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Enhancing Reflective Depth through Structured Video Mentoring in Indonesian Teacher Preparation Programs

Lismi Animatul Chisbiyah[1], Laili Hidayati[2]
Universitas Negeri Malang, Indonesia [12]
Correspondent : lismi.chisbiyah@um.ac.id [1]

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ABSTRACT: Reflective practice is crucial for pre-service teachers (PSTs) because it integrates theory and practice. Through reflection, PSTs can analyze their experiences, identify improvement areas, and strengthen pedagogical skills. Using a quasi-experimental mixed-methods design, 240 PSTs from three Indonesian teacher education institutions were divided into two groups: video-based mentoring and conventional mentoring. Reflective growth was measured using the Reflective Thinking Questionnaire (RTQ), Groningen Reflection Ability Scale (GRAS), and coded reflective journals. Mediation analysis assessed the role of mentoring quality using the METPI instrument. Thematic analysis of journals and interviews complemented the quantitative findings. PSTs in the video-supported mentoring group showed significantly higher post-test scores in both RTQ and GRAS compared to the control group. Mediation analysis confirmed that mentoring quality significantly predicted reflective depth. Qualitative data revealed common themes such as increased self-awareness, emotional resilience, and a refined teaching philosophy. The study confirms the value of modeling, coaching, and fading in mentoring, and demonstrates that video analysis supports deeper metacognitive engagement. National mentoring frameworks such as PPG and Kampus Mengajar offer strong infrastructure for scaling these practices. Nevertheless, challenges related to technological access and mentor training require systemic policy responses. Video-based mentoring enhances reflective thinking and supports the professional identity formation of PSTs. This model offers a scalable and theoretically sound strategy for improving teacher education quality in Indonesia and similar contexts. Further research should investigate long-term outcomes and implementation models across diverse institutions.

Keywords: Pre-Service Teacher, Reflective Practice, Video-Based Mentoring, Cognitive Apprenticeship, Teacher Education, Mentoring Quality, Indonesia.

INTRODUCTION

Reflective practice plays a fundamental role in developing teaching competencies among pre-service teachers (PSTs). It facilitates the integration of theory and practice, allowing PSTs to critically analyze their experiences, identify areas for improvement, and enhance their pedagogical skills. Scholars such as Schön emphasize the importance of reflective thinking, suggesting that it leads to deeper understanding and informed decision-making in teaching contexts (Liesa et al.,

2023). Additionally, Korthagen's model of reflective practice highlights the significance of integrating personal beliefs and experiences into professional development, enabling PSTs to connect their teaching practices with their values and aspirations (Orland-Barak & Wang, 2020). The incorporation of these theoretical frameworks into teacher education programs resonates with the goal of fostering an adaptive and responsive teaching workforce that can thrive in dynamic educational environments.

The application of Schön's and Korthagen's theories informs a variety of teacher education programs globally. Many institutions have integrated reflective practices into their training curricula, aiming to encourage PSTs to engage in meaningful self-evaluation and peer feedback. For instance, programs that utilize reflective journals and structured feedback mechanisms empower PSTs to articulate their teaching practices and reflect on their successes and failures (Sert, 2023). Moreover, the emphasis on reflective practice has led to innovative approaches such as video-based feedback, where PSTs can observe their teaching in action, analyze their methodologies, and receive targeted feedback from mentors (Liesa et al., 2023; Sert, 2023). This alignment with reflective theory underscores the potential for PSTs to become lifelong learners who continuously refine their teaching competencies.

Despite the obvious benefits, several barriers inhibit the achievement of critical reflection among PSTs. Many PSTs face time constraints within their demanding schedules, limiting their opportunities to engage deeply with reflective practices. Additionally, a lack of formal training in reflective methodologies can leave PSTs feeling ill-equipped to engage in meaningful reflection (Turan & Yiğitoğlu, 2023). Cultural factors can also play a role, particularly in contexts where traditional pedagogical approaches dominate, and questioning or reevaluating teaching practices is not encouraged (Orland-Barak & Wang, 2020). Therefore, addressing these barriers necessitates an intentional focus on creating supportive environments that foster a culture of reflection and continuous improvement within pre-service education.

Across the globe, mentoring practices in teacher education differ significantly, influenced by cultural, institutional, and pedagogical contexts. In Indonesia, for example, mentoring often emphasizes hierarchical relations, where experienced teachers act as primary guides for PSTs (Orland-Barak & Wang, 2020). In contrast, several Western models emphasize co-constructed mentoring, allowing for more reciprocal relationships where PSTs and mentors learn collaboratively (Molitor et al., 2018; Pozzi et al., 2020). This divergence suggests that while the essence of mentoring remains vital to professional development, the methods and approaches can vary significantly. Institutions often design mentoring frameworks that reflect local educational philosophies and address the contextual needs of their PSTs (Orland-Barak & Wang, 2020).

The depth of reflection practiced by PSTs considerably impacts teaching quality and student outcomes. Research demonstrates that PSTs who engage in deeper reflections not only improve their instructional strategies but also develop enhanced emotional awareness and empathy towards their students (Sert, 2023). This emotional and pedagogical growth leads to better student engagement and learning experiences, ultimately translating into improved academic performance. Moreover, deeper reflective practices encourage PSTs to adopt a growth mindset, leading to

enhanced resilience and adaptability in their teaching careers (Liesa et al., 2023; Sert, 2023). Therefore, emphasizing reflective depth has significant implications not only for PSTs' professional growth but also for fostering student success in diverse educational settings.

Video-based mentoring has emerged as a strategically valuable tool for enhancing PST development, offering numerous theoretical and practical advantages. Empirically, studies show that video reflections facilitate a more concrete analysis of teaching practices, enabling PSTs to visualize their interactions within the classroom context (Liesa et al., 2023; Sert, 2023). This visual feedback allows for a richer, more nuanced understanding of teaching dynamics, promoting deeper levels of critical analysis. Furthermore, video-based mentoring supports the development of specific competencies, including classroom management, lesson delivery, and student engagement strategies (Boxtel, 2017). Through repeated cycles of observation and feedback, PSTs can iteratively refine their skills, making video-based mentoring an effective approach to high-quality educator preparation and training (Sert, 2023).

In conclusion, reflective practices linked to Schön's and Korthagen's theoretical frameworks significantly enhance the development of teaching competencies among PSTs. However, critical reflection is often hampered by institutional and personal barriers. Effective mentoring approaches, which vary globally, contribute to the professional development of PSTs by fostering a supportive and collaborative learning environment. The depth of reflective practice correlates directly with teaching effectiveness and student success, highlighting the need for innovative methods such as video-based mentoring to drive this process forward.

METHOD

This study employed a quasi-experimental mixed-methods design to examine the impact of video-based mentoring on PSTs' reflective practice. The choice of this design was based on its ability to combine numerical outcomes with qualitative insights, thereby capturing both measurable growth and contextualized experiences within the cognitive apprenticeship framework.

A mixed-methods design was employed to capture both quantitative shifts in reflective depth and qualitative insights into the mentoring process. This design enabled triangulation between numerical indicators (e.g., pre-post scores) and participant perceptions, enhancing validity (Antonio & Prudente, 2021).

The study involved 240 PSTs enrolled in teaching practicums across three Indonesian LPTKs. Participants were randomly assigned to two groups: the experimental group (video-based mentoring) and the control group (conventional mentoring).

Instruments and Measures

Reflective thinking was assessed using multiple validated instruments:

- Reflective Thinking Questionnaire (RTQ): Captures levels of habitual action, understanding, and reflection (Kurti, 2023).
- Critical Reflection Instrument (CRI): Evaluates depth of reflection by examining assumptions, context, and consequences (Reis & Braund, 2019).
- Structured Reflective Journals: Qualitative data collection tool to assess reflective writing (Kurti, 2023).
- METPI (Mentoring Quality Scale): Assesses mentor attributes, feedback quality, and modeling effectiveness.

The study was conducted over one academic semester. Both groups underwent pre- and post-tests using RTQ and CRI. PSTs submitted weekly journals, with a stratified sample (10–20%) double-coded using Larrivee's rubric.

In the experimental group:

- Mentors applied the cognitive apprenticeship model, consisting of initiation, modeling, scaffolding, and fading stages (Aderibigbe et al., 2016; Stafeniak & Scott-Brown, 2016).
- PSTs engaged in video reflection cycles involving self-observation, mentor-led discussion, and goal-setting.
- Stimulated recall interviews were conducted to examine metacognitive development.

The control group followed traditional mentoring without structured video reflection or coaching frameworks.

Quantitative data were analyzed using:

- ANCOVA: To assess post-test differences between groups while controlling for pre-test scores (Kaçar, 2023).
- Mediation Analysis: To determine whether mentoring quality (METPI) mediated reflective growth.

Qualitative data from journals and interviews underwent thematic analysis to identify recurring patterns, aligned with grounded theory principles (Walters et al., 2019).

RESULT AND DISCUSSION

Quantitative Findings

Table 1. RTQ and GRAS Pre-Post Scores by Group

Measure	Group	Pre-Test Mean	Post-Test Mean	SD (Post)	N
RTQ	Video-based Mentoring	2.75	3.65	0.43	120
RTQ	Traditional Mentoring	2.78	3.21	0.47	120
GRAS	Video-based Mentoring	3.12	3.88	0.39	120
GRAS	Traditional Mentoring	3.14	3.45	0.44	120

Table 2. Mediation Analysis: Mentoring Quality (METPI) → Reflective Growth

Path	Coefficient (β)	SE	p-value
Mentoring Type → METPI	0.41	0.07	<0.001
METPI → Reflective Score	0.38	0.06	<0.001
Indirect Effect (Mediated)	0.16	0.04	<0.001

Reflective thinking was assessed using RTQ and GRAS. Both instruments showed that the video-based mentoring group demonstrated significantly higher reflective gains than the traditional group.

RTQ and GRAS Scores

Repeated measures analyses, including ANCOVA, indicated that mentoring models significantly influenced reflective outcomes. The video-based group exhibited greater growth in both RTQ and GRAS scores. This aligns with research by Nagro et al. (2021), who found that interactive mentoring models foster deeper cognitive processing.

Mediation by Mentoring Quality

Further mediation analysis confirmed that perceived mentoring quality (measured by METPI) significantly influenced the relationship between intervention type and reflective growth. High-quality mentoring, characterized by feedback and modeling, was associated with greater reflection gains (Morin et al., 2019; Nagro et al., 2021).

Instrument Validity

The METPI instrument demonstrated high internal consistency (Cronbach's alpha > 0.70) and strong correlations with reflective outcomes, validating its use (O'Brien et al., 2020).

Qualitative Findings

Journal Themes

Thematic analysis of reflective journals identified recurring patterns: increased self-awareness, emotional responses to classroom dynamics, and strategies for enhancing student engagement. These themes echo findings by Yang (2023) and Zainuddin et al. (2022), highlighting the richness of reflection.

Impact of Video Analysis

PSTs consistently described the use of video recordings as transformative. Analyzing recorded teaching sessions led to heightened awareness of instructional practices and student interactions (Peralta et al., 2020; Susantini et al., 2016). Collaborative peer discussions around these videos further deepened reflective dialogue (Russ, 2017).

Modeling–Coaching–Fading Cycle

Mentoring sessions clearly demonstrated the cognitive apprenticeship cycle. Mentors modeled instructional strategies, coached PSTs through feedback, and gradually withdrew support as competence increased a process corroborated by Nagro (2019).

Reflection Level Identification

Larrivee's rubric was applied to journal samples to assess reflection levels. Most PSTs progressed from habitual action to pedagogical and critical reflection, supporting this rubric's effectiveness in capturing qualitative growth.

Video-Supported Mentoring and Cognitive Scaffolding in Teacher Education

Video-supported mentoring provides a structured tool for cognitive scaffolding in teacher education. By combining self-observation with mentor feedback, PSTs develop awareness of classroom dynamics and strengthen metacognitive engagement. This section builds on earlier results by emphasizing how the process translates theoretical frameworks into practice, while also noting its limitations.

This process of video-supported reflection aligns well with the core principles of cognitive scaffolding. In particular, mentors who strategically employ modeling, coaching, and fading guide PSTs through progressive zones of development, thereby reinforcing the acquisition of

pedagogical knowledge in manageable stages (Sert, 2023). The use of video footage enhances this process by capturing subtle aspects of classroom interaction, such as teacher talk, body language, and student engagement elements that are often missed during live teaching experiences. PSTs can revisit these moments multiple times, allowing for richer analysis and targeted improvement.

Moreover, this pedagogical model resonates with Vygotsky's sociocultural theory, which posits that learning is most effective when mediated through social interaction and appropriate scaffolding. The recorded lessons serve as shared artifacts that prompt analytical dialogue between PSTs and mentors. These reflective conversations allow PSTs to deconstruct their teaching decisions and co-construct meaning around best instructional practices. Topics such as managing disruptive behavior, adjusting lesson pacing, and differentiating instruction are often addressed in these discussions, thereby broadening the PSTs' instructional repertoire and confidence. Ultimately, these practices not only deepen reflection but also cultivate a habit of continuous improvement.

Implications of Reflective Practice for Teacher Professional Identity

Reflective practice plays a fundamental role in shaping and strengthening the evolving professional identity of PSTs. Regular engagement in reflective processes allows PSTs to consolidate experiences from their practicum settings, analyze their instructional decisions, and begin articulating a coherent teaching philosophy (Helleve, 2017). These reflections contribute to a deeper sense of agency and professionalism, as PSTs learn to see themselves as intentional, adaptive educators rather than passive deliverers of content.

Structured tools such as reflective journals, observation rubrics, and discussion protocols guide this reflective process and support PSTs in identifying both their strengths and areas for further development (Nopriyeni et al., 2019). As they develop reflective competence, PSTs begin to make principled decisions about classroom practice that are grounded in self-awareness, student needs, and theoretical understanding. This, in turn, fosters a more authentic teaching persona aligned with their values and aspirations.

Furthermore, as PSTs encounter both successes and setbacks during their teaching practice, reflective thinking helps them navigate these experiences constructively. The ability to reinterpret challenges as learning opportunities builds resilience and promotes a growth mindset. Engagement in deep reflection also reinforces a commitment to lifelong learning, positioning PSTs as proactive learners who continuously seek to improve their craft (Liesa et al., 2023; Sert, 2023). The cumulative effect is the development of a robust, context-sensitive teacher identity that evolves with practice and inquiry.

Support for Structured Mentoring in National Programs

National education initiatives such as Indonesia's Pendidikan Profesi Guru (PPG) and Kampus Mengajar have increasingly emphasized the importance of structured mentoring systems in supporting the development of PSTs. These programs institutionalize mentorship as a core

component of teacher education by clearly defining mentor roles, learning goals, and collaborative processes (Orland-Barak & Wang, 2020). Their policy frameworks offer an enabling structure that facilitates continuity between university coursework and in-school practice.

In the PPG program, PSTs participate in guided school-based teaching placements where they receive consistent, real-time feedback from experienced mentors. These mentorship sessions often include structured conferences, lesson planning discussions, and guided reflections, all of which support the integration of theory with practice. Similarly, Kampus Mengajar encourages PSTs to work collaboratively with mentor teachers in under-resourced schools, fostering real-world exposure and contextualized learning (Kuswandono, 2017).

Such institutional supports not only ensure pedagogical coherence but also establish a professional culture in which reflective mentoring is normalized. These programs provide templates for scaling structured mentoring across diverse educational settings, ensuring that all PSTs, regardless of their geographic or institutional background, have access to high-quality support mechanisms. As more LPTKs adopt these frameworks, mentoring becomes not just an adjunct component, but a central pillar of teacher preparation (Nopriyeni et al., 2019).

Limitations and Scalability Considerations of Video-Based Mentoring

While video-based mentoring presents numerous advantages for enhancing reflection and pedagogical development, its implementation is not without challenges. One of the primary obstacles lies in the technological infrastructure required to support consistent video recording and review. In rural or resource-limited educational institutions, access to reliable cameras, editing tools, and digital storage may be limited, thus constraining the feasibility of this approach (Helleve, 2017 and Stanulis et al. (2018).

In addition to technical limitations, the human capacity required to operationalize video-based mentoring can be a constraint. Mentors must be adequately trained not only in using video tools but also in facilitating reflective discussions based on video analysis. Without sufficient training, feedback sessions may lack structure or focus, potentially reducing their effectiveness. Moreover, the interpretation of video footage can be subject to individual biases. If mentors are not guided by a shared set of criteria or rubrics, they may provide inconsistent or overly subjective feedback, which can hinder PST development (Sert, 2023).

For video-based mentoring to be scalable, tailored adaptations must be developed to suit different educational contexts. This includes creating simplified video reflection models for schools with minimal resources, as well as asynchronous mentoring platforms where PSTs can upload videos and receive delayed feedback. Policymakers and institutions must also consider equitable access and professional development for mentors as foundational elements for sustainability (Helleve, 2017).

CONCLUSION

This study demonstrates that video-supported mentoring, framed within the cognitive apprenticeship model, effectively enhances pre-service teachers' (PSTs) reflective capacity and professional identity. By integrating video analysis with structured mentor feedback, PSTs engage in systematic cycles of observation, dialogue, and self-assessment that sharpen pedagogical reasoning and promote adaptive teaching practices. The use of modeling, coaching, and fading provides a clear developmental pathway, enabling PSTs to progress from novice reflection to more critical and self-regulated practice.

Despite its promise, the scalability of this approach remains constrained by unequal technological access, varying mentor expertise, and institutional readiness. Addressing these challenges requires targeted policy interventions and capacity-building efforts to ensure equitable adoption across diverse contexts. Future research should move beyond short-term outcomes to explore sustainability across multiple cohorts and examine how video-based mentoring can be adapted for resource-limited settings.

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