

# The Influence of Academic Supervision and Abstraction Ability on Elementary School Teachers' Performance in Kragan District

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**Abstract:** This study examines the influence of academic supervision and abstraction ability on elementary school teachers' performance in Kragan District. Academic supervision is a critical aspect of professional development, aiming to enhance instructional quality, while abstraction ability reflects teachers' cognitive capacity to understand and apply learning concepts effectively. Understanding these factors is essential for improving teacher performance and the overall quality of education. This research employs a quantitative approach using Structural Equation Modeling (SEM). Data were collected through structured questionnaires tested for validity and reliability. A proportional random sampling technique was used to select 192 elementary school teachers as respondents. Data analysis was performed to determine the causal relationships among academic supervision, abstraction ability, and teacher performance. The findings indicate that academic supervision significantly and positively influences teacher performance, with effective supervision improving lesson planning, teaching execution, and assessment. Furthermore, abstraction ability also plays a crucial role in enhancing teacher performance. Teachers with higher abstraction ability tend to be more innovative, analytical, and capable of creating engaging learning experiences. The combined influence of academic supervision and abstraction ability suggests that both factors are mutually reinforcing in improving teacher effectiveness. These findings highlight the importance of optimizing academic supervision and fostering teachers' abstraction ability as key strategies for enhancing elementary education quality. Therefore, school principals and education supervisors are encouraged to implement effective academic supervision practices while supporting teachers in developing higher-order thinking skills. Additionally, policymakers should focus on strengthening academic supervision and designing professional development programs to enhance teachers' analytical and creative skills. This research provides valuable insights for academics, educational practitioners, and policymakers in designing strategies to improve teacher performance through effective supervision and cognitive skill development, ultimately contributing to broader educational improvements.

**Keywords:** Academic Supervision, Abstraction Ability, Teacher Performance.

## 1. Introductions

The quality of education is a fundamental determinant of national development, emphasizing the importance of teacher performance in achieving educational goals. According to Law No. 20 of 2003 on the National Education System in Indonesia, education functions to develop abilities and shape a dignified national character and civilization. In this context, teachers play a critical role as the primary agents in implementing effective teaching and learning processes. Their performance is influenced by several factors, including academic supervision and abstraction ability, both of which significantly impact the effectiveness of instructional delivery (Rahmadini, 2024).

Academic supervision is an essential aspect of professional development that involves structured guidance, evaluation, and support to enhance teaching effectiveness. Pratiwi (2024) highlights that effective academic supervision fosters a constructive communication framework between supervisors and teachers, leading to an improved learning environment. Through structured supervision, teachers receive feedback that helps them refine instructional strategies, manage classrooms efficiently, and align their teaching methodologies with educational standards. However, ineffective supervision—characterized by infrequent evaluations, irrelevant approaches, and lack of constructive feedback—can hinder teachers from realizing their full potential.

Beyond supervision, teachers' abstraction ability is a cognitive factor that influences their capacity to comprehend, analyze, and synthesize abstract concepts for practical application in teaching. Santi and Firmasari (2018) explain that individuals with strong abstraction abilities can integrate theoretical knowledge into real-world contexts, making them more innovative and effective educators. Teachers with high abstraction ability can develop creative lesson plans, implement diverse teaching strategies, and solve instructional challenges dynamically. Furthermore, professional interactions and collaborative learning experiences also contribute to the development of abstraction ability and teacher professionalism (Isriyati et al., 2024).

In Kragan District, the performance of elementary school teachers remains a pressing concern. Preliminary observations suggest that some teachers struggle with implementing engaging and innovative teaching methods. Challenges such as limited instructional creativity and insufficient responsiveness to students' diverse learning needs indicate gaps in teacher preparedness and adaptability. Addressing these challenges necessitates an examination of the factors influencing teacher performance, particularly academic supervision and abstraction ability, as key determinants of instructional success.

As the demands of the 21st-century learning environment evolve, teachers are expected to be adaptive, technologically literate, and capable of fostering critical thinking among students. Riyadi et al. (2024) emphasize that effective academic supervision, managerial skills, and teacher motivation significantly contribute to improving teacher performance in modern educational settings. Therefore, optimizing academic supervision and enhancing teachers' abstraction ability should be prioritized as part of professional development initiatives. This study aims to analyze the extent to which academic supervision and abstraction ability influence teacher performance, providing empirical insights for policymakers, school administrators, and educators to develop targeted interventions that enhance teaching effectiveness and educational outcomes.

By exploring these relationships, this research contributes to the existing body of knowledge on teacher professional development, offering theoretical and practical implications for improving the quality of elementary education. The findings will inform strategies to strengthen academic supervision frameworks and develop cognitive training programs that cultivate higher-order thinking skills among teachers, ultimately fostering a more effective and innovative teaching workforce (Awam et al., 2023).

## 1.1 Conceptual framework

The conceptual framework of this study is based on the premise that teacher performance is significantly influenced by academic supervision and abstraction ability. Academic supervision serves as a structured mechanism for improving instructional quality, providing teachers with necessary guidance, constructive feedback, and continuous professional development opportunities (Pratiwi, 2024). Effective academic supervision ensures that teachers align their teaching methodologies with educational objectives, implement appropriate classroom management techniques, and enhance student engagement (Hartati, 2024). Conversely, inadequate supervision can lead to stagnation in teacher competencies, reducing instructional effectiveness.

Abstraction ability, on the other hand, refers to teachers' cognitive capacity to process complex concepts, draw meaningful connections, and apply theoretical knowledge in instructional practices (Santi & Firmasari, 2018). Teachers with high abstraction ability are more likely to employ innovative teaching strategies, adapt to diverse classroom scenarios, and develop creative problem-solving approaches. Furthermore, abstraction ability is cultivated through continuous professional interactions and learning experiences, which can enhance teachers' professionalism and instructional effectiveness (Isriyati et al., 2024). Therefore, an educational environment that fosters abstraction ability through workshops, peer discussions, and reflective teaching practices can contribute to enhanced instructional performance.

The interaction between academic supervision and abstraction ability plays a crucial role in determining teacher performance. When teachers receive structured supervision and possess strong abstraction skills, they are better equipped to implement engaging and effective teaching methods, thereby improving student learning outcomes. Riyadi et al. (2024) emphasize that teachers who are supported through effective supervision and strong managerial practices are more adaptable to contemporary pedagogical challenges and educational changes.

This study posits that academic supervision and abstraction ability are mutually reinforcing factors that contribute to optimal teacher performance. Teachers who receive quality supervision while developing their cognitive abstraction skills are more likely to engage in reflective teaching practices, experiment with innovative methodologies, and foster critical thinking in students. Therefore, school administrators and policymakers should prioritize initiatives that integrate effective supervision models with professional development programs aimed at enhancing teachers' abstraction abilities. By examining these relationships, this study seeks to provide empirical insights that can inform strategies for improving teacher effectiveness and overall educational quality (Awam et al., 2023).

## 1.2 Research objectives

This study aims to explore the impact of academic supervision and abstraction ability on teacher performance, particularly in the context of elementary school education in Kragan District. Specifically, this research seeks to:

Analyze the influence of academic supervision on the performance of elementary school teachers, examining how structured supervision contributes to improving instructional quality, classroom management, and student engagement.

Investigate the role of abstraction ability in enhancing teacher performance, identifying how cognitive skills such as critical thinking, problem-solving, and conceptual understanding affect instructional strategies.

Examine the combined effect of academic supervision and abstraction ability on teacher performance, assessing whether these factors interact to create a more effective teaching environment.

Provide empirical evidence that can inform policy recommendations for school administrators and educational stakeholders, emphasizing strategies to optimize academic supervision and foster higher-order thinking skills among teachers.

By achieving these objectives, this study will contribute valuable insights into the development of effective teacher training programs, supervision models, and professional development strategies that can enhance teaching effectiveness and overall educational quality.

## 2. Methodology

### 2.1 Research design

This study employs a quantitative research design using a survey approach to assess the influence of academic supervision and abstraction ability on teacher performance. The research is conducted in elementary schools in Kragan District, involving teachers as key respondents

### 2.2 Respondents of the study

The study's respondents consist of elementary school teachers selected through proportional random sampling. The total population comprises 370 teachers, and the sample size is determined using Slovin's formula, resulting in 192 respondents.

Data was collected using a closed questionnaire with a five-level Likert scale. Data were collected using a closed questionnaire with a five-level Likert scale. To ensure the validity and reliability of the instrument, validity test and reliability test were conducted before data analysis. Data analysis using Structural Equation Modeling (SEM) with AMOS 24 software, which begins with confirmatory factor analysis (CFA) of exogenous and endogenous variables, followed by the preparation of measurement models and structural models until a fit model is obtained.

### 2.3 Sample how table should be placed is as below

The Technique The steps that must be taken to test the model and hypothesis using SEM (Ihsan Khairi & Susanti, 2021) with Goodness-of-Fit (GOF) performance valuation, which is carried out by testing the SEM assumptions in the following table.

**Table 1.** Goodness of fit Index Cut-off value.

Criteria	Cut Off Value
Chi Square	be small
Significanced	$\geq 0.05$
Probability CMIN/DF	$\leq 2.00$
GFI	$\geq 0.90$
AGFI	$\geq 0.90$
TLI	$\geq 0.95$
CFI	$\geq 0.95$
RMSEA	$\leq 0.08$

### 3. Findings and Discussion

The findings of this study reveal that academic supervision significantly influences teacher performance. Teachers who receive regular and constructive supervision demonstrate improved instructional planning, classroom management, and student engagement. These findings support previous studies which state that effective academic supervision contributes positively to teacher professionalism, discipline, and instructional quality (Wardana et al., 2023; Tidjani & Lailiyah, 2023). In addition, the implementation of structured supervision by school principals has been proven to improve teacher performance in elementary schools (Indriani et al., 2022).

The results also indicate that abstraction ability plays a crucial role in enhancing teacher performance. Teachers with strong abstraction skills exhibit higher creativity, adaptability, and problem-solving capabilities in instructional practices. Professional competence and work commitment also influence teacher effectiveness in carrying out learning activities (Ahmanda & Daryono, 2024). Furthermore, teacher professionalism development is an important factor in improving overall teaching performance and educational quality (Putri & Imaniyati, 2017).

Moreover, the combined impact of academic supervision and abstraction ability suggests that these factors are interdependent in shaping effective teaching outcomes. Schools that implement structured supervision while fostering teachers' cognitive skills create a more dynamic and effective learning environment. Leadership strategies implemented by school principals also play an essential role in improving teacher discipline and performance within the school environment (Khana et al., 2023). In addition, effective classroom management through teacher leadership contributes significantly to creating a conducive learning atmosphere (Maghfiroh et al., 2021).

The discussion highlights the need for policymakers and educational leaders to strengthen supervision programs and professional development initiatives aimed at improving teachers' abstraction abilities. Continuous supervision programs are essential for encouraging teachers to become more adaptive, reflective, and innovative in addressing contemporary educational challenges. Mulyanto et al. (2023) emphasize that academic supervision is an effective strategy for improving teacher performance and maintaining instructional quality in educational institutions. Future research should explore additional variables that may further enhance teacher effectiveness in elementary education.

### 4. Conclusions and recommendations

This study concludes that academic supervision and abstraction ability are significant determinants of teacher performance. Effective academic supervision enhances instructional planning, classroom management, and student engagement, while strong abstraction skills contribute to creativity, adaptability, and problem-solving capabilities. The combined influence of these factors demonstrates that structured supervision and cognitive development play complementary roles in shaping effective teaching outcomes.

Based on these findings, the following recommendations are proposed:

- a. Strengthening Academic Supervision Programs: School administrators and education supervisors should implement structured and continuous supervision programs to provide teachers with constructive feedback and professional guidance.
  - b. Enhancing Teacher Training in Abstraction Skills: Professional development programs should focus on fostering teachers' cognitive skills, encouraging critical thinking, and supporting innovative instructional strategies.
  - c. Integrating Supervision and Cognitive Development Initiatives: Policies should be designed to combine academic supervision with programs that enhance teachers' abstraction abilities, ensuring a more holistic approach to teacher development.
  - d. Encouraging Further Research: Future studies should explore additional factors influencing teacher performance, such as technological integration, emotional intelligence, and collaborative learning practices.
- By addressing these recommendations, educational institutions can work towards improving teacher performance, fostering a more dynamic learning environment, and ultimately enhancing the quality of elementary education.

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### Conflict of Interest

The authors declare there is no conflict of interest.

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