



Evidence of Teacher Leadership in Learning: A Case Study on Principal Supervision, Learning Methods, Communication, and School Environment

B. S. WIDODO, H. PRASTIYONO, J. WAHYUNI, M. H. IBRAHIM

ABSTRACT

Introduction. Strengthening teacher leadership is vital in achieving Sustainable Development Goal 4 (SDG-4), which focuses on inclusive and equitable quality education. This study examines how various factors such as principal supervision, learning methods, communication, classroom management, and the school environment influence teacher leadership in learning. Given the complex demands of educational reform and the importance of professional teacher development, this research addresses the need for empirical evidence on how school conditions shape leadership behavior among teachers, especially in non-Java regions of Indonesia.

Methods. This research employs a quantitative approach using a structured questionnaire distributed to 108 high school social science teachers in South Kalimantan. The study uses Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the causal relationships among independent variables (principal supervision, learning methods, communication, classroom management, and school environment) and the dependent variable (teacher leadership in learning). Instrument validation was conducted through expert judgment and statistical analysis, ensuring construct validity and reliability.

Results. The findings indicate that all five factors positively contribute to teacher leadership, with classroom management (path coefficient = 0.28) having the strongest influence, followed by communication (0.20), principal supervision (0.19), school environment (0.19), and learning methods (0.16). The model explains 94% of the variance in teacher leadership, signifying strong explanatory power. Reliability and model fit indices (SRMR = 0.05; NFI = 0.69) confirm the suitability of the proposed model.

Practical significance. These results emphasize the importance of a holistic support system in schools, where leadership development is reinforced not only by internal professional practices but also by a conducive environment and managerial support. The insights gained provide important guidance for education policymakers, school leaders, and teacher training institutions in designing interventions that improve leadership effectiveness and overall teaching quality in line with SDG-4.

KEYWORDS

education quality, sdg 4, learning management, teacher professional development

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INTRODUCTION

The mission to achieve SDG-4 is still ongoing and has always been a focus of education, including improving teachers' learning management skills. Professional learning continuously strengthens teacher leadership [1]. Education for Sustainable Development (ESD) activities always monitor teachers' professionalism in achieving SDG-4 goals [2]. Teacher leadership as the spearhead of the learning process cannot be doubted. In this context, teacher leadership plays a crucial role in improving the effectiveness of learning in the classroom [3; 4]. In this context, improvising teacher leadership in learning becomes very relevant to be explored more deeply. Teacher leadership involves not only the ability to manage the classroom and teach, but also the ability to inspire, motivate, and guide students effectively [5]. Constant changes in curriculum requirements, technology, and societal expectations require teachers to be highly flexible and adaptable. The quality of teacher leadership has a significant impact on student learning outcomes [6; 7]. Teachers who can provide effective leadership can create an inclusive and supportive learning environment, improving students' motivation to learn and academic outcomes. Therefore, it is important to understand how teachers can improve in their leadership to meet their challenges.

The quality of education is contingent upon several factors, including the caliber of the teaching staff, the degree of support provided by the principal, the condition of the school environment, and the availability of facilities. An appreciation of these supplementary elements is vital to the establishment of an optimal learning environment, conducive to students' academic advancement. Principal supervision is defined as a process of supervision and guidance conducted to enhance the quality of teaching in schools [8; 9]. Effective supervision entails not only the evaluation of teachers' performance but also the cultivation of their professionalism through constructive feedback and timely support [10]. A learning-oriented approach to supervision can provide substantial motivation for teachers to enhance their pedagogical practices, improving student learning outcomes [11]. An effective teaching and learning process entails the utilization of innovative and evidence-based learning methodologies [12]. Variations in learning methodologies considerably impact student learning outcomes, including providing clear feedback, the suitability of formative assessment, and the facilitation of deep understanding [13]. Innovation and incorporating diverse learning methodologies can contribute to a more meaningful learning experience for students.

The availability of adequate school facilities is a crucial factor in the creation of a conducive learning environment. The physical quality and infrastructure of schools, including comfortable classrooms, laboratories, libraries, and access to technology, can enhance students' motivation to learn and provide the requisite support for effective teaching practices [14; 15]. Furthermore, a safe, inclusive, and supportive school environment has been demonstrated to have a significant impact on teacher leadership in learning [16]. A positive and collaborative environment can enhance interactions between teachers and students and facilitate cooperation among school staff in improving teaching practices [17; 18]. The role of the principal's supervision, teaching and learning processes, facilities, and school environment not only provides a comprehensive picture of the factors that influence teacher leadership in the learning process but also provides a foundation for the development of school policies and practices oriented towards improving the quality of education in line with SDG-4 targets.

The study of the role of principal supervision, the process of teaching and learning activities, facilities, and the school environment on teacher leadership in learning draws upon existing literature and research contributions to present a current overview of the subject. Firstly, it provides a review of the literature on enhancing the capacity of teacher leadership in learning, with a particular focus on the social science group at the senior high school level. Secondly, through a theoretical approach, it offers an expansion and development of the concept of teacher leadership in learning, particularly in non-Java regions. Thirdly, it offers researchers in other provinces outside Java Island the opportunity to gain insight from this research and contribute to the field of teacher leadership in learning. Consequently, this study addresses the research gap in teacher leadership in learning by examining the principal's supervisory role, the process of teaching and learning activities, facilities, and the school environment. The findings can assist in identifying which forms of teacher leadership, based on the role of principal supervision, learning methods, communication, classroom management, and school environment, are more effective in encouraging and enhancing teacher innovation and performance. Furthermore, this study underscores the significance of the principal's role, the process of teaching and learning activities, facilities, and infrastructure, as they are crucial elements in accelerating the effectiveness and efficiency of teacher leadership.

LITERATURE REVIEW

1. Principal Supervision

Principal supervision represents a significant practice in facilitating teachers' professional development and enhancing the efficacy of learning within educational institutions. The present study is a literature review exploring the impact of principal supervision on teacher leadership within the context of learning [19]. Effective supervision entails the provision of comprehensive and constructive feedback to teachers [20]. Supervision feedback should not only focus on evaluating performance, but also provide recommendations that can be directly implemented to improve teacher leadership [21]. This allows educators to more effectively address students' needs and enhance the quality of learning. Furthermore, supervision contributes to the development of teachers' leadership abilities [22]. Principals can serve as mentors for teachers in developing effective leadership skills, including the ability to manage the classroom, facilitate in-depth discussions, and motivate students to reach their academic potential [8; 23]. Supervision that supports teachers' professional growth not only improves their motivation and performance, but also contributes to overall improvements in student academic outcomes.

2. Learning Methods, Communication and Classroom Management

The implementation of effective learning methodologies, good communication, and optimal classroom management are key factors in supporting teacher leadership in learning environments. A review of the literature on learning methods, communication, and classroom management as they relate to teacher leadership [24]. Innovative learning methods, including cooperative learning [25], problem-based cases [26], and hybrid approaches [27; 28] have been demonstrated to enhance student engagement and improve learning outcomes. The capacity to communicate effectively with students is a key skill for teachers, enabling them to establish positive relationships and facilitate productive interactions in the classroom [29]. Effective communication also entails the capacity to listen with empathy and offer constructive feedback to students [30]. Conflict management is an essential skill for teachers in maintaining classroom discipline and facilitating a safe and productive learning environment [23], [31]. Strategies such as clear classroom organization and consistent rules can assist teachers in managing classroom dynamics more effectively [32]. The appropriate use of rewards and reinforcement is also a crucial aspect of efficient classroom management [33]. The positive recognition of desired behaviors and the implementation of positive classroom management strategies can motivate students to engage in a positive learning environment [16].

3. School Environment

The quality of the school's physical environment, including classrooms, laboratories, and libraries, as well as the accessibility of sports and technology facilities, has a direct impact on students' comfort and learning conditions [34]. The provision of adequate school facilities can facilitate the creation of a conducive learning environment, which in turn can enhance students' learning motivation and support teacher leadership in the design of effective learning experiences [35]. A supportive school environment fosters strong collaboration and mutual support, enhancing commitment to the mission of education [16]. Given the complexity of the interaction between the physical and socio-cultural environments of schools, this study underscores the importance of strengthening environmental factors to support teacher leadership in learning [36]. A supportive school environment not only creates optimal conditions for student learning but also empowers teachers to become effective and influential leaders in achieving desired educational goals.

4. Teacher Leadership in the Learning Process

Teacher leadership in learning is a crucial factor in enhancing the quality and learning outcomes. The advanced literature on teacher leadership encompasses a range of topics, including principal supervision, instructional methods, communication, management, and the school environment [37].

Effective pedagogical skills represent a fundamental aspect of teacher leadership [38]. The practice of collaborative teacher leadership facilitates the sharing of knowledge and best practices among educators, which can subsequently enhance learning standards and the overall quality of instruction in schools [39]. The evidence indicates that effective and practical teacher leadership has a significant positive impact on student learning outcomes. Teacher leadership is not only about managing the classroom effectively, but also about being an agent of change in education [40]. By continuously strengthening their pedagogical, adaptation, and collaboration skills, teachers can play a central role in creating inclusive, innovative, and outcome-oriented learning environments for students.

RESEARCH METHODS

This study used a quantitative methodology through the application of a questionnaire to analyze two variables: principal supervision (X1), learning methods (X2), communication (X3), classroom management (X2), and school environment (X5). These variables are utilized as independent variables (X), while teacher leadership in the learning process serves as the dependent variable (Y). The questionnaire has been augmented with several items that serve to elucidate the explanatory factors between the variables. Six items were added for principal supervision (X1), including classroom observation (KS1), lesson planning (KS2), teacher professional development (KS3), conflict management (KS4), school culture (KS5), and policy implementation (KS6). Regarding learning methods (X2), six items were incorporated, including learning content (M1), learning objectives (M2), learning strategies (M3), modeling (M4), feedback (M5), and evaluation (M6). With communication (X3), seven items address the following aspects: expression (K1), communication media/channels (K2), interaction (K3), response (K4), understanding (K5), engagement (K6), and language (K7). Concerning classroom management (X2), five items encompass rules/regulations (P1), time (P2), social interaction (P3), engagement (P4), and performance (P5). For the school environment (X5), six items include physical quality (L1), school climate (L2), support (L3), participation (L4), technology (L5), and resources (L6). For further clarification regarding the relationship between variables, likely in Figure 1.

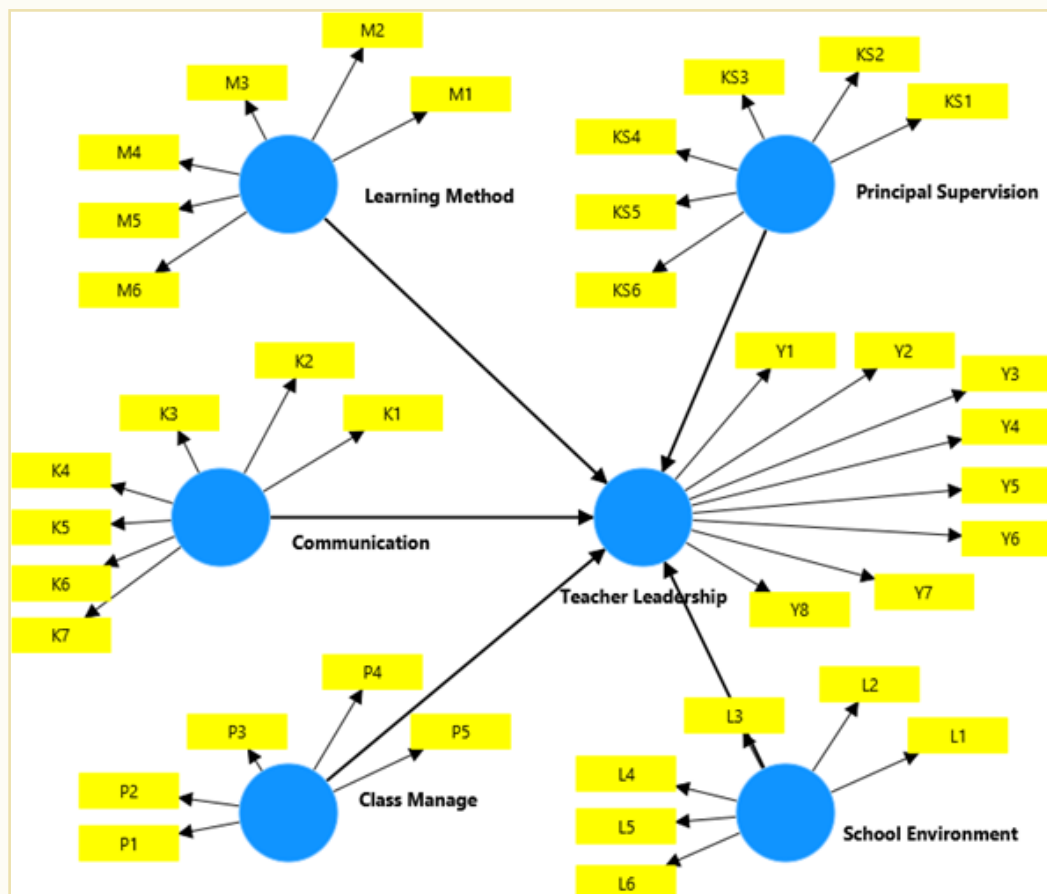


Figure 1 Research Framework

The data collection process involved the use of purposive sampling, which included the selection of 108 high school social science teachers in South Kalimantan, Indonesia. The data were collected on the role of principal supervision, learning methods, communication, classroom management, and school environment on teacher leadership in learning in South Kalimantan based on the Teacher Performance Assessment Instruments (TPAI) study of the Teacher's Standardization Agency [41]. The initial stage of instrument validation by experts employed both qualitative and quantitative methods. The qualitative evaluation yielded statements indicating that the instrument is valid, applicable, and suitable for use in research. The quantitative results are professional evaluations of the suitability of the indicators for measurement with the instrument item statements, employing a Likert model scale. The Likert model scale comprises four options: not suitable (NS), less suitable (LS), suitable (S), and very suitable (VS).

The data were augmented with demographic information, including gender, educational level, possession of professional teaching certificates, and length of teaching experience. The subsequent phase of data analysis entailed incorporating input and recommendations from experts. Following the revision of the questionnaire, it was distributed to respondents for data collection. A one-month data collection period was designated. To analyze the complex research data between the above variables, a structural equation modeling Partial Least Squares (SEM-PLS) analysis is conducted using the SmartPLS tool [42]. SEM-PLS is a statistical tool that assists researchers in understanding the relationship between a set of observed variables. It assesses complex relationships between multidimensional constructs simultaneously. Partial least squares (PLS) analysis consists of two submodels: the measurement model and the structural model.

RESULTS

Responses were obtained from 108 high school social science teachers in South Kalimantan, Indonesia. The respondents were selected using purposive sampling from members of the *Musyawarah guru mata Pelajaran* (MGMP; re: Social Science Teachers' Association) in 11 districts and 2 cities, including: The research respondents were drawn from the following regencies and cities in South Kalimantan, Indonesia: Tanah Laut, Kotabaru, Banjar, Barito Kuala, Tapin, Hulu Sungai Selatan, Hulu Sungai Tengah, Hulu Sungai Utara, Tabalong, Tanah Bumbu, Balangan, Banjarmasin City, and Banjarbaru City. It is beneficial to provide an overview of the research respondents, as this allows for the presentation of information regarding the diversity of these individuals. This data can subsequently be employed to facilitate further analysis and inform discussions. The descriptions of the research respondents were obtained, including information regarding gender, educational level, and teaching experience as in Table 1.

Table 1 Demographic Data and Educational Detail

Gender	Frequency	Percentage (%)
Male	34	31.00
Female	74	69.00
Total	108	100.00
Educational Level	Frequency	Percentage (%)
Bachelor	10	9.00
Master	98	91.00
Certified Teacher	Frequency	Percentage (%)
Yes	85	79.00
No	23	21.00
Total	108	100.00
Teaching Duration	Frequency	Percentage (%)
More than 30 Years	5	5.00
16-30 Years	34	31.00

5-15 years	56	52.00
Less than 5 Years	13	12.00
Total	108	100.00

As illustrated in Table 1, the gender distribution of the 108 research respondents is as follows: 34 individuals (31.00%) are male, and 74 individuals (69.00%) are female. About the level of education of the 108 respondents, it can be stated that 10 individuals (9.00%) have obtained a master qualification, while 98 people (91%) have a bachelor qualification. About the ownership of teaching certificates, it can be observed that 85 individuals (79.00%) possess such qualifications, while 23 respondents (21.00%) do not. The experience of educators from the 108 respondents is as follows: five people (5.00%) have over 30 years of experience, 34 people (31.00%) have between 16 and 30 years of experience, 56 people (52.00%) have between five and 15 years of experience, and 13 people (12.00%) have less than five years of experience.

The research data was measured using confirmatory factor analysis (CFA) and structural equation modeling (SEM). Subsequently, the measurement data were subjected to CFA to gain insight into their construct validity and reliability. An instrument item is deemed authentic if the value of the loading factor > 0.50 and the t-value > 1.96 [43]. The items' instrument is deemed reliable if the omega value > 0.70 [42]. Table 2 presents the validity and reliability data for the study.

Table 2 Reliability and Validity Construct

Indicator	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	Information
Principal Supervision	0.88	0.89	0.91	0.63	Valid and Reliable
Learning Method	0.94	0.94	0.95	0.78	Valid and Reliable
Communication	0.93	0.93	0.94	0.71	Valid and Reliable
Class Management	0.91	0.91	0.93	0.74	Valid and Reliable
School Environment	0.93	0.93	0.95	0.75	Valid and Reliable

As evidenced by the output in Table 2, the AVE value for all variables exceeds 0.5, indicating that all valid indicators converge in forming their respective variables. Furthermore, Cronbach's Alpha and CR values were also obtained, which yielded values greater than 0.6 for all variables. It can be concluded that all variables and items utilized in this study demonstrate satisfactory validity and reliability in variable measurement.

Subsequently, goodness of fit testing is employed to ascertain the data that quantifies the relationship between variables. Two indicators are employed in this test: the coefficient of determination and the model fit test. The coefficient of determination is employed to ascertain the extent to which the independent variable elucidates the relationship with the dependent variable. The coefficient of determination is determined by examining the R-squared statistical value associated with each variable relationship. The R-squared value is classified as strong if it exceeds 0.67, moderate if it exceeds 0.33 but is below 0.67, and weak if it exceeds 0.19 but is below 0.33 [44]. The results of the coefficient of determination test are presented in Table 3.

Table 3 Coefficient of Determination (R-Square Value)

Construct	R-square	R-square adjusted	Description
Teacher Leadership in Learning Process (Y)	0.94	0.94	Strong

The Coefficient of Determination (R^2) for the teacher leadership variable in learning (Y) is 0.94, indicating that the independent/free variables exert a simultaneous influence of 94.60% on teacher leadership in learning (dependent/dependent variable). The remaining 5.40% is influenced by other variables that were not tested in the study. The model fit test employs several statistical indicators, including the Standardized Root Mean Square Residual (SRMR), Normed Fit Index (NFI), and RMS theta. In obtaining a suitable model, the aforementioned indicators must meet the following values: SRMS < 0.08; NFI > 0.90; RMS theta is close to zero [19]. Moreover, Table 4 represent the results of the model suitability assessment.

Table 4 Suitability Assessment Model

Goodness of Fit Index	Saturated model	Estimated model	Information
SRMR	0.05	0.05	Suitable
NFI	0.69	0.69	Suitable

The resulting output indicates that the SRMS value is 0.05, which is less than 0.08. Moreover, the NFI value of 0.69 is less than 0.90. Based on these two indicators, it can be concluded that the model has met the suitability criteria and is therefore suitable for use. Furthermore, the model is effective at describing the relationship between variables.

In the construction of the SEM model, two types of relationships are identified: direct relationships, as indicated by path coefficients, and indirect relationships, as represented by indirect effects. The value of the path coefficient falls within the range of -1 to 1. If the value is within the range of 0 to 1, it can be classified as positive, whereas if the value is within the range of -1 to 0, it can be classified as negative [45]. The relationship can be observed in Table 5.

Table 5 Path Coefficients

Variable	Path coefficients	Relationship
Communication -> Teacher Leadership in Learning Process	0.20	Positive
School Environment -> Teacher Leadership in Learning Process	0.19	Positive
Learning Method -> Teacher Leadership in Learning Process	0.16	Positive
Class Management -> Teacher Leadership in Learning Process	0.28	Positive
Principal Supervision -> Teacher Leadership in Learning Process	0.19	Positive

The results in Table 5 indicate that the principal supervision variable is significantly correlated with the teacher leadership variable in learning, with a value of 0.19. Similarly, the classroom management variable is also significantly correlated with the teacher leadership variable in learning, with a value of 0.28. Considering these findings, it can be concluded that the relationship between the independent variables (principal supervision, learning methods, learning communication, classroom management, and learning environment) and the dependent variable (teacher leadership in learning) is positive likely in Figure 2.

Research Hypothesis:

1. The effect of principal supervision on teacher leadership in the learning process

The hypothesis in this study can be seen in Figure 1, the t-value obtained for the principal supervision variable (ks) is 3.64 (>1.96). it can be concluded that the principal supervision variable (ks) influences teacher leadership in the learning process.

2. The effect of learning methods on teacher leadership in the learning process

The hypothesis in this study can be seen in Figure 1, the t-value obtained for the learning method variable (m) is 1.77 (<1.96). it can be concluded that the learning method variable (m) does not affect teacher leadership in the learning process.

3. The effect of learning communication on teacher leadership in the learning process

The hypothesis in this study can be seen in Figure 1, the t-value obtained for the learning communication variable (k) is 2.78 (>1.96). it can be concluded that the learning communication variable (k) influences teacher leadership in the learning process.

4. The effect of classroom management on teacher leadership in the learning process

The hypothesis in this study can be seen in Figure 1, the t-value obtained for the classroom management variable (p) is 4.03 (>1.96). it can be concluded that the classroom management variable (p) influences teacher leadership in the learning process.

5. The effect of school environment on teacher leadership in the learning process

The hypothesis in this study can be seen in Figure 1, the t-value obtained for the school environment variable (l) is 3.11 (>1.96). it can be concluded that the school environment variable (l) influences teacher leadership in learning process.

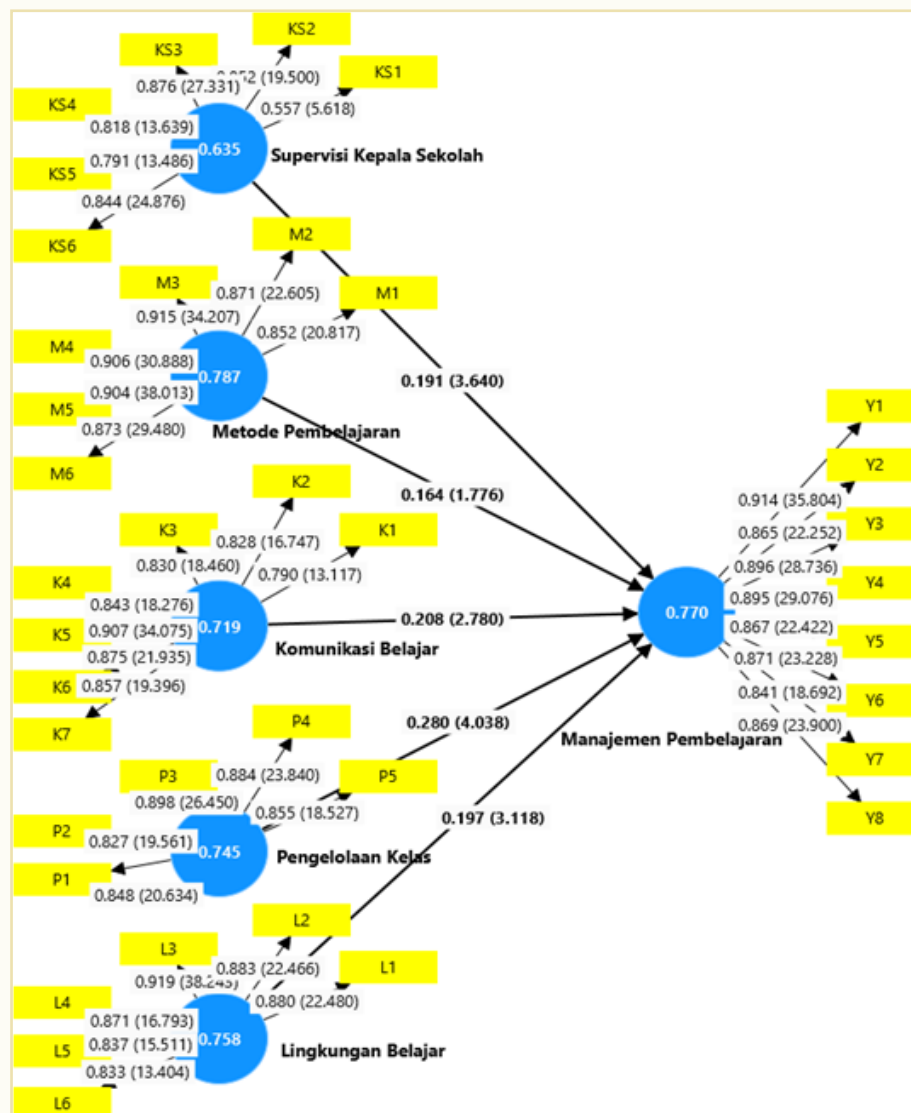


Figure 2 SEM Diagram on the Influence of Principal Supervision, Learning Method, Communication, Class Management and School Environment on Teacher Leadership in Learning Process

DISCUSSION

This study aims to explore the role of principal supervision, methods, communication, classroom management, and school environment in teacher leadership in learning. First, the instrument was validated, and preliminary analysis was conducted. Next, the reliability, convergent, and discriminant validity of the instrument were tested using EFA and CFA. The normality test for the data was conducted and provided statistical assumptions through preliminary analysis. Subsequently, the data were analyzed using descriptive and inferential statistics to answer the research questions. The results of the hypothesis tests show that four variables have a significant effect on teacher leadership in the learning process.

Furthermore, collaborative supervision approaches have been demonstrated to be an effective means of enhancing teacher leadership skills [46]. In their study, [47] emphasized the significance of collaboration between principals and teachers in identifying challenges and developing strategies to enhance teaching quality. A collaborative approach facilitates the establishment of trusting and supportive relationships between principals and teachers, which in turn reinforces a positive school culture. Supervision by principals that is oriented toward the development of teachers' professionalism and leadership skills has been demonstrated to have a beneficial impact on classroom learning outcomes [48]. Integrating a supervision approach that considers the provision of constructive feedback, the development of leadership skills, and principal-teacher-school collaboration can facilitate the creation of a conducive learning environment and climate. Effective supervision is not merely about supervision; it is also about empowering teachers to become effective leaders in optimally meeting students' learning needs.

This approach not only enhances student engagement but also reinforces the teacher's role as an effective learning facilitator. The incorporation of technology in the learning process has the potential to alter the dynamics of the classroom and enhance the quality of interaction between teachers and students [49]. The appropriate use of technology has the potential to expand access to learning resources, facilitate differentiated learning, and strengthen personalized and integrated learning experiences. Effective communication necessitates collaboration with parents, teachers, and students. The involvement of parents in education has been demonstrated to have a positive impact on students' learning motivation and to support teachers in their role of creating an inclusive and supportive learning environment [50]. By integrating current approaches to learning methods, communication, and classroom management, teachers can develop strong leadership in supporting students' academic achievement and in building a supportive learning environment for all learners. This research highlights the importance of continuity in teacher professional development to create meaningful learning experiences that will positively impact the future of education.

The physical environment plays an instrumental role in fostering a secure atmosphere, convenient facilities, and an optimal learning environment. A well-designed physical environment can help minimize distractions and enhance student engagement and participation in learning, thereby supporting the teacher's leadership role in managing the classroom effectively [7]. A positive school environment can facilitate collaboration between teachers, enhance mutual trust, and provide the necessary support for innovation in learning [18]. Teachers who can implement teaching strategies that have a significant impact on student learning outcomes, such as effective feedback, collaborative learning, and the use of technology in teaching, can be considered to possess strong leadership in the learning process [4; 51]. Teacher leadership encompasses the capacity to adapt to evolving pedagogical approaches, curriculum, technology, and the diverse needs of students. It extends beyond the classroom, involving collaboration with colleagues and engagement in curriculum development and formulating school's policy [45]. Teacher leadership in the context of learning represents a critical factor that influences the effectiveness of the teaching and learning process.

Despite their pivotal role in fostering a conducive learning atmosphere, educators frequently encounter a multitude of obstacles that impede their capacity to impart optimal instruction. In the context of inclusive education, teachers are confronted with the challenge of catering to students with diverse academic and socio-emotional needs [7]. The ability of teachers to manage diversity is a significant challenge in maintaining equity and effectiveness in learning [52]. The constant changes in the curriculum and technological advances require teachers to adapt and update their teaching methods regularly [40]. This challenge can affect the consistency of the implementation of effective leadership strategies. Teachers who lack professional training and support in developing

their leadership skills may face difficulties in meeting the increasing expectations for student learning outcomes [53; 54]. Teachers' leadership effectiveness also depends on their ability to manage complex classroom dynamics and utilize learning time efficiently. These challenges have the potential to impact the consistency with which effective leadership strategies are implemented.

Teachers who lack professional training and support in developing their leadership skills may encounter challenges in meeting the increasing expectations for student learning outcomes. Furthermore, teachers' leadership effectiveness is contingent upon their capacity to navigate intricate classroom dynamics and optimize the utilization of learning time. Such challenges not only affect the quality of learning in the classroom, but also underscore the necessity for teachers to cultivate adaptive and responsive leadership skills that are attuned to the evolving context of education [55]. It is anticipated that the ability to manage change and to be prepared to address the challenges will be pivotal to the success of teacher leadership.

In the context of evolving education, the development of teacher leadership that is adaptive and responsive to challenges is of paramount importance. Based on the issues on teacher leadership in learning process, appropriate solutions can be provided to establish a foundation for the development of policies and practices that will enhance the overall quality of education. The capacity of teachers to manage the learning process has emerged as a fundamental element in the development of effective pedagogical strategies and the creation of a positive learning environment [17; 31]. These essential skills include the capacity to design, implement, and refine teaching methods, communication practices, and management styles in response to the dynamic needs of students and the educational context. It is imperative to prioritize the enhancement of teachers' learning management abilities, as this directly impacts the caliber of education, teacher satisfaction, and students' academic and social growth [8]. Teachers' learning management skills can be enhanced by examining the impact of teaching methodologies, the significance of effective communication, the utility of diverse management styles, and the value of cultivating a collaborative work environment. Each section provides insights into how these elements contribute to the refinement of teacher management strategies and offers practical solutions to the challenges faced in this field. Through the review of case studies and success stories, the discussion further elucidates innovative approaches and prospective avenues for the advancement of teachers' learning management capabilities, thereby facilitating enhanced educational outcomes and teacher empowerment.

In the field of education, the efficacy of a teacher's management abilities is contingent upon the pedagogical approaches they utilize. These methods not only impact classroom dynamics but also have a significant effect on learning outcomes and student engagement [56]. It is crucial for effective teacher management to understand and apply a balanced approach to teaching methods [57]. Innovative teaching techniques are designed to transform the educational landscape by integrating contemporary pedagogical strategies. These include blended learning models, the integration of technology in the classroom, and methods that encourage student-centered learning. Techniques such as flipped classrooms, project-based learning, and inquiry-based learning encourage students to interact with the material actively, fostering critical thinking and problem-solving skills. By leveraging digital tools, educators can provide personalized learning experiences to meet the diverse needs of students, enhancing accessibility and engagement in the learning process.

Communication plays an integral role in facilitating connections within the school community. Thereby fostering an environment conducive to the optimal development of all members [58]. It influences how individuals perceive the school and is the conduit through which the school disseminates its values, mission, and vision. Effective communication is essential for ensuring that all stakeholders students, parents, and staff understand and align with the school's goals, thus fostering a unified community [59]. By explicitly defining expectations and providing constructive feedback, educational institutions can modify their pedagogical approaches to align with the heterogeneous needs of their student population, thereby enhancing the quality of education. In the contemporary digital era, educational institutions have a plethora of communication tools at their disposal. The regular deployment of newsletters, emails, school apps, and parent-teacher meetings ensures the expedient dissemination of information to all relevant parties. Digital platforms, such as learning management systems and mobile apps, streamline communication, rendering it more expedient and accessible. These tools not only facilitate the dissemination of information but also engender active engagement and community participation, thereby fortifying the bonds within the school community.

Creating an environment rich in feedback is essential for the continuous improvement process. Feedback should be specific, timely, and constructive, with a focus on helping students and staff understand their strengths and areas for improvement [35]. It is incumbent upon educational institutions to foster an environment wherein feedback is actively sought and esteemed, and where individuals feel secure in articulating their ideas and concerns [41]. The implementation of regular feedback sessions, suggestion boxes, and interactive platforms where feedback can be provided anonymously can facilitate the establishment of this culture. This approach not only encourages personal and academic growth but also fosters a positive and proactive community atmosphere.

The effectiveness of teachers, their job satisfaction, and the overall school environment are all significantly influenced by the management styles employed in educational settings. This section examines the influence of distinct management styles, with a particular emphasis on the contrast between hierarchical and collaborative approaches, the significance of empowerment and autonomy, and the role of school administration in shaping these dynamics. It is of the utmost importance to empower teachers through professional autonomy to foster a sense of job satisfaction and retention [39]. In this context, autonomy refers to the freedom of teachers to make decisions regarding their pedagogical strategies and professional development [60]. Schools that demonstrate support for teacher autonomy frequently exhibit elevated levels of innovative teaching practices and a more dedicated teaching workforce. The provision of opportunities for teachers to assume leadership roles in professional development workshops, curriculum design, and school-wide decision-making processes represents a key strategy for enhancing teacher autonomy. By empowering teachers, educational institutions can cultivate a more motivated and satisfied workforce, better equipped to address the challenges of modern education [61]. By understanding and implementing effective management styles, schools can enhance their educational outcomes and cultivate positive work environments that attract and retain highly qualified teachers. The interplay between hierarchical and collaborative approaches, coupled with a focus on empowerment and the supporting role of administration, constitutes the foundation of successful education management.

CONCLUSION

Improving teachers' learning management abilities reinforces the critical role of teaching methods, communication strategies, management style, and the significance of a supportive work environment. We examined how a harmonious integration of conventional and innovative teaching methodologies, coupled with effective communication and empowering managerial practices, can foster a conducive learning environment that enhances teacher satisfaction and student outcomes. These deliberations revealed that the pursuit of an enhanced educational experience is multi-faceted, requiring continuous adaptation and a profound comprehension of the dynamic educational landscape.

As we progress, it becomes clear that the challenges and opportunities in teaching and learning management are in a state of constant evolution, necessitating a dedication to continuous professional development and innovative thinking. The implications of our findings underscore the importance of a collaborative, supportive, and adaptable educational environment that prioritizes teacher empowerment and student success. The implementation of these principles will determine the future of educational institutions that can thrive, adapt to change, and maintain a commitment to excellence and inclusivity. While this journey is complex, it paves the way to a more effective and fulfilling educational experience for all stakeholders involved.

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