

Research Article

Cite this article: Putri, F. R., Sujarwo, Wijayanti, W., & Huda, W. N. (2025). Measuring The Effects Of Management Development, Esq, And Lesson Study On Kindergarten Teachers' Multidimensional Competence: A Structural Equation Modeling Approach. *Educational Process: International Journal*, 19, e2025586.
<https://doi.org/10.22521/edupij.2025.19.586>

Received August 5, 2025

Accepted October 14, 2025

Keywords: Emotional-Spiritual Quotient, Kindergarten Teacher Competence, Lesson Study

Author for correspondence:

Farah Rizkita Putri

✉ farahrizkita.2022@student.uny.ac.id

✉ Universitas Negeri Yogyakarta, STAI Syekh Jangkung, Indonesia

Measuring The Effects Of Management Development, Esq, And Lesson Study On Kindergarten Teachers' Multidimensional Competence: A Structural Equation Modeling Approach

Farah Rizkita Putri , Sujarwo , Wiwik Wijayanti , Wafiq Nurul Huda 

Abstract

Background/purpose. Kindergarten teacher competence in Indonesia continues to face significant disparities and structural challenges. To address this issue, multidimensional approaches to professional development are urgently required. This study aims to examine the effects of Management Development (MD), Emotional-Spiritual Quotient (ESQ), and Lesson Study (LS) on the pedagogical, professional, personality, and social competencies of kindergarten teachers.

Materials/methods. A quantitative research design was applied using Structural Equation Modeling (SEM) via SmartPLS. The study involved a sample of 200 kindergarten teachers from various institutions. Participants were selected using purposive sampling based on their involvement in recent professional development programs. The research instrument consisted of a validated questionnaire measuring each latent variable on a four-point Likert scale. Data were analyzed using path analysis, R^2 , Q^2 , f^2 , and significance testing via SmartPLS 4.

Results. Results revealed that ESQ significantly influences all four competence dimensions, whereas MD and LS showed varied effects across domains. The model demonstrated strong predictive power with high R^2 and Q^2 values across all competence areas.

Conclusion. These findings suggest that an integrated development strategy involving ESQ, MD, and LS is both practical and essential for improving the quality of early childhood education in Indonesia.

**OPEN ACCESS**

© The Author(s), 2025. This is an Open Access article, distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution, and reproduction, provided the original article is properly cited.

1. Introduction

In the context of global educational transformation, early childhood education (ECE) is increasingly recognized as the cornerstone of lifelong learning, socio-emotional development, and character formation. The role of kindergarten teachers has become more critical than ever, as they are tasked not only with delivering foundational knowledge but also nurturing the holistic growth of young learners (Han, 2023). Their competence in managing learning environments, responding to developmental needs, and fostering inclusive and ethical interactions directly influences the quality of education (Wijaya et al., 2023). As international policy frameworks emphasize early investment in human capital, the demand for competent and well-prepared ECE teachers continues to rise (Arndt et al., 2021).

Early childhood education is globally recognized as a cornerstone for lifelong learning, socio-emotional development, and character formation, with kindergarten teachers playing a pivotal role in fostering young learners' holistic growth (Han, 2023). Their ability to design effective learning environments, address developmental needs, and promote inclusive, ethical interactions directly shapes educational quality (Wijaya et al., 2023). International and national policy frameworks, such as UNESCO's Education 2030 Agenda and Indonesia's Permendikbud No.137/2014, underscore the need for competent early childhood education teachers to support human capital development (Arndt et al., 2021). However, achieving multidimensional competence encompassing pedagogical, professional, personal, and social dimensions remains a challenge, particularly in Indonesia.

In Indonesia, the development of kindergarten teacher competence remains uneven despite ongoing reforms. National reports have revealed persistent deficiencies in pedagogical practice, professional knowledge, personal integrity, and interpersonal communication, which compromise the overall quality of early childhood education (Samala et al., 2024; Wijaya et al., 2023). While certification and regulatory mechanisms are in place, they are often undermined by limited access to continuous professional development, especially in rural and underserved regions. As a result, many teachers struggle to meet the multidimensional standards of competence, which include pedagogical, professional, personality, and social aspects as required by the national framework (Kurnianti et al., 2025). This finding aligns with Permendikbud RI No. 137 of 2014, which mandates that teachers possess these four core competencies.

These gaps, which align with the multidimensional competency standards mandated by Permendikbud No. 137/2014 (comparable to international frameworks like the OECD's TALIS), are exacerbated by limited access to continuous professional development (CPD) (Kurniati et al., 2025). While certification exists, it often fails to address systemic barriers to holistic teacher development, underscoring the critical need for effective, integrated CPD strategies.

To address these competency gaps, scholars and practitioners have emphasized the importance of structured developmental approaches. Three widely recognized mechanisms are Management Development (MD) (Chatchawaphun et al., 2016), which enhances teachers' leadership and strategic planning skills; Emotional and Spiritual Quotient (ESQ) (Ikhwan et al., 2025; Saad et al., 2023), which supports ethical responsibility, empathy, and emotional resilience; and Lesson Study (LS), which fosters collaborative, reflective, and practice-oriented professional learning (Ayantaş & Gürgen, 2024). Although the individual benefits of these approaches have been demonstrated across various contexts, their combined contribution to multidimensional competence, particularly among kindergarten teachers in Indonesia, remains underexplored. Most studies apply linear models or focus on isolated interventions, thereby failing to capture the complexity of teacher development as a systemic, multi-domain process.

While individual studies have explored these approaches, their combined impact on multidimensional teacher competence in the Indonesian context remains underexplored,

constituting a significant research gap. Most existing research employs linear models or examines isolated interventions, failing to capture the complexity of teacher development as a systematic, multidomain process.

This study aims to fill this gap by examining the combined effects of MD, ESQ, and LS on the pedagogical, professional, personal, and social competencies of Indonesian kindergarten teachers using structural equation modelling (SEM). SEM provides robust frameworks to analyze direct and indirect relationships among latent variables, enabling a holistic understanding of complex teacher development models (Hair et al., 2021). The study's rationale lies in its potential to integrate fragmented CPD approaches into a cohesive framework, offering theoretical insights into holistic competency models and practical guidance for policy and training programs in Indonesia's early childhood education sector.

To address this research gap, the present study aims to examine the effects of Management Development, EQ-SQ, and Lesson Study on kindergarten teachers' multidimensional competence using a Structural Equation Modeling (SEM) approach. SEM offers a robust statistical framework for analyzing the direct and indirect relationships among latent variables and for validating complex theoretical models (Hair Jr. et al., 2017). The significance of this study lies in its potential to bridge fragmented domains of teacher development into an integrated analytical model. The findings are expected to contribute both theoretically, by advancing holistic frameworks for teacher competence, and practically, by informing policy, institutional programming, and educator training. By examining these three developmental dimensions simultaneously, the study seeks to provide empirical evidence that can guide competency-based capacity building in Indonesia's early childhood education sector.

The theoretical review above identifies a research gap regarding the simultaneous contributions of MD, ESQ, and LS to kindergarten teachers' multidimensional competence, particularly in the Indonesian context. To address this gap, the present study is designed to investigate the following research questions:

1. To what extent does MD influence the pedagogical, professional, personal, and social competence of kindergarten teachers?
2. To what extent does ESQ influence the pedagogical, professional, personal, and social competence of kindergarten teachers?
3. To what extent does LS influence the pedagogical, professional, personal, and social competence of kindergarten teachers?
4. How do MD, ESQ, and LS collectively contribute to the multidimensional competence of kindergarten teachers?

2. Literature Review

2.1. Multidimensional Competence of Kindergarten Teachers

The competence of kindergarten teachers serves as the foundational pillar for successful early childhood education. Within the context of Indonesian educational policy, teacher competence is defined multidimensionally, encompassing four core aspects: pedagogical, professional, personal, and social (Kurnianti et al., 2025; Wijaya et al., 2023). These dimensions are interdependent and mutually reinforcing in educational practice.

- Pedagogical competence refers to the ability to design, implement, and evaluate learning processes tailored to the characteristics of early childhood learners.
- Professional competence involves mastery of subject matter, commitment to continuous professional development, and the effective use of instructional technology.

- Personal competence reflects moral integrity, emotional stability, mature attitudes, and work ethics, positioning teachers as role models for students.
- Social competence encompasses communication skills, the ability to interact with students, parents, and colleagues, as well as sensitivity to socio-cultural contexts.

Multidimensional competence is essential for teachers to create inclusive, ethical, and meaningful learning environments. Prior research indicates that holistic improvements in teacher competence directly enhance teaching quality and early childhood development outcomes (Rizal et al., 2022).

2.2. Management Development (MD)

MD comprises systematic interventions aimed at enhancing individuals' capacities in planning, organizing, decision-making, and values-based leadership aligned with institutional vision (Prasetya et al., 2024). In early childhood education, MD applies not only to school principals but also to teachers as classroom managers and learning facilitators.

MD equips teachers to understand school organizational structures, design instructional programs aligned with institutional goals, and strategically manage classroom dynamics. These skills directly strengthen pedagogical and professional competence by fostering visionary, systematic, and reflective teaching practices (Arobiolè & Oko-Jaja, 2023; Ghamrawi et al., 2024). Additionally, MD enhances learning efficiency and improves school-parent communication management.

2.3. Emotional-Spiritual Quotient (ESQ)

Emotional-Spiritual Quotient (ESQ) integrates two intelligences: emotional intelligence (EQ) and spiritual intelligence (SQ). Antonopoulou (2024) defines EQ as encompassing self-awareness, emotional regulation, intrinsic motivation, empathy, and social skills. Meanwhile, SQ has the capacity to derive meaning, uphold noble values, cultivate transcendental awareness, and act with wisdom and compassion.

In educational practice, ESQ underpins the development of personal and social competence. Teachers with high EQ can respond appropriately to children's emotional needs, maintain composure, and foster positive interpersonal relationships. SQ, conversely, supports ethical decision-making, sincerity in teaching, and integrity in actions (Pilvera et al., 2024).

2.3.1. Lesson Study (LS)

LS is a collaborative, iterative, and practice-based professional development approach. The professional development approach consists of iterative cycles in which a group of teachers follows a series of core stages: study, plan, teach, observe, and reflect (Lewis, 2009). For kindergarten teachers, LS serves as a platform for peer learning, contextualized lesson design, and professional learning communities.

LS has proven effective in enhancing pedagogical and professional competence by enabling teachers to refine instructional strategies through peer feedback and classroom observations (García, 2024). Furthermore, LS strengthens social competence by fostering mutual respect, open communication, and teamwork in curriculum development.

This study's conceptual framework is grounded in the following assumptions:

1. Management Development (MD) enhances efficiency in instructional planning, micro-leadership in the classroom, and work accountability, thereby contributing to pedagogical and professional competence.

2. Emotional-Spiritual Quotient (ESQ) underpins the development of personal values, emotional stability, and work ethics, directly influencing personal and social competence.

3. Lesson Study (LS) fosters reflective practice, collaborative learning, and collective teaching improvements, impacting pedagogical, professional, and social competence.

3. Methodology

3.1. Research Design and Approach

This study falls under the category of explanatory quantitative research, which aims to explain causal relationships among variables through structured, systematic statistical analysis. In this research, the researcher examines and explains the extent of influence of three exogenous variables (MD, ESQ, and LS) on the endogenous variable, teachers' multidimensional competence, comprising four dimensions: pedagogical, professional, personal, and social competencies. The design is structured to test a complex theoretical model that integrates multiple latent constructs, using partial least squares structural equation modeling (PLS- SEM) as the primary analytical approach. PLS- SEM was selected due to its robustness in handling complex models with latent variables, its flexibility with non-normal data distributions, and its suitability for relatively small sample sizes, which aligns with the study's context of limited but complex data. (Hair et al., 2021; Subhaktiyasa, 2024). The research follows a cross-sectional approach, collecting data at a single point in time to assess the immediate effects of the professional development interventions.

3.2. Population and Sample

The population in this study consists of all kindergarten teachers in Indonesia who have participated in professional development programs, particularly those involving Management Development training, Emotional-Spiritual Quotient enhancement, and Lesson Study implementation. This population is spread across various formal ECE institutions, both public and private. The target population is estimated to include thousands of teachers across Indonesia's diverse regions, with a focus on those engaged in structured CPD Programs. The research sample comprises 200 kindergarten teachers selected through a purposive sampling technique, a method based on specific criteria aligned with the research objectives. Inclusion criteria were: (1) active teachers with at least one year of teaching experience, (2) participation in at least one structured MD, ESQ, and LS training within the past two years, and (3) willingness to complete the research instrument honestly. Purposive sampling was appropriate to target teachers with relevant CPD exposure but may introduce selection bias, potentially limiting generalizability to teachers without such training. This sample size of 200 is sufficient for PLS-SEM to meet the 10:1 ratio of respondents to indicators. (Hair et al., 2021), and was validated using analysis to ensure adequate statistical power for detecting medium effect sizes.

3.3. Ethical Considerations

The study was classified as minimal risk, involving non-sensitive survey data with no direct intervention, and thus did not require formal ethical clearance from an Institutional Review Board, per standard educational research protocols in Indonesia. Informed consent was obtained from all participants via a digital consent form on Google Forms, which clearly outlined the study's purpose, voluntary participation, and data-handling procedures. Confidentiality and anonymity were ensured by assigning unique respondent codes, storing data on a secure, password-protected server, and reporting results in aggregate form to protect participant identities.

3.4. Data Collection Procedures and Instruments

Data were collected between March and May 2025 using a structured, self-administered online questionnaire distributed via Google Forms. The questionnaire was designed to measure MD, ESQ,

LS, and multidimensional teacher competence, with items from established theoretical frameworks. It consisted of 40 closed-ended statements across the four constructs, using a four-point Likert scale (1 = strongly disagree, 4 = strongly agree) to ensure clear responses. The absence of a neutral option was intentional to minimize ambivalence but may limit response nuance. Each construct was measured with 8-12 indicator items, systematically developed and content-validated by two experts in early childhood education and one in research methodology. A pilot study with 30 kindergarten teachers (not including the final sample) was conducted in February 2025 to assess item clarity and reliability, yielding Cronbach's Alpha values above 0.80 for all constructs. Based on pilot feedback, three items were rephrased for clarity. The questionnaire was distributed through official channels within early childhood education institutions to ensure respondent engagement and data validity.

3.5. Data Analysis Techniques

Data analysis was conducted using SmartPLS 4.0 software, selected for its ability to model complex relationships and accommodate non-normal data and smaller samples (Hair et al, 2021). The analysis proceeded in two stages:

3.5.1. Outer Model Evaluation

This stage assessed construct validity and reliability. Convergent validity was confirmed through loading factors (>0.70), Average variance extracted (AVE > 0.50), and composite reliability (CR > 0.70). Discriminant validity was verified using the Fornell-Larcker criterion, ensuring that the square root of AVE for each construct exceeded its correlations with other constructs. Normality tests (Shapiro-Wilk) confirmed non-normal data, justifying PLS-SEM, and multicollinearity was assessed via the Variance Inflation Factor (VIF < 5 for all constructs)/

3.5.2. Inner Model Evaluation

This stage tested causal relationships through path coefficients, R-squared (R^2) for explained variance, F-squared (f^2) for effect size, and Q-squared (Q^2) for predictive relevance. Bootstrap with 5,000 resamples was used to determine the significance of path coefficients ($p < 0.005$). The model's structure, depicting relationships between MD, ESQ, LS, and multidimensional competence, is shown in Figure 1.

To enhance replicability, all analysis steps were documented, and model fit indices were used. Standardized root mean square residual [SRMR] < 0.08 was calculated to ensure the model's goodness-of-fit. Data cleaning involved checking for missing values (none found) and outliers, which were addressed using winsorization to maintain sample integrity.

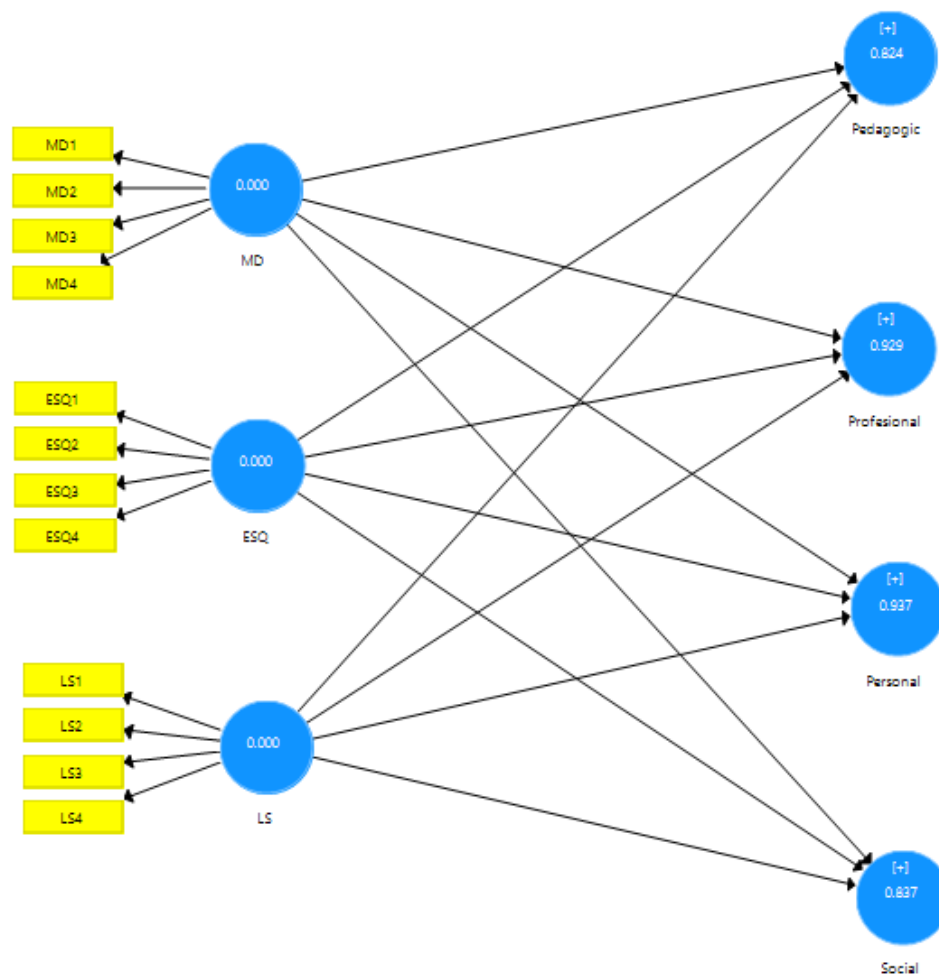


Figure 1. Structural Model of MD, ESQ, and LS Effects on Teacher Competence

4. Results

Before interpreting the structural model, construct validity and reliability were examined. The Construct Reliability and Validity assessment confirmed that all constructs met the minimum reliability threshold of 0.70 (Bagozzi & Yi, 1988; Chin & Dibbern, 2010). Each construct demonstrated strong internal consistency, with Composite Reliability values ranging from 0.939 to 1.000 across all measured variables. The square roots of AVE for all constructs exceeded the required thresholds, confirming adequate convergent validity, as presented in Table 1.

Table 1. Result of Validity and Reliability

	Cronbach's Alpha	Composite Reliability	√AVE
ESQ	0,913	0,939	0,8916
LS	0,965	0,974	0,9513
MD	0,939	0,957	0,9210
Pedagogic	1,000	1,000	1,000
Personal	1,000	1,000	1,000
Profesional	1,000	1,000	1,000
Social	1,000	1,000	1,000

Discriminant validity was verified using the Fornell-Larcker criterion. The analysis revealed that, for each construct, the square root of its AVE (displayed on the diagonal) was greater than its correlations with other constructs in the model. This confirms that each construct is statistically distinct and suitable for inclusion in the structural analysis. The results collectively demonstrate that all measurement models satisfy the necessary psychometric properties for advanced statistical testing.

Research Problem 1: The Effect of Management Development (MD)

Management Development demonstrated significant effects on pedagogical competence ($p = 0.021$; $f^2 = 0.031$), professional competence ($p = 0.000$; $f^2 = 0.117$), and social competence ($p = 0.005$; $f^2 = 0.055$). These results indicate that management training effectively enhances teachers' instructional design capabilities, professional content mastery, and positive social relationships within school environments. However, MD did not significantly influence personal competence ($p = 0.450$; $f^2 = 0.003$), suggesting that managerial training does not directly affect teachers' personality development. The test results are shown in Table 2.

Table 2. The Test Results of the Influence of MD on Multidimensional Competence of Teachers

	P Values	F Square
MD -> Pedagogic	0,021	0,031
MD -> Personal	0,450	0,003
MD -> Profesional	0,000	0,117
MD -> Social	0,005	0,055

Research Problem 2: The Effect of Emotional-Spiritual Quotient (ESQ)

ESQ significantly influenced all competence dimensions: pedagogical ($p = 0.003$; $f^2 = 0.148$), professional ($p = 0.000$; $f^2 = 0.150$), personal ($p = 0.000$; $f^2 = 0.151$), and social ($p = 0.017$; $f^2 = 0.052$). This demonstrates that teachers' emotional and spiritual intelligence plays a crucial role in holistic competency development, particularly in fostering moral integrity, self-awareness, and ethical interpersonal relationships. The effect of ESQ on personal competence emerged as the strongest among all observed relationships. The test results are shown in Table 3.

Table 3. The Test Results of the Influence of ESQ on Multidimensional Competence of Teachers

	P Values	F Square
ESQ -> Pedagogic	0,003	0,148
ESQ -> Personal	0,000	0,151
ESQ -> Profesional	0,000	0,150
ESQ -> Social	0,017	0,052

Research Problem 3: The Effect of Lesson Study (LS)

Lesson Study significantly affected personal competence ($p = 0.000$; $f^2 = 0.206$) and professional competence ($p = 0.021$; $f^2 = 0.032$). These findings confirm that collaborative teaching practices, including joint lesson planning and reflection, strengthen professional responsibility while cultivating reflective and open-minded personal attitudes. However, LS showed no significant effects on pedagogical competence ($p = 0.378$; $f^2 = 0.005$) or social competence ($p = 0.327$; $f^2 = 0.006$),

potentially due to implementation limitations or insufficient depth of reflective interaction during LS sessions. The test results are shown in Table 4.

Table 4. The Test Results of the Influence of LS on Multidimensional Competence of Teachers

	P Values	F Square
LS -> Pedagogic	0,378	0,005
LS -> Personal	0,000	0,206
LS -> Profesional	0,021	0,032
LS -> Social	0,327	0,006

Research Problem 4: Collective Contribution of MD, ESQ, and LS

The three exogenous variables (MD, ESQ, and LS) collectively contributed significantly to overall teacher competence. This is evidenced by high R^2 values across all four competence dimensions (>0.85) and excellent Q^2 values, indicating the model's strong predictive power. ESQ emerged as the most consistent and significant factor influencing all competence aspects, while MD contributed substantially to professional and social competence. Although LS showed limited effects on pedagogical and social competence, it remained relevant for strengthening personal and professional development. The test results are shown in Table 5.

Table 5. Collective Effects of MD, ESQ, and LS on Teachers' Multidimensional Competence

	R Square	$Q^2 (=1-SSE/SSO)$
Pedagogic	0,864	0,824
Personal	0,944	0,937
Profesional	0,942	0,929
Social	0,850	0,837

5. Discussion

This study examined the effects of Management Development (MD), emotional-spiritual Quotient (ESQ), and Lesson Study (LS) on the multidimensional competence (pedagogical, professional, personal, and social) of Indonesian kindergarten teachers using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicate significant contributions from MD, ESQ, and LS, with ESQ showing the strongest and most consistent influence across all competence dimensions, followed by MD and LS, which have more selective impacts. Below, we systematically summarize the findings, interpret them in light of prior research, and highlight the study's unique contributions to the field of early childhood education.

5.1. The Extent of MD's Influence on Pedagogical, Professional, Personal, and Social Competence

The findings reveal that Management Development (MD) has a clear and positive influence on professional and social competencies of kindergarten teachers. This reflects the role of organizational development and leadership training in enhancing teachers' ability to function effectively within their institutions and collaborate with others. However, MD exhibits a minimal influence on personal competence, indicating a shortfall in addressing deeper psychological or character-related domains.

This is most likely due to the administrative and structural focus of many MD programs, which often overlook educators' personal and ethical development. As suggested by Liden et al. (2025), effective MD must be reconceptualized as a holistic, ethically grounded, and context-sensitive approach that incorporates leadership styles, moral accountability, follower dynamics, multilevel analysis, and responsiveness to complexity and unintended outcomes. The moderate pedagogical effect may reflect MD's emphasis on system-level management rather than classroom-specific instructional strategies, a gap also noted by Arobirole and Oko-Jaja (2023), who suggest aligning MD with practical teaching applications.

5.2. The Extent of ESQ's Influence on Pedagogical, Professional, Personal, and Social Competence

The study emphasizes that Emotional and Spiritual Quotient (ESQ) contributes significantly to the overall competence development of kindergarten teachers, particularly in the personal and professional domains. This finding reinforces the notion that teaching young children is not only a technical task but also a deeply affective and value-laden profession. According to Sakti et al. (2024), early childhood education must be anchored in emotional stability and spiritual awareness, enabling teachers to nurture children with empathy, patience, and integrity. Therefore, ESQ should be formally integrated into teacher training and professional development programs, not treated as supplementary or occasional content. Institutionalizing ESQ ensures the cultivation of character, ethical consciousness, and resilience, which are essential for pedagogical sensitivity and social competence, even if these dimensions are often developed implicitly. ESQ's impact on pedagogy may manifest indirectly through teacher motivation, empathy, and meaningful classroom interactions, rather than through specific instructional techniques. These findings extend prior work by Ikhwan et al. (2025) and Saad et al. (2023), who highlight ESQ's role in fostering ethical decision-making and resilience. Unlike previous studies focusing on EQ or SQ in isolation, this study's examination of ESQ as a composite construct reveals its holistic impact, particularly its indirect influence on pedagogy through enhanced motivation and classroom interactions.

5.3. The Extent of LS's Influence on Pedagogical, Professional, Personal, and Social Competence

Lesson Study (LS) has a strong influence on professional and personal competence, primarily by promoting reflective practice and collegial learning. It provides a platform for teachers to critically evaluate their teaching and to engage in shared problem-solving. However, its impact on pedagogical and social competencies remains limited. This limitation may stem from LS being implemented as a relatively informal, discussion-based activity rather than a structured, supervised instructional improvement mechanism. Al-Hattami & Bawaneh (2024) and Cheung & Wong (2014) argue that, without clinical oversight and clear pedagogical targets, LS tends to function more as a reflective forum than as a direct tool for enhancing teaching strategies or classroom interaction. To maximize its potential, LS needs to be redesigned into a more rigorous model that integrates pedagogical planning, real-time feedback, and collaborative engagement with students and peers. This transformation would enable LS to support not only internal reflection but also tangible improvements in instructional quality and social responsiveness. These findings contrast with Ayantas and Gorgen (2024), who found broader LS impact in collaborative settings, suggesting that contextual factors, such as Indonesia's varying LS implementation quality, may explain the limited effects. Structured LS with real-time feedback could address these shortcomings.

5.4. The Collective Contribution of MD, ESQ, and LS to Multidimensional Competence

The collective model of MD, ESQ, and LS yielded high predictive power ($R^2 > 0.85$, $Q^2 >$ across all competence dimensions, indicating a robust framework for teacher development. This synergistic

effect supports Brussino's (2021) assertion that high-quality teacher development requires integrated approaches addressing cognitive, emotional, social, and managerial domains. Unlike prior studies that examined MD, ESQ, or LS in isolation (Chatchawaphun et al., 2016; Lewis, 2009), this study's unique contribution lies in its simultaneous analysis of these approaches using PLS-SEM, revealing their complementary roles. ESQ's consistent impact across all competencies highlights its centrality in holistic development, while MD and LS provide targeted support for professional and reflective capacities, respectively.

From a policy perspective, this underscores the need for systemic, evidence-informed professional learning systems that align with national competency frameworks such as Permendikbud No. 137/2014 and International standards (OECD's TALIS). Institutionally, embedding MD, ESQ, and LS within professional learning communities, supported by peer coaching and instructional leadership, can drive cultural transformation in early childhood education settings, as suggested by Parivash and Stolz (2024) and Ventista and Brown. The study's findings also highlight the potential of digital and hybrid training models to enhance accessibility, particularly in Indonesia's resource-limited regions (Maity et al., 2021; R, 2024). However, such modalities require high-quality content and authentic assessments (microcredentialling) to ensure effectiveness, aligning with Ventista and Brown's (2023) emphasis on scalable, impactful professional development.

5.5. Unique Contributions to the Field

This study makes several unique contributions to early childhood education literature. First, it provides empirical evidence of the combined effects of MD, ESQ, and LS, addressing a gap in prior research that focused on isolated interventions. Second, PLS-SEM offers a robust methodological approach for modeling complex, multidimensional teacher competence, advancing theoretical frameworks for holistic CPD. Third, the study's focus on Indonesia's culturally specific context, emphasizing collectivism and spiritual values, enhances the applicability of findings to similar settings while aligning with global early childhood education standards. In practice, the integrated model informs policy by advocating for systemic CPD that balances managerial, emotional, and collaborative learning, and offers a blueprint for improving teacher effectiveness and early childhood education quality.

Limitations include the purposive sampling and moderate sample size ($n=200$), which may limit generalizability, and the four-point Likert scale's potential to reduce response nuance. Future research should explore larger, randomized samples and incorporate contextual variables, such as teacher experience and program structure, to further refine the model.

6. Conclusion

This study underscores the complex, multi-dimensional nature of kindergarten teacher competence and the varying degrees of influence that Management Development, Emotional-Spiritual Quotient, and Lesson Study exert across pedagogical, professional, personality, and social domains. The strongest effects were found in the EQ-SQ domain, followed by MD and LS with more selective impacts. These findings point to the need to adopt an integrated, evidence-based approach to teacher development, in which professional growth is viewed holistically and supported by emotional, organizational, and collaborative mechanisms. To achieve sustainable improvement in the quality of early childhood education, stakeholders must implement systemic, reflective, and context-sensitive professional learning ecosystems.

7. Suggestion

Based on the findings, it is recommended that stakeholders in early childhood education adopt an integrated professional development model that equally emphasizes Management Development (MD), Emotional-Spiritual Quotient (ESQ), and Lesson Study (LS) as complementary pillars.

Specifically, ESQ should be institutionalized as a foundational component in teacher training programs to foster ethical awareness, emotional resilience, and personal integrity. MD initiatives need to shift toward holistic leadership development that goes beyond administrative competence to include reflective and ethical dimensions. Additionally, LS should be restructured into a more systematic, supervised format to maximize its potential in enhancing pedagogical planning and collaborative learning. For scalability and equity, digital and hybrid training platforms must also be utilized to provide accessible, high-quality learning experiences, particularly for teachers in remote or under-resourced areas.

Declarations

Author Contributions. Farah Rizkita Putri contributed to the conceptualization, research design, data collection, analysis, and manuscript drafting. Prof. Dr. Sujarwo provided supervision and critical feedback and contributed to refining the theoretical framework and methodology. Dr. Wiwik Wijayanti offered expertise in educational administration and contributed to the validation of the research instruments and the interpretation of findings. Wafiq Nurul Huda supported the data analysis, prepared the SEM model in SmartPLS, and contributed to the final editing and formatting of the manuscript. All authors have read and approved the final version of the manuscript.

Conflicts of Interest. No conflict of interest.

Funding. The author(s) declare that financial support was received for the research and/or publication of this article. This work was funded by the Indonesian Education Scholarship, the Center for Higher Education Funding and Assessment, and the Indonesian Endowment Fund for Education.

Ethical Approval. This research was conducted in accordance with ethical standards for research involving secondary school students. Research authorization was obtained from the school. All participants provided informed consent prior to participations. Participants were assured that their responses would be kept confidential and anonymous, and that their participation was voluntary with no academic consequences.

Data Availability Statement. The data supporting these research findings are available upon reasonable request from the corresponding author.

Acknowledgments. We would like to thank BPI, PPAPT Kemdiktisaintek and LPDP (Education Fund Management Agency) of the Ministry of Finance of the Republic of Indonesia for their financial support. The authors declare no conflict of interest. The data supporting this research are available upon request from the corresponding author.

References

- Al-Hattami, A., & Bawaneh, A. K. (2024). The effect of lesson study approach on developing teachers' reflective thinking as a self-assessment tool. *International Journal of Evaluation and Research in Education (IJERE)*, 13(5), 3306. <https://doi.org/10.11591/ijere.v13i5.29354>
- Antonopoulou, H. (2024). The value of emotional intelligence: self-awareness, self-regulation, motivation, and empathy as key components. *Technium Education and Humanities*, 8, 78–92. <https://doi.org/10.47577/teh.v8i.9719>
- Arndt, S., Smith, K., Urban, M., Ellegaard, T., Blue Swadener, B., & Murray, C. (2021). Reconceptualising and (re)forming early childhood professional identities: Ongoing transnational policy discussions. *Policy Futures in Education*, 19(4), 406–423. <https://doi.org/10.1177/1478210320976015>
- Arobiolo, O. O., & Oko-Jaja, C. (2023). Leadership development programs and the management of competence for educational administrator's effectiveness. *International Journal of Institutional Leadership*, 5(3), 262–276.

- Ayantaş, T., & Gürgen, G. (2024). Building collaboration among teacher candidates in higher education. In *Developing Effective and High-Performing Teams in Higher Education* (pp. 145–186). IGI Global. <https://doi.org/10.4018/979-8-3693-3852-0.ch006>
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74–94. <https://doi.org/10.1007/BF02723327>
- Brussino, O. (2021). Building capacity for inclusive teaching: Policies and practices to prepare all teachers for diversity and inclusion. In *OECD Education Working Papers* (Vol. 256, p. 126). <https://doi.org/10.1787/57fe6a38-en>
- Chatchawaphun, P., Julsuwan, S., & Srisa-ard, B. (2016). Development of program to enhance strategic leadership of secondary school administrators. *International Education Studies*, 9(10), 34. <https://doi.org/10.5539/ies.v9n10p34>
- Cheung, W. M., & Wong, W. Y. (2014). Does Lesson Study work? *International Journal for Lesson and Learning Studies*, 3(2), 137–149. <https://doi.org/10.1108/IJLLS-05-2013-0024>
- Chin, W. W., & Dibbern, J. (2010). Handbook of Partial Least Squares. *Handbook of Partial Least Squares*, 171–172. <https://doi.org/10.1007/978-3-540-32827-8>
- García, E. C. (2024). Peer feedback for teaching professional development: conditions for it to take effect. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186X.2024.2391577>
- Ghamrawi, N., Shal, T., & Ghamrawi, N. A. R. (2024). Cultivating teacher leadership: evidence form a transformative professional development model. *School Leadership & Management*, 44(4), 413–441. <https://doi.org/10.1080/13632434.2024.2328056>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *An Introduction to Structural Equation Modeling*. Springer. https://doi.org/10.1007/978-3-030-80519-7_1
- Hair, J. F., Jr., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107. <https://doi.org/10.1504/ijmda.2017.10008574>
- Han, S. (2023). Research on the profession development of early education teachers for children aged 0 to 3 years old. *Frontiers in Educational Research*, 6(27), 179–183. <https://doi.org/10.25236/fer.2023.062730>
- Ikhwan, A., Rohmad, A., Tobroni, & Zukhrufin, F. K. (2025). Integrating emotional and spiritual quotient (ESQ) with prophetic values in human resource development. *AFKAR: Jurnal Akidah & Pemikiran Islam*, 27(1), 383–426.
- Kurnianti, K., Elpisah, E., & Devilla, R. (2025). Pedagogic , personality , social , and professional competence influences on elementary students ' social studies interest. *International Journal of Studies in International Education*, 2(2), 22–33. <https://doi.org/https://doi.org/10.62951/ijse.v2i2.266>
- Lewis, C. (2009). What is the nature of knowledge development in lesson study? *Educational Action Research*, 17(1), 95–110. <https://doi.org/10.1080/09650790802667477>
- Liden, R. C., Wang, X., & Wang, Y. (2025). The evolution of leadership: Past insights, present trends, and future directions. *Journal of Business Research*, 186, 115036. <https://doi.org/10.1016/j.jbusres.2024.115036>
- Maity, C., Mukherjee, M., & Planning, E. (2021). *A Flexible Combination of In-person and Remote Environment Hybrid Model of Learning*: Researchgate; researchgate. <https://www.researchgate.net/publication/354066385%0AHybrid>

- Parivash, M. N., & Stolz, S. A. (2024). Unveiling teachers' professional agency and decision-making in professional learning: the illusion of choice. *Professional Development in Education*, 1–21. <https://doi.org/10.1080/19415257.2024.2349058>
- Pilvera, S. C., Trinidad, A. E., & Sabud, M. C. (2024). Building effective values educators: The role of emotional intelligence and instructional efficacy. *Asian Research Journal of Arts & Social Sciences*, 22(12), 178–188. <https://doi.org/10.9734/arjass/2024/v22i12607>
- Prasetya, Y. B., Az Zaakiyyah, H. K., & Suherlan. (2024). Building values-based leadership in the context of knowledge management and information technology to support sustainable change in organizational culture. *Journal of Contemporary Administration and Management (ADMAN)*, 2(1), 436–442. <https://doi.org/10.61100/adman.v2i1.166>
- R, H. I. (2024). Hybrid learning models : Combining in-person and online education effectively. *Research Output Journal of Education*, 3(3), 16–19. <https://rojournals.org/roj-education/PRINT>
- Rizal, M., Najmuddin, N., Iqbal, M., Zahriyanti, Z., & Elfiadi, E. (2022). Kompetensi guru PAUD dalam mengimplementasikan profil pelajar pancasila di sekolah penggerak [Competence of early childhood education teachers in implementing the pancasila student profile in driving schools]. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(6), 6924–6939. <https://doi.org/10.31004/obsesi.v6i6.3415>
- Saad, M., Shah, N. A., Supian, K., Rani, A. A., & Abidin, I. (2023). Emotional and spiritual quotient for sustainable education's service quality. *International Journal of Evaluation and Research in Education*, 12(4), 1781–1790. <https://doi.org/10.11591/ijere.v12i4.25434>
- Sakti, S. A., Endraswara, S., & Rohman, A. (2024). Integrating local cultural values into early childhood education to promote character building. *International Journal of Learning, Teaching and Educational Research*, 23(7), 84–101. <https://doi.org/10.26803/ijlter.23.7.5>
- Samala, A. D., Rawas, S., Santiago, C. C., Bondarenko, O., Samala, A. G., & Novaliendry, D. (2024). Harmony in education: An in-depth exploration of indonesian academic landscape, challenges, and prospects towards the golden generation 2045 vision. *TEM Journal*, 13(3), 2436–2456. <https://doi.org/10.18421/TEM133-71>
- Subhaktiyasa, P. G. (2024). PLS-SEM for multivariate analysis: A practical guide to educational research using SmartPLS. *EduLine: Journal of Education and Learning Innovation*, 4(3), 353–365. <https://doi.org/10.35877/454ri.eduline2861>
- Ventista, O. M., & Brown, C. (2023). Teachers' professional learning and its impact on students' learning outcomes: Findings from a systematic review. *Social Sciences & Humanities Open*, 8(1), 100565. <https://doi.org/10.1016/j.ssaho.2023.100565>
- Wijaya, C., Ginting, L. R., Iswanto, J., Nadia, M., & Rahman, A. A. (2023). Improving the quality of education by developing the social competency of teachers. *AL-ISHLAH: Jurnal Pendidikan*, 15(3), 3666–3674. <https://doi.org/10.35445/alishlah.v15i3.1564>

About the Contributor(s)

Farah Rizkita Putri, Universitas Negeri Yogyakarta, STAI Syekh Jangkung, Indonesia.

Email: farahrizkita.2022@student.uny.ac.id

ORCID: <https://orcid.org/0009-0008-0908-6513>

Sujarwo, Universitas Negeri Yogyakarta, Indonesia.

Email: sujarwo@uny.ac.id

ORCID: <https://orcid.org/0000-0002-9283-7961>

Wiwik Wijayanti, Universitas Negeri Yogyakarta, Indonesia.

Email: wiwik_wijayanti@uny.ac.id

ORCID: <https://orcid.org/0000-0001-8535-9001>

Wafiq Nurul Huda, Universitas Negeri Yogyakarta, Indonesia.

Email: wafiqnurul.2023@student.uny.ac.id

ORCID: <https://orcid.org/0000-0003-0853-8000>

Publisher's Note: *The opinions, statements, and data presented in all publications are solely those of the individual author(s) and contributors and do not reflect the views of Universitepark, EDUPIJ, and/or the editor(s). Universitepark, the Journal, and/or the editor(s) accept no responsibility for any harm or damage to persons or property arising from the use of ideas, methods, instructions, or products mentioned in the content.*
