School Teachers in Indonesian Language Learning under the Implementation of the Merdeka Curriculum

*Dhiyaun Nadhira¹, Atep Sujana², Effy Mulyasari³

^{1,2,3}Universitas Pendidikan Indonesia, Indonesia

Correspondence Email: dhiyaunnadhira@gmail.com

Article History: Submission: 2026-06-01 || Accepted: 2026-09-04 || Published: 2026-09-20

Abstract

Metacognitive regulation is an important component of prospective teachers' capacity to plan, monitor, and evaluate pedagogical decisions, particularly within the flexible instructional demands of the *Kurikulum Merdeka*. This study aimed to describe prospective teachers' metacognitive regulation in Indonesian language teaching across three dimensions: planning, monitoring, and evaluation. A quantitative descriptive survey design was employed with 40 prospective teachers selected through purposive sampling from several higher education institutions in Indonesia. Data were collected using a researcher-developed 15-item questionnaire consisting of five items for each dimension. The instrument demonstrated satisfactory internal consistency (Cronbach's $\alpha = .87$), and the data were analyzed using descriptive statistics. The results showed an overall mean score of 52.95 out of 60 (88.2%), indicating a high level of perceived metacognitive regulation. Planning obtained the highest percentage (90.3%), followed by monitoring (88.2%) and evaluation (86.2%). Item-level analysis revealed relatively strong scores for preparing instructional materials and actively involving students to monitor understanding, whereas recognizing errors during teaching, reflecting on teaching strengths and weaknesses, and following up on evaluation results received comparatively lower scores. These findings indicate that respondents perceived themselves as relatively stronger in planning than in self-monitoring and reflective evaluation. Teacher education should therefore provide structured opportunities for prospective teachers to integrate planning, monitoring, reflection, and evaluative follow-up into a continuous cycle of pedagogical improvement. Given the self-report design and purposive sample, the findings should be interpreted as a descriptive profile rather than direct evidence of actual teaching performance.

Keywords: Metacognitive regulation, Prospective teachers, Indonesian language teaching, Planning, Monitoring, Evaluation.

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



I. INTRODUCTION

The changing paradigm of education requires teachers not only to possess pedagogical and subject-matter knowledge but also to plan, monitor, and evaluate their instructional decisions reflectively. This demand has become increasingly relevant with the implementation of the *Kurikulum Merdeka*, which provides teachers with greater flexibility to adapt instruction to students' needs, characteristics, and developmental progress. Within this context, teachers' ability to assess the appropriateness of instructional strategies and make adjustments based on both the learning process and its outcomes constitutes an important component of professional competence. Teacher education should therefore prepare prospective teachers not merely to implement instruction but also to reflect on and regulate the thinking processes underlying their pedagogical decisions (Darling-Hammond et al., 2020; Matsumoto-Royo et al., 2022).

Metacognition provides a conceptual framework for understanding this capacity. Flavell (1979) defined metacognition as individuals' knowledge and awareness of their own cognitive processes and their ability to exercise control over those processes. Conceptually, metacognition can be distinguished into metacognitive knowledge and metacognitive regulation. Metacognitive knowledge encompasses declarative, procedural, and conditional knowledge about cognition, whereas metacognitive regulation refers to the processes through which individuals regulate their thinking by planning, monitoring, and evaluating their cognitive activities (Schraw & Dennison, 1994; Schraw, 1998). This distinction is important because knowing which strategy is appropriate does not necessarily mean that an individual can effectively implement, monitor, and evaluate that strategy in practice. Accordingly, the present study specifically focuses on metacognitive regulation, conceptualized as prospective teachers' ability to plan, monitor, and evaluate their pedagogical actions.

In teacher education, metacognitive regulation serves a broader function than merely supporting students' academic success. Prospective teachers need to anticipate instructional needs before teaching, monitor students' responses and the appropriateness of instructional strategies during teaching, and evaluate completed practices to determine necessary improvements. Matsumoto-Royo et al. (2022) showed that opportunities for instructional planning, simulated teaching practice, and feedback can facilitate the development of prospective teachers' metacognitive skills. However, such abilities do not necessarily develop automatically. Bowling et al. (2022), for example, found that prospective teachers may experience difficulty translating reflection into concrete actions for improving their teaching. These findings highlight an important distinction between engaging in reflection and being able to regulate pedagogical thinking systematically throughout the planning, implementation, and evaluation of instruction.

Metacognitive regulation is particularly relevant to Indonesian language learning because language instruction requires teachers to manage complex literacy activities involving reading, writing, speaking, listening, interpretation, and the development of students' thinking skills. Prospective teachers therefore need more than knowledge of language-teaching strategies; they must also be able to determine when and why particular strategies should be used, monitor students' understanding and engagement during instruction, and evaluate whether those strategies have achieved the intended learning purposes. Research on literacy instruction suggests that teachers' modeling of thinking processes and metacognitive strategies can help students understand reading and writing processes more explicitly (Pratt & Hodges, 2025). Research at the elementary school level has also indicated that teacher instruction is associated with the development of students' monitoring and learning-regulation processes (van Loon et al., 2021). Metacognitive regulation is therefore an important competency for preparing prospective teachers to provide Indonesian language instruction that is reflective and responsive to students' learning needs.

Despite its importance, previous research has not produced a uniform picture of metacognition among prospective teachers. A large-scale Indonesian study by Soeharto et al. (2024), involving 4,377 prospective elementary school teachers, reported that most participants demonstrated a moderate level of metacognitive awareness related to reading strategies. Studies conducted in other teacher-education contexts have similarly revealed variation in prospective teachers' abilities to plan, monitor, evaluate, and translate reflection into pedagogical action (Bowling et al., 2022; Matsumoto-Royo et al., 2022). These differences underscore the multidimensional nature of metacognition and suggest that its manifestation may vary according to the activity and pedagogical context being examined. Consequently, prospective teachers' metacognitive abilities should not be understood solely through a global measure but should also be examined through specific dimensions of regulation and within particular pedagogical tasks.

The existing literature further reveals two important research gaps. First, studies involving prospective teachers have frequently examined metacognitive awareness in relation to personal learning, reading strategies, or general reflective practice, whereas explicit profiling of planning, monitoring, and evaluation as dimensions of metacognitive regulation in pedagogical action remains comparatively underexplored. For example, Soeharto et al. (2024) examined prospective elementary teachers' metacognitive awareness of reading strategies, whereas Bowling et al. (2022) investigated metacognitive experiences through reflective activities. Second, limited attention has been given to how these three dimensions of metacognitive regulation are represented in Indonesian language teaching within the instructional demands of the Kurikulum Merdeka. The research gap therefore extends beyond differences in geographical setting or curriculum and concerns the need for a more specific account of how planning, monitoring, and evaluation are represented in prospective teachers' perceptions of preparing, implementing, and evaluating Indonesian language instruction.

To address these gaps, this study aims to describe the profile of prospective teachers' metacognitive regulation in Indonesian language learning across three dimensions: planning, monitoring, and evaluation. Rather than testing causal relationships or attempting to generalize the abilities of all prospective teachers in Indonesia, the study provides a descriptive account of metacognitive-regulation tendencies among the respondents examined. Its contribution lies in mapping the three dimensions within a coherent cycle of pedagogical action, thereby identifying dimensions that appear relatively well developed and those that may require greater attention in

teacher education. Such a profile can provide a more differentiated understanding of prospective teachers' metacognitive regulation and inform efforts to strengthen reflective and self-regulated pedagogical practice, particularly in the context of Indonesian language learning.

II. METHOD

This study employed a quantitative descriptive survey design to provide a systematic profile of prospective elementary school teachers' metacognitive regulation in Indonesian language learning (Creswell, 2014). The study was conducted during the second semester of the 2025/2026 academic year and involved 40 prospective teachers from several higher education institutions in Indonesia. Participants were selected using purposive sampling based on three criteria: (1) being enrolled in an elementary teacher-education program, (2) having completed or currently taking a course related to Indonesian language teaching in elementary school, and (3) having teaching experience through microteaching or field-based teaching practice. These criteria ensured that participants had sufficient theoretical and practical exposure to reflect on pedagogical planning, monitoring, and evaluation (Creswell & Plano Clark, 2018). The research procedure comprised four stages: literature review and preliminary study, instrument development and validation, online data collection through Google Forms, and descriptive statistical analysis (Fraenkel et al., 2012).

Data were collected using a researcher-developed questionnaire based on Flavell's (1979) conceptualization of metacognition and Zimmerman's (2002) self-regulation framework. The instrument consisted of 15 items representing three dimensions of metacognitive regulation: planning (5 items), monitoring (5 items), and evaluation (5 items). Responses were recorded on a five-point Likert scale ranging from 0 to 4, representing the frequency of metacognitive behaviors in the context of Indonesian language teaching. The instrument framework is presented in Table 1.

Table 1. Framework of the Metacognitive Regulation Instrument

No.	Dimension	Indicator	Item
1	Planning	Determining learning objectives	1
2	Planning	Developing instructional strategies	2
3	Planning	Preparing learning materials	3
4	Planning	Adapting instruction to student characteristics	4
5	Planning	Selecting instructional methods	5
6	Monitoring	Monitoring students' understanding	6
7	Monitoring	Adjusting strategies during instruction	7
8	Monitoring	Maintaining awareness of the instructional process	8
9	Monitoring	Maintaining focus on learning objectives	9
10	Monitoring	Encouraging active student interaction	10
11	Evaluation	Assessing learning outcomes	11
12	Evaluation	Conducting self-reflection	12
13	Evaluation	Planning instructional improvements	13
14	Evaluation	Evaluating the effectiveness of instructional methods	14
15	Evaluation	Following up on evaluation results	15

Content validity was assessed by three experts, representing expertise in metacognition, Indonesian language education, and educational measurement and evaluation. The experts examined the correspondence between questionnaire items, dimensions, and indicators (Gregory, 2011). The instrument was subsequently piloted with 30 prospective teachers outside the main study sample. Item analysis showed that all 15 items met the predetermined item-total correlation criterion of $\geq .30$ (Azwar, 2020). Internal consistency was examined using Cronbach's alpha, yielding an overall coefficient of $\alpha = .87$, exceeding the .70 criterion and indicating satisfactory reliability (Nunnally & Bernstein, 1994; Hair et al., 2019).

The data were analyzed using descriptive statistics in SPSS version 26.0. Mean scores, standard deviations, minimum scores, and maximum scores were calculated for each dimension and for the overall metacognitive-regulation score (Creswell, 2014). Respondents' scores were also classified into high, moderate, and low categories using the categorization approach adapted from Azwar (2020): high for scores $\geq (\mu + 1\sigma)$, moderate for scores from $(\mu - 1\sigma)$ to $< (\mu + 1\sigma)$, and low for scores $< (\mu - 1\sigma)$, where μ and σ represent the hypothetical mean and standard deviation of the

instrument. Data screening and a Kolmogorov–Smirnov normality test were also conducted before the descriptive results were summarized in tables and figures.

III. RESULTS AND DISCUSSION

A. Results

This section presents the empirical findings on prospective elementary school teachers' metacognitive regulation in Indonesian language learning within the context of the *Kurikulum Merdeka*. The analysis was organized to provide a descriptive profile of the respondents and their metacognitive regulation. The results first describe the participants' characteristics, followed by the overall metacognitive-regulation profile and a comparison across the three dimensions of planning, monitoring, and evaluation. This structure provides a basis for identifying relative strengths and areas that may require further attention in prospective teachers' regulation of pedagogical thinking and decision-making.

1. Respondent Characteristics

The study involved 40 prospective teachers from several higher education institutions in Indonesia, including Universitas Pendidikan Indonesia (UPI), Universitas Syiah Kuala (USK), Universitas Islam Negeri Ar-Raniry Banda Aceh, Universitas Malikussaleh, UIN Sultanah Nahrasyiah, UIN Sunan Kalijaga Yogyakarta, and Universitas Gadjah Mada (UGM). The respondents represented several educational programs, including Elementary School Teacher Education (PGSD), Elementary Education, Madrasah Ibtidaiyah Teacher Education (PGMI), Indonesian Language Education, and other teacher-education programs. Of the 40 respondents, 34 (85.0%) were female and 6 (15.0%) were male. This distribution is presented in Table 2.

Table 2. Distribution of Respondents by Gender

Gender	Institutional Background	Frequency	Percentage (%)
Female	Various universities	34	85.0
Male	Various universities	6	15.0
Total		40	100.0

The predominance of female respondents is consistent with patterns reported in Indonesian elementary teacher-education contexts, where female students constitute a substantial proportion of those pursuing teacher education (Sarimanah, 2020). Meanwhile, the respondents' varied institutional and academic backgrounds provided diversity within the sample. However, because the participants were selected purposively and the sample consisted of only 40 respondents, this diversity should be understood as a characteristic of the study sample rather than as a basis for statistical generalization to the broader population of prospective teachers in Indonesia.

2. Overall Profile of Prospective Teachers' Metacognitive Regulation

Analysis of the 15-item questionnaire showed that the respondents obtained a mean total metacognitive-regulation score of 52.95 out of a maximum possible score of 60, equivalent to 88.2% of the maximum score. Based on the percentage-based classification applied in this study, this result was categorized as Very High. Descriptively, the finding indicates that the prospective teachers in the sample reported a high frequency of metacognitive-regulation behaviors related to Indonesian language teaching. Given that the instrument was self-reported, however, the scores represent respondents' perceptions of their planning, monitoring, and evaluation practices rather than direct observations of their actual teaching performance.

A comparison across the three dimensions revealed a relatively consistent pattern, although differences were evident in their mean scores. Planning obtained the highest score, followed by monitoring and evaluation. The descriptive results for each dimension are presented in Table 3.

Table 3. Mean Scores of Metacognitive Regulation by Dimension

No.	Dimension	Mean Score	Percentage (%)	Category
1	Planning	18.05	90.3	Very High
2	Monitoring	17.65	88.2	Very High
3	Evaluation	17.25	86.2	Very High
	Overall	52.95	88.2	Very High

As shown in Table 3, all three dimensions were classified as Very High. Planning achieved the highest mean score ($M = 18.05$; 90.3%), followed by monitoring ($M = 17.65$; 88.2%) and evaluation ($M = 17.25$; 86.2%). The difference between the highest and lowest dimensional means was only 0.80 points, indicating relatively similar self-reported scores across the three dimensions. Nevertheless, the consistent ordering of planning, monitoring, and evaluation provides an initial indication that respondents perceived themselves as relatively stronger in preparing instructional actions than in monitoring ongoing instruction or evaluating completed teaching practices. Evaluation, although still classified as very high, represented the lowest-scoring dimension and therefore warrants closer examination at the indicator level in the subsequent analysis.

3. Analysis of Metacognitive Regulation by Dimension

To obtain a more detailed profile of prospective teachers' metacognitive regulation, each dimension was analyzed at the item level. The analysis focused on planning, monitoring, and evaluation, with five indicators representing each dimension. This item-level analysis was used to identify the behaviors with the highest and lowest self-reported scores within each dimension.

a. Planning

The planning dimension comprised five indicators related to setting learning objectives, planning instructional strategies in accordance with the Kurikulum Merdeka, preparing learning materials, considering students' abilities, and selecting appropriate instructional methods. Planning obtained a mean total score of 18.05 out of 20 (90.3%), the highest among the three dimensions. The item-level results are presented in Table 4.

Table 4. Item-Level Analysis of the Planning Dimension

Item	Statement	Mean	Category
P1	Setting learning objectives before teaching Indonesian language	3.62	Very High
P2	Planning instructional strategies in accordance with the <i>Kurikulum Merdeka</i>	3.50	Very High
P3	Preparing learning materials before instruction	3.77	Very High
P4	Considering students' abilities when planning instruction	3.52	Very High
P5	Selecting instructional methods appropriate to the learning objectives	3.62	Very High
Dimension Mean		3.61	Very High

As shown in Table 4, P3, concerning the preparation of learning materials before instruction, obtained the highest mean ($M = 3.77$), whereas P2, concerning the planning of instructional strategies aligned with the Kurikulum Merdeka, obtained the lowest ($M = 3.50$). Nevertheless, all five items were classified as Very High. This pattern indicates that respondents reported consistently strong planning behaviors, particularly in preparing instructional materials. The comparatively lower score for curriculum-aligned strategy planning suggests that this component may warrant closer attention, although the descriptive data alone do not establish why this difference occurred.

b. Monitoring

The monitoring dimension assessed respondents' reported behaviors in monitoring students' understanding, adjusting instructional strategies when students encountered difficulties, recognizing errors during teaching, maintaining focus on learning objectives,

and encouraging active student participation. The dimension obtained a mean total score of 17.65 out of 20 (88.2%), which was also classified as Very High. Detailed results are presented in Table 5.

Table 5. Item-Level Analysis of the Monitoring Dimension

Item	Statement	Mean	Category
PM1	Monitoring students' understanding during instruction	3.73	Very High
PM2	Adjusting instructional strategies when students experience difficulties	3.33	Very High
PM3	Recognizing errors while teaching	3.30	Very High
PM4	Maintaining focus on learning objectives during instruction	3.55	Very High
PM5	Encouraging active student participation to assess their understanding	3.75	Very High
Dimension Mean		3.53	Very High

Among the monitoring indicators, PM5 obtained the highest mean ($M = 3.75$), followed closely by PM1 ($M = 3.73$). In contrast, PM3, which concerned recognizing errors during teaching, obtained the lowest mean ($M = 3.30$). The pattern suggests that respondents reported stronger monitoring behaviors directed toward students' participation and understanding than toward recognizing problems in their own teaching while instruction was underway. The relatively lower scores for PM2 and PM3 also indicate that real-time instructional adjustment and self-monitoring may represent areas requiring greater attention in prospective teachers' practical preparation.

c. Evaluation

The evaluation dimension included evaluating learning outcomes, reflecting on strengths and weaknesses in teaching, planning improvements for subsequent instruction, assessing the effectiveness of instructional methods, and following up on evaluation results. Evaluation obtained a mean total score of 17.25 out of 20 (86.2%). Although classified as Very High, it was the lowest-scoring of the three metacognitive-regulation dimensions. The item-level results are presented in Table 6.

Table 6. Item-Level Analysis of the Evaluation Dimension

Item	Statement	Mean	Category
E1	Evaluating learning outcomes after instruction	3.62	Very High
E2	Reflecting on strengths and weaknesses in teaching	3.33	Very High
E3	Planning improvements for subsequent instruction	3.52	Very High
E4	Assessing the effectiveness of the instructional methods used	3.42	Very High
E5	Taking follow-up actions based on evaluation results	3.35	Very High
Dimension Mean		3.45	Very High

As presented in Table 6, E1, evaluating learning outcomes after instruction, obtained the highest mean ($M = 3.62$), whereas E2, reflecting on strengths and weaknesses in teaching, obtained the lowest mean ($M = 3.33$), followed closely by E5 ($M = 3.35$). Thus, respondents reported relatively stronger practices in evaluating learning outcomes than in critically reflecting on their own teaching and translating evaluation results into follow-up actions. Combined with the monitoring results, this pattern provides a more differentiated profile: prospective teachers reported particularly strong behaviors related to instructional preparation and monitoring students, while self-monitoring, reflective evaluation, and follow-up actions received comparatively lower scores.

B. Discussion

The findings indicate that the respondents reported a high level of metacognitive regulation in Indonesian language teaching, with an overall score of 52.95 out of 60 (88.2%). Across the three dimensions, planning obtained the highest percentage (90.3%), followed by monitoring (88.2%) and evaluation (86.2%). This pattern suggests that respondents perceived themselves as relatively stronger in regulating pedagogical thinking before instruction than in monitoring their

decisions during instruction and evaluating them afterward. From a metacognitive perspective, however, these dimensions should function as an interconnected regulatory cycle rather than as separate competencies. Effective pedagogical regulation requires teachers not only to formulate instructional plans but also to monitor their implementation and use evaluation results to inform subsequent decisions (Pintrich, 2002).

These findings should be interpreted in relation to the specific construct measured in this study. Previous large-scale research involving 4,377 prospective elementary teachers in Indonesia reported predominantly moderate levels of metacognitive awareness related to reading strategies. However, this difference does not necessarily indicate contradictory findings because the studies examined metacognition in different contexts and through different instruments. The present study focused specifically on respondents' perceptions of pedagogical metacognitive regulation, represented by planning, monitoring, and evaluation, rather than metacognitive awareness in performing a reading task. This distinction reinforces the multidimensional nature of metacognition and suggests that its profile should be interpreted according to the specific cognitive or pedagogical activity being assessed.

Planning emerged as the strongest dimension, with preparation of instructional materials obtaining the highest item score within this dimension. This finding suggests that respondents were particularly confident in activities undertaken before instruction, including preparing materials, defining objectives, and selecting instructional approaches. Such a pattern may reflect the structure of teacher-education programs, in which prospective teachers repeatedly engage in lesson planning through pedagogical coursework, microteaching, and field-based teaching practice. Nevertheless, strong planning does not necessarily indicate an equivalent capacity to adapt those plans to changing classroom conditions. Cheng (2025) emphasized that prospective teachers' metacognitive pedagogy can be strengthened when planning is integrated with Lesson Study, classroom observation, collaborative reflection, and the documentation of knowledge generated through teaching experience. Planning should therefore be developed as the initial component of an iterative regulatory cycle rather than merely as a procedural requirement before teaching.

A more differentiated pattern appeared in the monitoring dimension. Respondents reported relatively strong behaviors in actively involving students to determine their understanding, whereas recognizing their own errors while teaching received a comparatively lower score. This contrast may distinguish student-oriented monitoring from self-monitoring of pedagogical actions. Monitoring students can rely on observable indicators such as responses, participation, and task performance, whereas recognizing weaknesses in one's own instructional decisions while simultaneously managing classroom interaction requires more complex reflection-in-action. Chaseley and Abercrombie (2025) showed that structured reflection prompts can support prospective teachers' pedagogical reasoning, problem-solving, metacognition, and reflective practice. This suggests that teacher education should provide structured opportunities for prospective teachers to examine not only students' responses but also the reasoning underlying their own instructional decisions.

Evaluation obtained the lowest score among the three dimensions, although it remained within the Very High category. More importantly, the item-level results showed that reflecting on strengths and weaknesses in teaching ($E2 = 3.33$) and taking follow-up action based on evaluation results ($E5 = 3.35$) were among the lowest-scoring behaviors. This pattern suggests that the central challenge may not lie in conducting evaluation itself but in transforming evaluation into critical reflection and actionable pedagogical improvement. García-Lázaro and Reyes-de-Cózar (2025) similarly demonstrated that prospective teachers' reflection during field experiences can vary from relatively superficial accounts to deeper forms of pedagogical reflection. Therefore, providing opportunities to reflect is insufficient unless prospective teachers are also guided to identify instructional problems, examine the assumptions underlying their decisions, consider alternative strategies, and translate their conclusions into subsequent teaching actions.

This issue is particularly relevant to language teacher education. Liu et al. (2025) reported that explicit instruction in reflective practice can strengthen the breadth and depth of prospective language teachers' reflection, while Balıkcı and Ataş (2026) highlighted the potential of video-

based reflection during microteaching to support reflective practice. In the context of Indonesian language teacher preparation, similar approaches could provide prospective teachers with concrete evidence of their own pedagogical decisions. Video-recorded microteaching, evidence-based reflective journals, peer feedback, and post-teaching conferences may help shift reflection from simply describing what occurred toward analyzing why it occurred, how students responded, and what should be modified in subsequent instruction.

The planning-monitoring-evaluation pattern also has implications for teacher preparation within the Kurikulum Merdeka. Greater pedagogical flexibility requires teachers to make instructional decisions that respond to students' needs and assessment evidence rather than merely implement predetermined plans. Metacognitive regulation should therefore be cultivated as a continuous pedagogical cycle of planning, implementation and monitoring, evaluation, improvement, and replanning. Structured Lesson Study, guided reflection, performance evidence, lecturer and peer feedback, and opportunities to reimplement revised instructional strategies may help connect these stages more systematically. Such experiences are particularly important for strengthening evaluation and follow-up practices, which emerged as comparatively weaker components of the respondents' metacognitive-regulation profile.

Nevertheless, the high scores observed in this study require cautious interpretation. Because the instrument was a self-report questionnaire, the findings represent respondents' perceptions of their metacognitive regulation rather than direct evidence of their actual metacognitive performance during teaching. Self-reported metacognitive judgments may not necessarily correspond to monitoring during actual tasks or observable performance (Seban et al., 2025). Future research should therefore combine questionnaires with performance-based evidence, such as microteaching observations, video analysis, think-aloud protocols, reflective journals, or assessments of actual instructional decision-making.

The study is also limited by its purposive sample of 40 respondents, which does not support generalization to all prospective elementary teachers in Indonesia. The findings are more appropriately interpreted as a descriptive profile of the participating group. Nevertheless, the study identifies a consistent pattern across the three components of metacognitive regulation: planning was relatively the strongest dimension, whereas evaluation was comparatively the weakest, with self-monitoring, critical reflection, and evaluative follow-up emerging as areas requiring greater attention. These findings provide a basis for teacher-education programs to complement lesson-planning competencies with structured opportunities for prospective teachers to monitor, critically examine, and systematically improve their pedagogical decisions.

IV. CONCLUSION

This study provides a descriptive profile of prospective teachers' metacognitive regulation in Indonesian language teaching across three interconnected dimensions: planning, monitoring, and evaluation. The respondents reported an overall score of 52.95 out of 60 (88.2%), indicating a high level of perceived metacognitive regulation. Planning emerged as the relatively strongest dimension (90.3%), followed by monitoring (88.2%) and evaluation (86.2%). At the item level, respondents reported strong practices in preparing instructional materials and engaging students to monitor their understanding, whereas recognizing errors during teaching, reflecting on strengths and weaknesses, and following up on evaluation results received comparatively lower scores. These findings suggest that prospective teachers perceive themselves as more prepared to regulate pedagogical thinking before instruction than to engage in self-monitoring and reflective follow-up during and after teaching. Teacher-education programs should therefore strengthen metacognitive regulation as a continuous cycle of planning, monitoring, evaluation, improvement, and replanning through structured reflection, feedback, and evidence-based teaching practice. Because the findings were derived from a self-report questionnaire administered to a purposively selected sample of 40 respondents, they should be interpreted as a descriptive profile rather than direct evidence of actual teaching performance or a representation of all prospective teachers in Indonesia.

CONFLICT OF INTEREST

The authors declare that there are no financial, institutional, personal, or professional conflicts of interest that could have influenced the design, data collection, analysis, interpretation, or reporting of this study. The authors take full responsibility for the integrity and accuracy of the work presented in this manuscript.

AUTHOR CONTRIBUTIONS

Dhiyaun Nadhira: Conceptualization, Investigation, Data Collection, Data Curation, Formal Analysis, and Writing – Original Draft.

Atep Sujana: Conceptualization, Methodology, Supervision, Validation, and Writing – Review & Editing.

Effy Mulyasari: Methodology, Supervision, Validation, Data Interpretation, and Writing – Review & Editing.

All authors contributed to the interpretation of the findings, critically reviewed the manuscript, and approved the final version for publication.

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The research activities, including data collection, analysis, and manuscript preparation, were conducted independently by the authors.

ACKNOWLEDGMENT

The authors gratefully acknowledge Universitas Pendidikan Indonesia for its academic support during the research process. The authors also thank all prospective teachers who voluntarily participated in this study and the experts who contributed to the validation of the research instrument.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES

Artificial intelligence (AI)-assisted tools were used solely to support language editing, academic translation, proofreading, and improvements in the clarity and readability of the manuscript. AI was not used to generate research data, determine the research design, recruit participants, conduct statistical analyses, or formulate the empirical findings. All AI-assisted content was critically reviewed and verified by the authors, who retain full responsibility for the accuracy, integrity, and originality of the final manuscript.

REFERENCES

- Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's educational objectives. Longman.
- Arikunto, S. (2019). Prosedur penelitian: Suatu pendekatan praktik. Rineka Cipta.
- Azwar, S. (2020). Penyusunan skala psikologi (Edisi ke-3). Pustaka Pelajar.
- Balıkçı, G., & Ataş, U. (2026). Video-based reflection in second language teacher education: Developing reflective practice through microteaching. *Journal of Education for Teaching*. <https://doi.org/10.1080/02607476.2026.2630282>
- Brown, A. L. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. E. Weinert & R. H. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 65–116). Lawrence Erlbaum Associates.
- Chaseley, T. L., & Abercrombie, S. (2025). Using scaffolds to support preservice teachers' reflective practice. *Frontiers in Education*, 10, 1621269. <https://doi.org/10.3389/feduc.2025.1621269>
- Cheng, E. C. K. (2025). Nurturing preservice teachers' metacognitive pedagogies through Lesson Study. *Teaching Education*, 36(2), 142–158. <https://doi.org/10.1080/10476210.2025.2451880>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.

- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140.
- Desoete, A. (2008). Multi-method assessment of metacognitive skills in elementary school children: How you test is what you get. *Metacognition and Learning*, 3(3), 189–206.
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, 34(10), 906–911. <https://doi.org/10.1037/0003-066X.34.10.906>
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). McGraw-Hill.
- Gregory, R. J. (2011). *Psychological testing: History, principles, and applications* (6th ed.). Pearson.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Hidayat, R., & Suryani, N. (2021). Efektivitas strategi pembelajaran reflektif dalam meningkatkan kemampuan metakognisi mahasiswa calon guru Bahasa Indonesia. *Jurnal Pendidikan Bahasa dan Sastra*, 21(1), 45–58.
- Kartika, D., & Rustaman, N. Y. (2019). Kemampuan metakognisi calon guru sekolah dasar dalam pembelajaran sains. *Jurnal Pendidikan Dasar*, 10(2), 112–123.
- Kemendikbudristek. (2022). *Panduan implementasi Kurikulum Merdeka*. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia.
- Maulida, Ida, Azizah, Nur, Rahmatullah, A., Anggraini, A., Jihadillah Saepurohman, Muthi'ah, & Sukiman, S. (2024). Penguatan Implementasi Kurikulum Merdeka bagi Guru PAUD. *Ainara Journal (Jurnal Penelitian Dan PKM Bidang Ilmu Pendidikan)*, 5(1), 18–25. <https://doi.org/10.54371/ainj.v5i1.339>
- Mulyasa, E. (2023). *Implementasi Kurikulum Merdeka: Pengembangan kompetensi guru di era transformasi pendidikan*. Remaja Rosdakarya.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice*, 41(4), 219–225. https://doi.org/10.1207/s15430421tip4104_3
- Puspita, A., Wulandari, S., & Kurniawan, A. (2022). Pelatihan metakognisi terintegrasi dalam perkuliahan calon guru sekolah dasar: Dampak pada kemampuan perencanaan, pemantauan, dan evaluasi pembelajaran. *Jurnal Pendidikan Guru Sekolah Dasar*, 11(3), 201–215.
- Rahayu, T. (2021). Analisis kemampuan refleksi diri mahasiswa calon guru pada pembelajaran Bahasa Indonesia berbasis Kurikulum Merdeka. *Jurnal Bahasa dan Sastra Indonesia*, 9(1), 78–92.
- Rahman, A. (2020). Kemampuan metakognisi calon guru dalam perencanaan pembelajaran: Studi pada mahasiswa PGSD. *Jurnal Pendidikan Dasar*, 12(1), 45–58.

- Sabilah, I. ., Umar, U., & Erliana, Y. D. . (2023). Analisis Tingkat Kesiapan Guru dalam Mengimplementasikan Kurikulum Merdeka Belajar di Sekolah Dasar. *Ainara Journal (Jurnal Penelitian Dan PKM Bidang Ilmu Pendidikan)*, 4(3), 210–215. <https://doi.org/10.54371/ainj.v4i3.311>
- Sari, D. P. (2021). Analisis kemampuan refleksi calon guru SD dalam pembelajaran berbasis literasi. *Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, 8(2), 101–115.
- Sarimanah, E. (2020). Profil kemampuan metakognisi mahasiswa calon guru Bahasa Indonesia di perguruan tinggi kependidikan. *Jurnal Didaktis Bahasa Indonesia*, 7(2), 134–148.
- Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Science*, 26(1–2), 113–125. <https://doi.org/10.1023/A:1003044231033>
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19(4), 460–475. <https://doi.org/10.1006/ceps.1994.1033>
- Schraw, G., Crippen, K. J., & Hartley, K. (2006). Promoting self-regulation in science education: Metacognition as part of a broader perspective on learning. *Research in Science Education*, 36(1–2), 111–139.
- Seban, P., Sikl, R., & Urban, K. (2025). Relationship between monitoring judgments and self-report measures of metacognition in educational research. *International Journal of Educational Research*, 131, 102578. <https://doi.org/10.1016/j.ijer.2025.102578>
- Soeharto, S., Martono, M., Hairida, H., Akhmetova, A., Arifiyanti, F., Csapó, B., & Charalambous, C. (2024). The metacognitive awareness of reading strategy among pre-service primary teachers and the possibility of rating improvement using Rasch analysis. *Studies in Educational Evaluation*, 80, 101319. <https://doi.org/10.1016/j.stueduc.2023.101319>
- Sugiyono. (2019). Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, dan R&D (Edisi Revisi). Alfabeta.
- Veenman, M. V. J. (2012). Metacognition in science education: Definitions, constituents, and their intricate relation with cognition. In A. Zohar & Y. J. Dori (Eds.), *Metacognition in science education: Trends in current research* (pp. 21–36). Springer. https://doi.org/10.1007/978-94-007-2132-6_2
- Waruwu, D., Hia, M., Zega, P., & Harefa, H. O. N. (2025). Peran Guru Mata Pelajaran dalam Menerapkan Kurikulum Merdeka. *Ainara Journal (Jurnal Penelitian Dan PKM Bidang Ilmu Pendidikan)*, 6(2), 284–292. <https://doi.org/10.54371/ainj.v6i2.840>
- Yuliati, L., & Lestari, M. (2021). Kemampuan metakognisi calon guru sekolah dasar dalam mengevaluasi strategi pembelajaran Bahasa Indonesia. *Jurnal Ilmiah Pendidikan Dasar*, 8(2), 156–170.
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2
- Zohar, A., & Barzilai, S. (2013). A review of research on metacognition in science education: Current and future directions. *Studies in Science Education*, 49(2), 121–169.