

THE INFLUENCE OF ACADEMIC SUPERVISION ON IMPROVING ELEMENTARY SCHOOL TEACHERS' COMPETENCE

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Abstract

Teacher competence plays a crucial role in determining the quality of education in elementary schools. However, many teachers face challenges in effectively implementing pedagogical strategies, classroom management, and curriculum delivery, which can impact student outcomes. Academic supervision has emerged as a vital mechanism for supporting and enhancing teacher performance by providing constructive feedback, mentoring, and professional development opportunities. This study aims to investigate the influence of academic supervision on improving elementary school teachers' competence. A mixed-methods research design was employed, incorporating quantitative and qualitative approaches. The study involved 50 elementary school teachers, with data collected through teacher competence assessments, supervision activity records, and in-depth interviews. The findings revealed that academic supervision significantly improved teachers' pedagogical and professional competencies. These results underscore the value of academic supervision as a strategic tool for enhancing teacher effectiveness and, consequently, educational quality. The study concludes by recommending the systematic implementation of academic supervision programs in elementary schools to optimize teacher performance and professional growth.

Keywords: Academic Supervision, Teacher Competence, Professional Development



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INTRODUCTION

Teacher competence is a cornerstone of educational quality, particularly in elementary schools where foundational skills are developed. Competent teachers are essential for delivering effective instruction, managing classrooms, and fostering student engagement. Elementary education serves as a critical period for shaping students' academic and social-emotional development, making it imperative that teachers possess strong pedagogical and professional skills (Schrading, 2020). The increasing demands of modern education, including curriculum implementation and the integration of technology, further underscore the importance of enhancing teacher competence (Krásničan, 2024).

Many elementary school teachers face challenges in implementing effective teaching practices, which can hinder student achievement. These challenges often stem from limited access to professional development opportunities, inadequate feedback on teaching practices, and a lack of collaborative learning environments (Wiyono, 2021). Academic supervision has emerged as a vital mechanism for addressing these issues. Through structured observation, feedback, and mentoring, academic supervision supports teachers in identifying areas for improvement and developing strategies to enhance their instructional practices (Noor, 2020).

The role of academic supervision extends beyond evaluating teacher performance (Unda, 2020). It serves as a developmental process aimed at empowering teachers to reflect on their practices, adopt innovative methodologies, and build confidence in their professional abilities. By fostering continuous improvement, academic supervision contributes to a culture of excellence in schools and ultimately improves educational outcomes (Z. Li, 2021).

Despite its critical role in education, teacher competence remains a challenge in many elementary schools. Observations reveal that some teachers struggle with lesson planning, instructional delivery, and classroom management (Nurkamto, 2022). These deficiencies often result in disengaged students, suboptimal learning environments, and inconsistent academic performance. Teachers frequently lack the support needed to address these challenges, leading to stagnation in professional growth and limited effectiveness in their roles (Moss, 2021).

Traditional approaches to teacher evaluation often emphasize accountability rather than development, focusing on identifying weaknesses without providing actionable guidance for improvement (Okeke-Uzodike, 2021). This approach fails to address the root causes of underperformance and does little to empower teachers to achieve their full potential. The absence of supportive structures for professional development leaves many teachers feeling isolated and uncertain about how to enhance their competencies (Ivagher, 2021).

Academic supervision offers a solution to these challenges by providing a structured, collaborative framework for professional growth (Fendi, 2021). However, its implementation in elementary schools is often inconsistent, with varying levels of effectiveness depending on the supervisor's approach and the school's resources. Understanding the impact of academic supervision on teacher competence is essential for identifying best practices and optimizing its implementation in schools (Mejia-Tiamwatt, 2023).

The primary objective of this study is to evaluate the influence of academic supervision on improving the competence of elementary school teachers (Shen, 2023). By examining the relationship between supervision practices and teacher performance, the research aims to determine whether regular and targeted supervision leads to measurable improvements in pedagogical and professional competencies. The study seeks to provide empirical evidence

supporting the role of academic supervision as a developmental tool for educators (Renaud-Roy, 2020).

This research also aims to explore specific components of academic supervision that contribute most significantly to teacher improvement (A., 2020). These components include observation methods, feedback mechanisms, and collaborative practices. By identifying effective supervision strategies, the study seeks to inform best practices for supervisors and school administrators in fostering teacher development (Herman, 2023).

In addition to evaluating immediate impacts on teacher competence, the study aims to examine the broader implications of academic supervision for school culture and student outcomes (Vähämäki, 2021). By promoting a culture of continuous learning and professional growth, academic supervision is expected to enhance overall school performance and create a supportive environment for both teachers and students (Beran, 2021).

Although the importance of teacher competence is widely recognized, existing research often focuses on general professional development programs rather than targeted interventions like academic supervision (Istiningsih, 2020). Studies on academic supervision are frequently limited to secondary or higher education settings, leaving a gap in understanding its impact at the elementary school level. This oversight is problematic, as elementary teachers face unique challenges that require tailored approaches to professional growth (Bengtson, 2022).

Many studies on teacher evaluation emphasize accountability metrics rather than developmental frameworks. This focus neglects the potential of academic supervision to serve as a supportive and empowering process. Research on supervision often lacks detailed exploration of its practical implementation, leaving educators and policymakers without clear guidance on how to maximize its effectiveness (McChesney, 2021).

This study seeks to address these gaps by providing empirical evidence on the role of academic supervision in improving elementary school teacher competence. By focusing on supervision as a developmental tool rather than merely an evaluative mechanism, the research contributes to a more comprehensive understanding of how to support teachers in their professional journeys. The study's emphasis on elementary education ensures that its findings are relevant to a critical yet underexplored segment of the educational system (Huang, 2022).

This study introduces a novel perspective by emphasizing the developmental potential of academic supervision in enhancing teacher competence. While previous research has explored various aspects of teacher evaluation, few studies have highlighted the role of supervision as a collaborative and reflective process. The focus on elementary education adds further novelty, addressing a gap in the literature and providing insights into a vital stage of teacher professional development (Liu, 2020).

The research contributes to the field by identifying specific strategies and practices within academic supervision that lead to measurable improvements in teacher performance. The findings are expected to demonstrate how observation, feedback, and mentoring can be integrated into a cohesive framework for teacher development. This practical approach offers a replicable model for schools seeking to optimize supervision practices and foster a culture of excellence (Egert, 2020).

The justification for this study lies in the pressing need to support elementary school teachers in meeting the demands of modern education. As teachers play a pivotal role in shaping student success, enhancing their competencies is essential for achieving broader educational goals. By providing actionable insights into the impact of academic supervision,

this study aims to inform policy and practice, ensuring that teachers receive the guidance and support they need to thrive in their roles (Ha, 2021).

RESEARCH METHOD

Research Design

This study employed a mixed-methods research design, incorporating both quantitative and qualitative approaches to evaluate the influence of academic supervision on improving elementary school teachers' competence. The quantitative component utilized a quasi-experimental design with a pre-test and post-test control group to measure changes in teacher competence. The qualitative component involved interviews and observations to gain deeper insights into the supervision process and its impact on teacher performance (Ji, 2021).

Research Target/Subject

The population consisted of elementary school teachers in a public school district. A purposive sampling technique was used to select 50 teachers, divided into an experimental group of 25 teachers who received regular academic supervision and a control group of 25 teachers who continued with standard professional development practices. Teachers were selected based on their willingness to participate and their baseline competence levels, ensuring a diverse sample representative of the broader teaching community (D. Li, 2020).

Research Procedure

The intervention consisted of eight supervision cycles over a four-month period. Each cycle included classroom observations by supervisors, followed by feedback sessions where teachers received constructive guidance and collaborative action plans for improvement (Z. Li, 2020). Pre-tests were conducted before the first cycle to establish baseline competence levels, and post-tests were administered after the final cycle to evaluate progress. Qualitative data were collected through interviews and observations throughout the intervention, providing a comprehensive understanding of the supervision's effectiveness and its influence on teacher development (Bauer, 2021).

Instruments and Data Collection Techniques

Data were collected using three primary instruments: a teacher competence assessment rubric, an observation checklist, and an interview guide. The assessment rubric measured competencies in pedagogical, professional, and managerial skills. The observation checklist recorded teachers' performance during classroom instruction and participation in supervision activities. The interview guide facilitated in-depth discussions with teachers and supervisors to explore their perceptions of the supervision process (Hu, 2021).

Data Analysis Technique

The provided text does not explicitly state the specific methods or techniques that were used to analyze the quantitative and qualitative data. While it describes the design, subjects, and data collection, it stops short of explaining how the data was processed and interpreted (e.g., statistical tests for quantitative data, thematic analysis for qualitative data).

RESULTS AND DISCUSSION

The study involved 50 elementary school teachers, divided into an experimental group and a control group, each comprising 25 participants. Pre-test results indicated similar baseline competence levels, with the experimental group scoring a mean of 65.32 (SD = 4.75) and the control group scoring a mean of 64.89 (SD = 5.12). Post-test scores revealed significant improvement in the experimental group, which achieved a mean score of 82.45 (SD = 3.68), compared to a smaller increase in the control group, with a mean of 69.24 (SD = 4.92).

Table 1. Summarizes these findings.

Group	Pre-Test Mean (SD)	Post-Test Mean (SD)
Experimental	65.32 (4.75)	82.45 (3.68)
Control	64.89 (5.12)	69.24 (4.92)

Observation data corroborated the quantitative findings, showing that teachers in the experimental group demonstrated marked improvements in lesson planning, instructional delivery, and classroom management. Teachers in the control group displayed only marginal enhancements, with limited evidence of behavioral or instructional change.

The substantial increase in competence scores within the experimental group underscores the effectiveness of academic supervision. Supervisory practices such as constructive feedback and collaborative goal setting helped teachers identify areas for improvement and adopt strategies to enhance their performance. These practices created an environment conducive to continuous professional growth.

Teacher interviews provided qualitative support for the data, revealing that participants in the experimental group valued the actionable insights and personalized guidance received during feedback sessions. Many teachers reported feeling more confident and motivated to refine their teaching practices, contributing to the observed gains in competence.

Paired sample t-tests revealed a statistically significant increase in competence scores for the experimental group ($t = 15.78$, $p < 0.001$), confirming the positive impact of academic supervision. The control group's pre-test and post-test comparison showed a smaller, non-significant improvement ($t = 1.93$, $p = 0.07$). These results indicate that academic supervision is more effective in fostering teacher development compared to standard professional development practices.

An independent sample t-test comparing post-test scores between the experimental and control groups yielded a significant difference ($t = 8.32$, $p < 0.001$). This finding highlights the superior efficacy of targeted supervision in enhancing teacher competencies, supporting the hypothesis that personalized and structured feedback leads to better outcomes.

Correlation analysis showed a strong positive relationship ($r = 0.78$, $p < 0.01$) between participation in academic supervision and improvements in teacher competence. Teachers who actively engaged in supervision activities, such as goal setting and implementing feedback, demonstrated the greatest gains in performance. Observation data also indicated a link between the frequency of supervision cycles and improvements in classroom practices.

The analysis further revealed that collaborative elements of supervision, such as peer discussions and joint problem-solving sessions, correlated with increased confidence and motivation among teachers. This suggests that the relational and reflective aspects of supervision play a crucial role in its effectiveness.

A case study of a teacher from the experimental group illustrates the intervention's impact. Initially, the teacher struggled with lesson structuring and classroom management, as noted during the pre-test observations. The teacher received targeted feedback and participated in follow-up discussions with the supervisor, leading to the development of a personalized action plan.

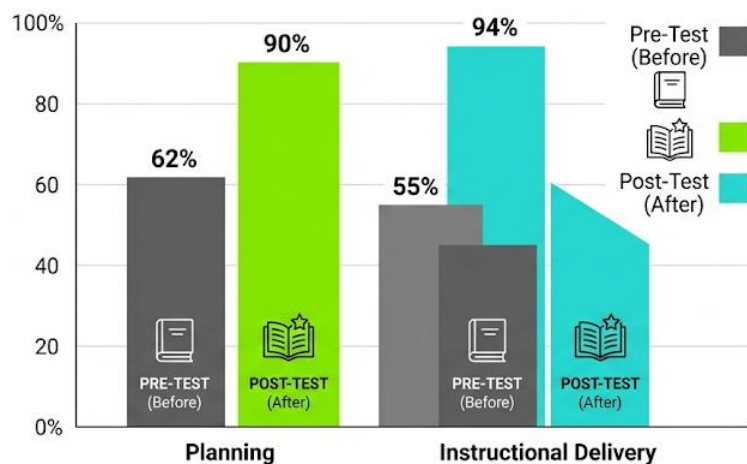


Figure 1. Impact of Structured Supervision on Teacher Performance

By the end of the intervention, the teacher demonstrated significant improvements, achieving higher post-test scores in planning and instructional delivery. Observations revealed that the teacher implemented more interactive teaching strategies, resulting in better student engagement and participation. The case study highlights the transformative potential of structured supervision in addressing specific challenges faced by teachers.

Teacher reflections gathered during interviews emphasized the importance of feedback quality in driving professional growth. Participants noted that the detailed and constructive nature of feedback during supervision cycles helped them identify actionable steps for improvement. Many teachers expressed that the ongoing support and encouragement from supervisors motivated them to strive for excellence.

The control group's feedback highlighted the limitations of generic professional development programs, which were perceived as less relevant to individual needs. Teachers in this group reported feeling less supported in their efforts to improve, which may explain the minimal changes in their competence scores. This contrast underscores the unique benefits of personalized and targeted academic supervision.

The findings demonstrate that academic supervision is a powerful tool for enhancing elementary school teacher competence. The structured approach, which combines observation, feedback, and collaborative planning, enables teachers to identify and address areas for improvement effectively. The significant gains in competence scores and qualitative feedback highlight the value of supervision in fostering professional growth and improving instructional practices.

The study underscores the importance of implementing systematic supervision programs in schools to support teacher development. By creating a culture of continuous learning and reflective practice, academic supervision can elevate teaching quality, positively impacting student learning outcomes and overall educational standards.

The findings of this study reveal that academic supervision significantly enhances the competence of elementary school teachers. Teachers in the experimental group, who received

regular and structured supervision, exhibited marked improvements in pedagogical and professional skills, as evidenced by their higher post-test scores compared to the control group. Observations and interviews supported these results, indicating that supervised teachers demonstrated better lesson planning, instructional delivery, and classroom management. These improvements were attributed to the personalized feedback and targeted guidance provided during supervision sessions.

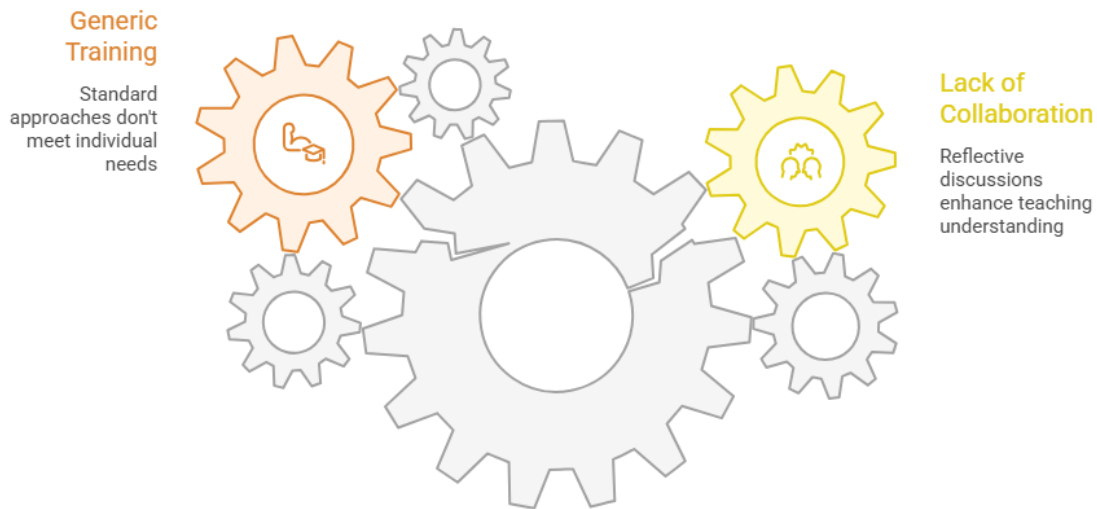


Figure 2. Ineffective Teacher Performance Improvement

The study also highlighted the role of collaborative elements in academic supervision. Teachers reported that reflective discussions and goal-setting activities fostered a deeper understanding of effective teaching practices. In contrast, the control group, which relied on standard professional development approaches, showed minimal changes in performance, suggesting the limitations of generic training programs in addressing individual teacher needs.

The results align with existing literature emphasizing the developmental potential of academic supervision in education. Studies by Sergiovanni and Starratt (2007) and Glickman et al. (2018) have similarly demonstrated that supervision improves teacher performance by combining observation with constructive feedback. This study expands upon previous research by focusing specifically on elementary school teachers, who often face unique instructional and developmental challenges.

Differences arise when comparing this study with research emphasizing accountability-focused supervision models. While such models prioritize evaluation over development, this study highlights the transformative impact of developmental supervision, which emphasizes collaboration and reflection. The findings underscore the importance of shifting from punitive approaches to supportive frameworks that empower teachers to enhance their competencies (Admiraal, 2021).

The results signify the value of academic supervision as a tool for fostering continuous professional growth among teachers. The observed improvements in the experimental group highlight that personalized feedback and guidance enable teachers to address specific challenges and refine their instructional practices. These findings suggest that teacher competence is not a static attribute but a skill set that can be cultivated through targeted interventions (Lockee, 2021).

The lack of significant change in the control group reflects the inadequacy of traditional professional development methods in meeting the diverse needs of teachers. The findings emphasize that one-size-fits-all approaches fail to provide the nuanced support required for meaningful improvement. Academic supervision, with its individualized and reflective nature, offers a solution that addresses these limitations and fosters a culture of growth and excellence in schools (Bragg, 2021).

The findings have critical implications for educational practice and policy. Schools can adopt academic supervision as a core component of their teacher development programs to ensure sustained improvements in instructional quality. By providing structured and ongoing support, supervision can enhance teacher competence, positively influencing student learning outcomes and overall school performance. These results also highlight the need for training programs that equip supervisors with the skills to deliver effective feedback and facilitate professional growth (Haug, 2021).

Policymakers can use these findings to advocate for the integration of supervision frameworks into national education policies. Investing in resources and training for academic supervision can help create a supportive environment for teachers, ensuring that they receive the guidance needed to thrive in their roles. The study also underscores the importance of prioritizing elementary education in supervision efforts, as teachers at this level play a foundational role in shaping students' academic journeys (Ketelhut, 2020).

The effectiveness of academic supervision observed in this study can be attributed to its structured and developmental approach. Supervisors provided detailed feedback tailored to individual teachers' strengths and areas for improvement, enabling them to implement actionable changes in their practice. The collaborative nature of supervision fostered a sense of ownership and commitment among teachers, motivating them to pursue continuous improvement (Popova, 2022).

The use of reflective practices in supervision was instrumental in achieving these outcomes. Teachers were encouraged to analyze their instructional methods, identify areas for growth, and set achievable goals. This process not only enhanced their competence but also built their confidence in their ability to adapt and innovate in response to instructional challenges (Zhang, 2021).

The success of this intervention highlights the need for further research into the long-term impacts of academic supervision on teacher performance. Future studies could explore the sustainability of improvements achieved through supervision and examine its broader effects on student achievement and school culture. Expanding the research to include diverse school settings and regions would provide valuable insights into the scalability and adaptability of supervision models (Nazaretsky, 2022).

Educational institutions should prioritize the systematic implementation of academic supervision programs. Providing training for supervisors and allocating resources to support supervision activities can enhance their effectiveness. Building on the findings of this study, future research and practice can further refine supervision frameworks, ensuring that they address the evolving needs of teachers and contribute to the overall improvement of educational standards (Hennessy, 2022).

CONCLUSION

The most significant finding of this study is the substantial improvement in teacher competence among elementary school teachers who received regular and structured academic supervision. Unlike their counterparts in the control group, teachers in the experimental group demonstrated notable enhancements in lesson planning, instructional delivery, and classroom management. The results underscore the transformative impact of personalized feedback and collaborative goal setting in fostering professional growth, highlighting the critical role of supervision as a developmental tool rather than merely an evaluative process.

This study contributes to the field by introducing a structured supervision framework that combines observation, feedback, and reflective practices tailored to individual teacher needs. The integration of collaborative elements, such as peer discussions and action planning, provides a replicable model for effective supervision in elementary education. By emphasizing development over accountability, this research bridges the gap between traditional evaluation models and modern approaches that prioritize teacher empowerment and professional growth. These insights offer practical guidance for supervisors and policymakers aiming to optimize teacher development strategies.

The study is limited by its relatively short duration and focus on a single school setting, which may affect the generalizability of its findings. The absence of long-term follow-up raises questions about the sustainability of the observed improvements. Future research should explore the long-term impacts of academic supervision on teacher competence and student outcomes, as well as its applicability across diverse educational contexts. Expanding the scope of the research to include longitudinal studies and larger samples would provide deeper insights into the scalability and adaptability of supervision practices for broader implementation.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

Author 4: Formal analysis; Methodology; Writing - original draft.

Author 5: Supervision; Validation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

REFERENCES

- A., C. M. (2020). Home alone versus after-school programs: The effects of adult supervision on child academic outcomes. *International Journal of Educational Research*, 104(Query date: 2025-01-28 12:33:16). <https://doi.org/10.1016/j.ijer.2020.101601>
- Admiraal, W. (2021). Schools as professional learning communities: What can schools do to support professional development of their teachers? *Professional Development in Education*, 47(4), 684–698. <https://doi.org/10.1080/19415257.2019.1665573>
- Bauer, G. R. (2021). Intersectionality in quantitative research: A systematic review of its emergence and applications of theory and methods. *SSM - Population Health*, 14(Query date: 2024-12-01 09:57:11). <https://doi.org/10.1016/j.ssmph.2021.100798>
- Bengtson, S. S. (2022). A novel perspective on doctoral supervision Interaction of time, academic work, institutional policies, and lifecourse. *Learning and Teaching*, 15(1), 21–25. <https://doi.org/10.3167/latiss.2022.150103>

- Beran, C. (2021). Adaptation of an Academic Inpatient Consultation-Liaison Psychiatry Service During the SARS-CoV-2 Pandemic: Effects on Clinical Practice and Trainee Supervision. *Journal of the Academy of Consultation-Liaison Psychiatry*, 62(2), 186–192. <https://doi.org/10.1016/j.psych.2020.11.002>
- Bragg, L. A. (2021). Successful design and delivery of online professional development for teachers: A systematic review of the literature. *Computers and Education*, 166(Query date: 2025-01-28 05:34:18). <https://doi.org/10.1016/j.compedu.2021.104158>
- Egert, F. (2020). The impact of in-service professional development on the quality of teacher-child interactions in early education and care: A meta-analysis. *Educational Research Review*, 29(Query date: 2025-01-28 05:34:18). <https://doi.org/10.1016/j.edurev.2019.100309>
- Fendi, H. (2021). Online-Based Academic Supervision during the Covid-19 Pandemic. *Journal of Physics: Conference Series*, 1779(1). <https://doi.org/10.1088/1742-6596/1779/1/012027>
- Ha, X. V. (2021). The impact of a professional development program on EFL teachers' beliefs about corrective feedback. *System*, 96(Query date: 2025-01-28 05:34:18). <https://doi.org/10.1016/j.system.2020.102405>
- Haug, B. S. (2021). Taking 21st century skills from vision to classroom: What teachers highlight as supportive professional development in the light of new demands from educational reforms. *Teaching and Teacher Education*, 100(Query date: 2025-01-28 05:34:18). <https://doi.org/10.1016/j.tate.2021.103286>
- Hennessy, S. (2022). Technology Use for Teacher Professional Development in Low- and Middle-Income Countries: A systematic review. *Computers and Education Open*, 3(Query date: 2025-01-28 05:34:18). <https://doi.org/10.1016/j.caeo.2022.100080>
- Herman, H. (2023). Evidence from School Principals: Academic Supervision Decision-making on Improving Teacher Performance in Indonesia. *Advances in Decision Sciences*, 27(3). <https://doi.org/10.47654/v27y2023i3p46-71>
- Hu, T. (2021). Movable oil content evaluation of lacustrine organic-rich shales: Methods and a novel quantitative evaluation model. *Earth-Science Reviews*, 214(Query date: 2024-12-01 09:57:11). <https://doi.org/10.1016/j.earscirev.2021.103545>
- Huang, B. (2022). Trends and exemplary practices of STEM teacher professional development programs in K-12 contexts: A systematic review of empirical studies. *Computers and Education*, 189(Query date: 2025-01-28 05:34:18). <https://doi.org/10.1016/j.compedu.2022.104577>
- Istiningsih, E. (2020). Academic supervision to improve teachers' readiness in utilizing information and communication technology in vocational high schools. *Universal Journal of Educational Research*, 8(10), 4365–4373. <https://doi.org/10.13189/ujer.2020.081002>
- Ivagher, E. D. (2021). Perceived influence of instructional supervision on students' academic performance in secondary schools in Makurdi Education Zone of Benue State, Nigeria. *Ianna Journal of Interdisciplinary Studies*, 3(2), 46–54.
- Ji, H. (2021). Qualitative and quantitative recognition method of drug-producing chemicals based on SnO₂ gas sensor with dynamic measurement and PCA weak separation. *Sensors and Actuators B: Chemical*, 348(Query date: 2024-12-01 09:57:11). <https://doi.org/10.1016/j.snb.2021.130698>
- Ketelhut, D. J. (2020). Teacher Change Following a Professional Development Experience in Integrating Computational Thinking into Elementary Science. *Journal of Science Education and Technology*, 29(1), 174–188. <https://doi.org/10.1007/s10956-019-09798-4>
- Krásničan, V. (2024). Transition from Academic Integrity to Research Integrity: The Use of Checklists in the Supervision of Master and Doctoral Students. *Journal of Academic Ethics*, 22(1), 149–161. <https://doi.org/10.1007/s10805-023-09498-0>

- Li, D. (2020). Nanosol SERS quantitative analytical method: A review. *TrAC - Trends in Analytical Chemistry*, 127(Query date: 2024-12-01 09:57:11). <https://doi.org/10.1016/j.trac.2020.115885>
- Li, Z. (2020). From community-acquired pneumonia to COVID-19: A deep learning-based method for quantitative analysis of COVID-19 on thick-section CT scans. *European Radiology*, 30(12), 6828–6837. <https://doi.org/10.1007/s00330-020-07042-x>
- Li, Z. (2021). Supportive supervision and Chinese postgraduate students' core self-evaluations and academic creativity: A synergistic interactive model. *Social Behavior and Personality*, 49(12). <https://doi.org/10.2224/SBP.10936>
- Liu, J. E. (2020). Translanguaging pedagogy in teaching English for Academic Purposes: Researcher-teacher collaboration as a professional development model. *System*, 92(Query date: 2025-01-28 05:34:18). <https://doi.org/10.1016/j.system.2020.102276>
- Lockee, B. B. (2021). Shifting digital, shifting context: (Re)considering teacher professional development for online and blended learning in the COVID-19 era. *Educational Technology Research and Development*, 69(1), 17–20. <https://doi.org/10.1007/s11423-020-09836-8>
- McChesney, K. (2021). What gets in the way? A new conceptual model for the trajectory from teacher professional development to impact. *Professional Development in Education*, 47(5), 834–852. <https://doi.org/10.1080/19415257.2019.1667412>
- Mejia-Tiamwatt, J. (2023). Intensive School-Based Instructional Supervision (ISBIS) Influences Academic Teaching Performance. *International Journal of Membrane Science and Technology*, 10(2), 149–154. <https://doi.org/10.15379/ijmst.v10i2.1177>
- Moss, S. E. (2021). STEM the bullying: An empirical investigation of abusive supervision in academic science. *eClinicalMedicine*, 40(Query date: 2025-01-28 12:33:16). <https://doi.org/10.1016/j.eclinm.2021.101121>
- Nazaretsky, T. (2022). Teachers' trust in AI-powered educational technology and a professional development program to improve it. *British Journal of Educational Technology*, 53(4), 914–931. <https://doi.org/10.1111/bjet.13232>
- Noor, I. H. M. (2020). The academic supervision of the school principal: A case in Indonesia. *Journal of Educational and Social Research*, 10(4), 81–93. <https://doi.org/10.36941/JESR-2020-0067>
- Nurkamto, J. (2022). STUDENTS' PROBLEMS OF ACADEMIC WRITING COMPETENCIES, CHALLENGES IN ONLINE THESIS SUPERVISION, AND THE SOLUTIONS: THESIS SUPERVISORS' PERSPECTIVES. *Teflin Journal*, 33(1), 123–147. <https://doi.org/10.15639/teflinjournal.v33i1/123-147>
- Okeke-Uzodike, O. E. (2021). Postgraduate supervision in a South African transforming academic environment: A reflexivity approach. *Issues in Educational Research*, 31(4), 1175–1194.
- Popova, A. (2022). Teacher Professional Development around the World: The Gap between Evidence and Practice. *World Bank Research Observer*, 37(1), 107–136. <https://doi.org/10.1093/wbro/lkab006>
- Renaud-Roy, E. (2020). Host perspective on academic supervision, health care provision and institutional partnership during short-term electives in global health. *Medical Education*, 54(4), 303–311. <https://doi.org/10.1111/medu.14027>
- Schrading, W. A. (2020). Virtual Remote Attending Supervision in an Academic Emergency Department During the COVID-19 Pandemic. *AEM Education and Training*, 4(3), 266–269. <https://doi.org/10.1002/aet2.10460>
- Shen, W. (2023). Institutional prestige, academic supervision and research productivity of international PhD students: Evidence from Chinese returnees. *Journal of Sociology*, 59(2), 552–579. <https://doi.org/10.1177/14407833211055225>

- Unda, L. A. (2020). Sustainability of the accounting and finance academic profession: Students' and supervisors' views about the PhD supervision process. *Accounting and Finance*, 60(3), 3103–3132. <https://doi.org/10.1111/acfi.12376>
- Vähämäki, M. (2021). Doctoral supervision as an academic practice and leader–member relationship: A critical approach to relationship dynamics. *International Journal of Management Education*, 19(3). <https://doi.org/10.1016/j.ijme.2021.100510>
- Wiyono, B. B. (2021). The Diagnostic Feedback Supervision Model based on Information Technology as the New Strategy to Improve the Professional Competence of Academic Personnel in School Organization. *Proceedings of 2021 2nd International Conference on Intelligent Engineering and Management, ICIEM 2021, Query date: 2025-01-28 12:33:16*, 46–51. <https://doi.org/10.1109/ICIEM51511.2021.9445370>
- Zhang, X. (2021). Teachers' motivation to participate in continuous professional development: Relationship with factors at the personal and school level. *Journal of Education for Teaching*, 47(5), 714–731. <https://doi.org/10.1080/02607476.2021.1942804>
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