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THE INFLUENCE OF PRINCIPAL LEADERSHIP AND TEACHER SELF-DEVELOPMENT ON THE PROFESSIONAL COMPETENCE OF PUBLIC HIGH SCHOOL TEACHERS

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Abstract

This study investigates the influence of principal leadership and teacher self-development on the professional competence of public senior high school teachers in Rembang Regency. Employing a quantitative research approach with a correlational ex post facto design and a survey method, data were collected through validated Likert-scale questionnaires from a sample of 214 teachers, selected using purposive and proportionate stratified random sampling from a total population of 460 teachers. The data were analyzed using SPSS through simple and multiple linear regression, correlation, and coefficient of determination analysis. The findings indicate that both principal leadership and teacher self-development have significant and positive effects on teacher professional competence, both individually and simultaneously. Principal leadership contributes 49.5% to competence (r = 0.704), with participative leadership as the strongest dimension and collaboration-building as the weakest. Teacher self-development contributes 48.8% (r = 0.698), with knowledge improvement as the most influential factor and teacher reaction as the least. Jointly, both variables explain 54.7% of the variance in professional competence (R = 0.740). Among the competence dimensions, monitoring student learning outcomes had the strongest influence, while commitment to students and the learning process was the weakest. These findings emphasize the importance of fostering participative leadership and promoting continuous self-development to enhance teacher performance and educational quality.

Keywords

Education Quality, Principal Leadership, Professional Competence, Senior High School, Teacher Self-Development.

INTRODUCTION

Education is a critical driver for developing qualified human resources (Anas, 2022; Yosi Sisri Nengsi et al., 2024). One of the core determinants of educational success lies in the professional competence of teachers (Damayanti et al., 2024; Aini & Nuro, 2023). According to the Directorate General of Teachers and Education Personnel Regulation No. 2626 of 2023, teachers are defined as professional educators with the primary tasks of educating, teaching, guiding, directing, training, assessing, and evaluating students across all educational levels (Muspawi, 2021; Fatimatuzzahroh & Zumrotun, 2023). However, there remains a significant discrepancy between the ideal expectations of teacher competence and the reality in the field, particularly in remote or underserved areas where teachers often lack access to continuous professional development and quality teaching resources.

Professional competence includes mastery of subject matter, effective classroom management, the ability to design relevant and meaningful learning experiences, and the use of technology to support innovation in teaching (Awangku Amin & Mohd Hamzah, 2021; Hasanah & Zainuddin, 2024). When this competence is lacking, it results in suboptimal teaching quality and uneven learning outcomes among students (Supiyanti et al., 2024; Mastuti et al., 2022). This phenomenon is evident in the Rembang Regency, where various public senior high schools exhibit disparities in teacher competencies, as shown in the 2023–2024 Education Report Card issued by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek, 2024).

The gap between expected teaching quality and the actual delivery of instruction indicates an urgent need for systemic efforts to enhance teacher professional competence (Imron et al., 2021; Anwar, 2019). This includes both internal efforts from the teachers themselves, such as a commitment to lifelong learning, and external support from educational leadership, particularly school principals (Risdianto et al., 2023). Effective school leadership plays a strategic role in shaping school culture and motivating teachers to continuously improve their pedagogical practices (Masruhin et al., 2022; Joko Nugroho, 2019). According to Bass & Avolio, transformational leadership significantly influences teachers' professionalism by fostering a clear vision, empowering collaboration, and providing support for professional growth (Ambawani et al., 2024; Wati et al., 2022).

Recent studies support these assertions. Fatimah & Rosyidah (2021) emphasized that teachers with higher professional competence create more effective learning environments, thereby improving student achievement. Setyawan & Santosa (2021) highlighted the role of continuous self-development in helping teachers adapt to curricular changes and instructional innovations. Moreover, (Kholil & Harahap, 2023) stressed that schools as institutions must provide structural support for teacher development, including adequate training, mentoring, and collaborative learning opportunities.

In terms of practical challenges, even though a significant percentage of teachers in Rembang Regency actively participate in professional development programs (92.7%), many face substantial barriers to implementation. These include limited resources, time constraints, and difficulties in applying newly acquired knowledge in classroom settings (Rapor Pendidikan Rembang, 2024). These issues reduce the impact of professional development on actual teaching practices. While many teachers cite administrative compliance as the main motivation for participating in such programs (80%), only 54% report noticeable improvements in their teaching performance, and just 49% feel more innovative as a result.

Furthermore, despite measurable increases in learning quality indicators at some schools—such as SMAN 3 Rembang showing a 16.54% improvement from 2023 to 2024—other schools like SMAN 1 Sulang experienced a decline in performance in the same period. This variation illustrates that systemic interventions are uneven, and school-level leadership plays a significant role in determining outcomes.

Previous studies in the last decade have explored various aspects of professional competence, leadership, and teacher development. Asih et al. (2023) found that self-leadership and professional competence significantly impacted teacher performance in early childhood settings. Ramadhan & Welis (2024) emphasized the role of teacher self-development in shaping professional competence in physical education. Rachmadtullah et al. (2024) showed that ongoing professional development through the Teacher Professional Education Program (TPEP) improved classroom practice in elementary schools. Meanwhile, Mujiburrahman et al. (2023) highlighted how mentoring during the Merdeka Curriculum implementation enhanced pedagogical competencies. Dwiki et al. (2024) further demonstrated that character-based leadership training improved teacher commitment and performance at the high school level.

Compared to those studies, the novelty of this research lies in its integrated approach that examines both principal leadership and teacher self-development simultaneously, rather than in isolation. It also provides dimensional analysis—highlighting, for example, participative leadership and knowledge enhancement as the most influential factors, which are rarely explored in similar contexts. Additionally, this study is situated in a rural-semi-urban district (Rembang Regency), which has been underrepresented in Indonesian educational research. These contributions position this study to fill a gap in the literature and offer practical implications for equitable and effective teacher development in diverse educational settings.

This study bridges educational leadership theory and practice by examining how principal leadership and teacher self-development jointly influence professional competence—an area rarely explored, especially in semi-urban contexts like Rembang. It provides empirical evidence for policymakers and raises teacher awareness of the importance of continuous professional growth. The research focuses on: (1) the impact of principal leadership, (2) the role of teacher self-development, and (3) the combined effect of both on teacher competence. The findings offer both theoretical and practical contributions to improving teaching quality and supporting educational equity in underserved regions.

METHOD

This study applies a quantitative research approach using a descriptive method within an ex post facto and correlational design (Hardani et al., 2020). The objective is to assess the influence of independent variables on a dependent variable by analyzing events that have already occurred, without manipulating any variables (Waruwu et al., 2025). The research was conducted at public senior high schools in Rembang Regency over a two-month period, from October to November 2024. The process included proposal development, instrument validation, data collection, analysis, thesis defense, and final reporting.

The design involves a survey method, utilizing questionnaires as the primary data collection tool (Yam & Taufik, 2021). These questionnaires are structured using a Likert scale, aimed at measuring three key variables: principal leadership, teacher self-development, and teacher professional competence (Darmawan et al., n.d.). Each of these variables is defined both conceptually and operationally within the study. Principal leadership is examined through dimensions such as leadership effectiveness, collaboration, participatory practices, and delegation.

Teacher self-development is explored through the reactions to professional learning, knowledge expansion, skill improvement, behavioral changes, and the tangible results of self-development. Teacher professional competence is focused on subject mastery, planning and implementing instruction, assessing student learning, and engaging in reflective practices for continuous improvement.

This study tests three hypotheses. The first is that principal leadership significantly influences teacher professional competence. The second is that teacher self-development significantly influences teacher professional competence. The third hypothesis posits that both principal leadership and teacher self-development simultaneously influence teacher professional competence.

The research population includes 460 teachers from public senior high schools across Rembang Regency, consisting of civil servant and non-civil servant teachers. Using Slovin's formula with a five percent margin of error, a sample size of 214 teachers was determined. The sample was selected using purposive and proportionate stratified random sampling methods to ensure fair representation of both groups. This study relies on both primary and secondary data. Primary data are derived from questionnaire responses completed directly by the teachers, which provide insight into their perceptions of leadership, self-development, and competence. Secondary data include official education reports, school performance records, policy documents, and prior studies related to leadership and teacher professionalism in Rembang Regency.

Instrument validation and reliability testing were carried out to ensure the accuracy and consistency of the measurements (Subhaktiyasa, 2024). Validity was assessed using Pearson Product-Moment correlation with an acceptance threshold of 0.361 (Krisnawati et al., 2024). Reliability testing was conducted using Cronbach's Alpha, and a minimum value of 0.60 was set as the benchmark for acceptable internal consistency.

Data analysis procedures included a normality test using the Kolmogorov-Smirnov method to ensure data were normally distributed (Nisfa et al., 2024). A linearity test was applied to determine whether the independent variables had a linear relationship with the dependent variable (Ahyani et al., 2024). A multicollinearity test was also performed to confirm that the independent variables were not strongly correlated with each other (Fitra Prisuna, 2021). Hypothesis testing employed both simple and multiple linear regression analyses to evaluate the effects of the independent variables, both separately and jointly (A'yun, 2022). Correlation analysis was

conducted to determine the strength and direction of the relationships, while the coefficient of determination was used to identify how much variation in teacher competence was explained by leadership and self-development. This comprehensive approach supports an in-depth understanding of how school leadership and professional growth contribute to improving teacher performance in public senior high schools in Rembang Regency.

FINDINGS AND DISCUSSION

Findings

A. Data Description

The data in this study were collected through questionnaires completed by public high school teachers in Rembang Regency. These responses provided insights into school principal leadership, teacher self-development, and professional competence. Descriptive analysis was conducted for each variable and item. For teacher professional competence, with 214 respondents, scores ranged from 110 to 170, with a mean of 150.39 and a standard deviation of 11.34. This suggests that overall competence is fairly good, though some variation exists among teachers. Principal leadership also involved 214 respondents. Scores ranged from 90 to 225, with a mean of 198.82 and a higher standard deviation of 25.19, indicating more significant differences in respondents' perceptions of leadership quality. Despite this variation, the average score reflects a generally positive assessment. Teacher self-development showed a score range from 126 to 255, with a mean of 225.75 and a standard deviation of 21.23. This indicates an overall high level of engagement in professional growth. In summary, all three variables showed strong average scores, with the most variability appearing in the perception of principal leadership.

B. Respondents' Perceptions

The data on teachers' perceptions of professional competence, principal leadership, and teacher self-development were obtained through questionnaires completed by public senior high school teachers in Rembang Regency. The results of descriptive statistical analysis for each variable are summarized as follows.

For professional competence, the scores ranged from 110 to 170, with a mean of 150.39 and a standard deviation of 11.34. This variable was measured using 34 questionnaire items. The data were classified into five categories. The majority of respondents (38%) rated teacher competence as "Fairly Good," followed by 33% who rated it as "Good," and 26% as "Very Good." Only a small portion

rated it as "Poor" (1.4%) and "Very Poor" (1.4%). Since the average score falls within the interval classified as "Fairly Good," it can be concluded that most teachers perceive their professional competence at a moderate to good level.

Regarding principal leadership, based on responses to 45 questionnaire items, scores ranged from 90 to 225, with a mean of 198.82 and a relatively high standard deviation of 25.19, indicating notable variation in perception. Most respondents (54%) rated principal leadership as "Very Good," while 36% rated it as "Good," and 6.5% as "Fairly Good." Only a few respondents perceived leadership as "Poor" (2.8%) or "Very Poor" (0.9%). Given that the mean score lies in the "Very Good" interval, it can be concluded that the overall perception of principal leadership is highly positive.

For teacher self-development, measured through 51 items, scores ranged from 126 to 255, with a mean of 225.75 and a standard deviation of 21.23. The data were grouped into five intervals. The majority of respondents (54.67%) considered their self-development as "Very Good," followed by 42.06% who rated it as "Good." Only a small percentage rated it as "Fairly Good" (1.4%), "Poor" (0.47%), and "Very Poor" (1.4%). The average score falls within the highest interval, indicating that most teachers actively engage in professional development activities.

In conclusion, the descriptive findings show that respondents generally hold positive perceptions toward all three variables. Teacher self-development and principal leadership were mostly perceived as "Very Good," while professional competence was viewed as "Fairly Good." These results suggest that while leadership and development efforts are strong, there is still room for improvement in enhancing teacher competence to achieve higher professional standards.

C. Dimension Test Results

The analysis of dimensions across the three variables reveals key findings (Sugiyanto et al., 2025). For professional competence, the most dominant dimension is the ability to monitor student learning outcomes (0.764), while commitment to students and the learning process is the weakest (0.634). In principal leadership, participative leadership (0.890) and delegation skills are the strongest, while relationship-building ranks lowest (0.738). For teacher self-development, knowledge enhancement stands out as the most influential dimension (0.869), while teacher reactions have the lowest value (0.686). These results suggest that improving professional competence and teacher development relies heavily on knowledge mastery and participative, empowering school leadership.

D. Regression Requirement Test Results.

The prerequisite analysis test confirms that the data meet the assumptions for parametric statistical analysis (Rizky et al., 2024). The normality tests using the Kolmogorov-Smirnov method show that all variables, school quality (Y), principal leadership (X1), and teacher professional competence (X2), have significance values above 0.05, indicating normally distributed data. The linearity test results also meet the requirements. The Deviation from Linearity for both X1 to Y (0.230) and X2 to Y (0.121) is greater than 0.05, meaning both relationships are linear and appropriate for regression analysis. Lastly, the multicollinearity test shows Tolerance values for both independent variables at 0.681 (>0.10) and VIF values at 1.468 (<10), indicating no multicollinearity. Therefore, it can be concluded that the assumptions of normality, linearity, and non-multicollinearity are fulfilled, and regression analysis can proceed reliably to examine the influence of school principal leadership and teacher professional competence on school quality.

E. The Instrument Testing

The instrument testing in this study included both validity and reliability assessments. Validity testing using Pearson Product-Moment with 30 respondents showed that all questionnaire items across the three variables—teacher professional competence (Y), principal leadership (X1), and teacher self-development (X2)—had correlation values above the r-table threshold of 0.361, indicating all items are valid. Reliability testing using Cronbach's Alpha showed high reliability for all variables: 0.882 for professional competence, 0.979 for principal leadership, and 0.916 for teacher self-development. Since all values exceed the 0.60 reliability threshold, the instruments used in this research are statistically reliable and suitable for data collection.

F. The Prerequisite Tests

The prerequisite tests in this study included normality, linearity, and multicollinearity assessments. Normality was tested using the One-Sample Kolmogorov-Smirnov Test. Results showed significance values of 0.052 for the leadership variable and 0.051 for teacher self-development—both above 0.05—indicating normal data distribution. Linearity was assessed through ANOVA; the deviation from linearity values was 0.076 for school leadership and 0.082 for teacher self-development—both exceeding 0.05—confirming a linear relationship with professional competence. Multicollinearity was evaluated using Tolerance and VIF values. Both independent variables (leadership and self-development) had Tolerance values of 0.366 and VIF values of 2.732, all within acceptable thresholds (Tolerance > 0.1 and VIF < 10). These results indicate no

multicollinearity in the regression model. Thus, the data met all statistical assumptions, making it suitable for further analysis.

G. Hypothesis Test Results

Simple Linear Regression Analysis

1. Analysis of School Principal Leadership (X1) on Teachers' Professional Competence (Y)

Simple linear regression is a statistical method used to determine the relationship between an independent variable (School Principal Leadership) and a dependent variable (Teachers' Professional Competence) (Alwy Yusuf et al., 2024). The formula for simple linear regression is:

$\hat{Y} = a + bX_1$

Where:

$\hat{Y}$ = Teachers' professional competence

a = constant

b = regression coefficient

X_1 = school principal leadership

The results of the regression analysis using SPSS are as follows:

Table 1. Simple Linear Regression Test Results I

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	87.385	4.402	–	19.849	.000
Principal_Leadership	0.317	0.022	0.704	14.426	.000

Source: SPSS Processed Data, 2025

Based on the data in Table 1, the constant (a) is 87.385, and the regression coefficient (b) is 0.317. Thus, the simple linear regression equation is:

$Y = 87.385 + 0.317X_1$

The regression equation indicates a positive value of 0.317, meaning that for every one-unit increase in school principal leadership (X_1), there is a corresponding increase of 0.317 in teachers' professional competence (Y). Conversely, a decrease in principal leadership will result in a 0.317 decrease in professional competence, plus the constant value of 87.385.

Furthermore, the significance test (t-test) shows a t-value of 14.426 with a significance level (Sig.) of 0.000. Since this value is less than 0.05, it can be concluded that school principal leadership has a significant influence on teachers' professional competence.

School principal leadership has a positive and significant effect on teachers' professional competence. Improvements in principal leadership are associated with increased teacher professionalism. Therefore, this regression model is significant and can be used to predict the impact of school leadership on teachers' professional competence.

2. Analysis of Teacher Self-Development (X2) on Teachers' Professional Competence (Y)

Simple linear regression is a statistical method used to determine the relationship between the independent variable (Teacher Self-Development) and the dependent variable (Teachers' Professional Competence).

The formula for simple linear regression is:

$\hat{Y} = a + bX_2$

Where:

$\hat{Y}$ = teachers' professional competence

a = constant

b = regression coefficient

X_2 = teacher self-development

Based on the SPSS analysis, the regression results are as follows:

Table 2. Simple Linear Regression Test Results II

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	66.152	5.954	–	11.110	.000
Teacher_Self_Development	0.373	0.026	0.698	14.210	.000

Source: SPSS Processed Data, 2025

From the data in Table 2, the constant value (a) is 66.152, and the regression coefficient (b) is 0.373. Thus, the regression equation becomes:

$Y = 66.152 + 0.373X_2$

The positive coefficient of 0.373 means that for every one-unit increase in teacher self-development (X_2), teachers' professional competence (Y) increases by 0.373 units. Conversely, a decline in self-development will result in a decrease of 0.373 units, plus the constant value of 66.152.

The t-test shows a t-value of 14.210 with a significance value of 0.000, which is less than 0.05. This indicates that teacher self-development has a statistically significant effect on teachers' professional competence.

Teacher self-development has a positive and significant influence on professional competence. The more teachers engage in professional development activities, the more likely they are to enhance their professional skills and effectiveness. This regression model is valid and reliable for predicting how improvements in self-development contribute to teachers' professional competence.

Multiple Linear Regression Analysis

A multiple linear regression analysis was conducted using SPSS to examine the effect of Principal Leadership (X_1) and Teacher Self-Development (X_2) on Teachers' Professional Competence (Y) (Husdi & Dalai, 2023). The results are as follows:

Table 3. Multiple Linear Regression Results

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	68.779	5.633	–	12.211	.000
Principal_Leadership (X_1)	0.182	0.034	0.404	5.272	.000
Teacher_Self_Development (X_2)	0.201	0.041	0.377	4.927	.000

Source: SPSS Processed Data, 2025

The resulting regression equation is:

$Y = 68.779 + 0.182X_1 + 0.201X_2$

Interpretation:

- The constant value (68.779) indicates that when both independent variables are zero, the predicted value of teachers' professional competence is 68.779.
- The coefficient for Principal Leadership (0.182) means that a one-unit increase in leadership is associated with a 0.182 increase in professional competence, holding other variables constant.
- The coefficient for Teacher Self-Development (0.201) means that a one-unit increase in self-development is associated with a 0.201 increase in professional competence.

The t-test results show that both independent variables have significant effects ($p < 0.05$) on professional competence. Therefore, it can be concluded that both principal leadership and teacher self-development significantly and positively influence teachers' professional competence. This regression model is statistically valid and can be used to predict how improvements in leadership and self-development enhance teacher professionalism.

Single Correlation Analysis

a. The Influence of Principal Leadership on Teachers' Professional Competence

This analysis was conducted using Pearson Product-Moment Correlation to examine the relationship between Principal Leadership (X_1) and Teachers' Professional Competence (Y). The correlation results are presented below:

Table 4. Correlation Test Results of Principal Leadership and Teachers' Professional Competence

Variables	Teachers' Professional Competence	Principal Leadership
Pearson Correlation	1	.704**
Sig. (2-tailed)	—	.000
N	214	214

Note: Correlation is significant at the 0.01 level (2-tailed)
Source: SPSS Processed Data, 2025

The correlation coefficient (r = 0.704) indicates a strong and positive relationship. Since the significance value is less than 0.05, the relationship is statistically significant. This suggests that better principal leadership is associated with higher teacher professional competence. To further verify Hypothesis 1, an ANOVA test was conducted:

Table 5. ANOVA Test Principal Leadership and Teachers' Professional Competence

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	13578.305	1	13578.305	208.101	.000
Residual	13832.723	212	65.249		
Total	27411.028	213			

Source: SPSS Processed Data, 2025

With Sig. = 0.000 and F = 208.101 > F-table = 3.04, the results confirm that Principal Leadership significantly affects Teachers' Professional Competence, thus supporting Hypothesis 1.

b. The Influence of Teacher Self-Development on Professional Competence

The Pearson correlation test was conducted to assess the relationship between Teacher Self-Development and Professional Competence. The results are as follows:

Table 6. Correlation Test Results of Teacher Self-Development and Teachers' Professional Competence

Variables	Professional Competence	Teacher Self-Development
Pearson Correlation	1	.698**
Sig. (2-tailed)	—	.000
N	214	214

Note: Correlation is significant at the 0.01 level (2-tailed)
Source: SPSS Processed Data, 2025

With a Pearson correlation coefficient of 0.698, the relationship between teacher self-development and professional competence is strong and positive. The significance value of 0.000 confirms the relationship is statistically significant. To test Hypothesis 2, an ANOVA test was conducted:

Table 7. ANOVA Test of Teacher Self-Development and Teachers' Professional Competence

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	13371.480	1	13371.480	201.912	.000
Residual	14039.549	212	66.224		
Total	27411.028	213			

Source: SPSS Processed Data, 2025

Since Sig. = 0.000 < 0.05 and F = 201.912 > F-table (3.04), it can be concluded that Teacher Self-Development significantly influences Professional Competence. Therefore, Hypothesis 2 is accepted.

Multiple Correlation Analysis

Multiple correlation analysis is used to determine the strength of the relationship between one dependent variable and two or more independent variables simultaneously. In this study, the relationship between school principal leadership (X1) and teacher self-development (X2) with professional teacher competence (Y) was tested using SPSS.

Table 8. Multiple Correlation Results Model Summary

Model	R	Square	Adjusted R Square	td. Error of the Estimate	Square Change	Change	f1	f2	ig. F Change
1	740a	547	543	7.66771	547	127.611	2	211	.000

Predictors: (Constant), Teacher Self-Development, Principal Leadership
Source: SPSS Processed Data, 2025

The multiple correlation coefficient (R = 0.740) indicates a strong and significant relationship between the independent variables and professional competence. The R^2 value (0.547) means

that 54.7% of the variance in teacher competence is explained by the combination of the two predictors, while the rest (45.3%) is influenced by other factors. The Sig. F Change = 0.000 < 0.05, confirming the model's statistical significance. To verify Hypothesis 3, the following ANOVA test was conducted:

Table 9. ANOVA Results of the Effect of Principal Leadership and Teacher Self-Development on Professional Competence

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	15005.533	2	7502.766	127.611	.000b
Residual	12405.495	211	58.794		
Total	27411.028	213			

Dependent Variable: Professional Teacher Competence
Predictors: (Constant), Teacher Self-Development, Principal Leadership
Source: SPSS Processed Data, 2025

Since Sig. = .000 < .05 and F = 127.611 > F-table (3.04), the result confirms that both independent variables simultaneously have a significant influence on teachers' professional competence. Therefore, Hypothesis 3 is accepted.

Coefficient of Determination Test

The coefficient of determination is used to measure how much the independent variables contribute to explaining the variance in the dependent variable (Setiawan et al., 2024). It helps determine how well the regression model accounts for the changes in the outcome variable based on variations in the predictors.

a. The Influence of Principal Leadership on Teachers' Professional Competence

The results of the determination test indicate that the R Square value is 0.495, or 49.5%. This means that principal leadership contributes 49.5% to the variation in teachers' professional competence. In other words, nearly half of the changes in the professional competence of teachers can be explained by the principal's leadership. The remaining 50.5% is influenced by other factors not examined in this model.

b. The Influence of Teacher Self-Development on Teachers' Professional Competence

The determination test for teacher self-development shows an R Square value of 0.488, or 48.8%. This indicates that teacher self-development contributes 48.8% to the variation in teachers' professional competence. While this contribution is slightly lower than that of principal leadership, it still represents a substantial portion, highlighting the importance of continuous professional development in enhancing teaching quality.

c. The Joint Influence of Principal Leadership and Teacher Self-Development on Teachers' Professional Competence

When both principal leadership and teacher self-development are analyzed together, the R Square value increases to 0.547, or 54.7%. This suggests that the combined effect of both variables explains 54.7% of the variance in teachers' professional competence. This joint contribution is greater than the individual effects, indicating a synergistic relationship between external leadership support and internal teacher initiative in shaping professional capabilities. The remaining 45.3% is attributed to other unmeasured variables, such as work environment, intrinsic motivation, or institutional support systems.

Discussion

1. Analysis of the Influence of Variable X1 (School Principal Leadership) on Variable Y (Teachers' Professional Competence)

The results of the simple linear regression analysis indicate a significant and positive linear relationship between school principal leadership and teachers' professional competence. The constant value of 87.385 suggests that teachers still possess a high baseline level of professional competence even in the absence of principal leadership. However, the regression coefficient of 0.317 indicates that every unit increase in leadership quality corresponds to an increase in teachers' professional competence by 0.317 points.

The t-test value of 14.426 with a significance level of 0.000 confirms the strong statistical significance of this relationship. The Pearson correlation coefficient (r) of 0.704 denotes a strong and positive correlation between the two variables. Meanwhile, ANOVA results show an F value of 208.101 and Sig. = 0.000, affirming the validity and reliability of the regression model. Furthermore, the coefficient of determination (R^2 = 0.495) reveals that 49.5% of the variance in teachers' professional competence is explained by school principal leadership, while the remaining 50.5% is attributed to other unmeasured factors.

From the dimensional analysis, the participative leadership style emerged as the most dominant dimension, with an extraction value of 0.890, followed by delegation skills. The lowest-performing dimension was the ability to foster cooperation and relationships (0.738), suggesting that interpersonal collaboration requires further development.

Participative leadership is effective because it involves teachers in decision-making processes, fosters a sense of being valued and heard, and creates a collaborative school environment.

Strengthening interpersonal relationship dimensions would further enhance the overall effectiveness of school leadership.

These findings are consistent with the research conducted by Mulyono et al. (2024), titled *"The Influence of School Principal Leadership, Organizational Culture, and Mastery of Information Technology on the Professional Competence of Elementary School Teachers in Bogorejo District, Blora Regency."* This supports the notion that investing in school principal leadership—especially in participative and relationship-building aspects—is a strategic and effective approach to improving overall teacher professionalism and educational quality.

2. Analysis of the Influence of Variable X2 (Teacher Self-Development) on Variable Y (Teachers' Professional Competence)

The simple linear regression analysis confirms a positive and significant linear relationship between teacher self-development (X2) and teachers' professional competence (Y). The regression coefficient (b = 0.373) indicates a stronger influence compared to school principal leadership (0.317), while the constant (a = 66.152) suggests that even without self-development, teachers retain a base level of competence, albeit lower.

The t-test result (t = 14.210, Sig. = 0.000) supports the significance of this relationship, indicating a reliable and non-random effect. The Pearson correlation coefficient (r = 0.698) shows a strong positive correlation, emphasizing the importance of self-initiated professional growth in shaping teacher competence.

The ANOVA test further validates the regression model with F = 201.912, far exceeding the F-table value (3.04), and Sig. = 0.000, confirming that the model is statistically valid and reliable. The R Square value (0.488) reveals that 48.8% of the variance in professional competence is explained by teacher self-development, a contribution nearly equal to that of principal leadership (49.5%). This indicates that both internal and external factors play comparably important roles.

Teacher self-development was analyzed across four dimensions: Teacher Reactions, Learning, Knowledge, and Behavior. The Knowledge dimension scored the highest (0.869), highlighting the dominance of knowledge acquisition in professional development. In contrast, Teacher Reactions scored lowest (0.686), indicating the need to strengthen teachers' responsiveness and adaptability in dynamic classroom contexts.

The relatively low reaction score suggests areas for improvement, such as classroom management, conflict resolution, and interpersonal skills—likely affected by limited training or

experience (Arifin & Hanif, 2024). Enhancing this dimension can complement the strong academic focus and lead to more holistic professional growth.

Overall, teacher self-development, especially through knowledge enhancement, has a positive and significant effect on professional competence (Harlita & Ramadan, 2024). However, reinforcing the reaction dimension could serve as a strategic step to maximize development outcomes.

These findings align with Pribadi et al. (2023) and Supardi U.S. & Henhen Herdiana (2024), who emphasized the importance of teacher self-development across educational levels. Their research found that professional growth should address teachers' real needs to improve instructional quality and meet professional standards, including in early childhood education, where teacher responsiveness is vital for child development.

3. Analysis of the Influence of X1 (School Principal Leadership) and X2 (Teacher Self-Development) on Y (Teachers' Professional Competence)

The multiple linear regression analysis demonstrates that both school principal leadership and teacher self-development simultaneously influence teachers' professional competence. The regression coefficient for principal leadership (0.182) means that every unit increase in leadership improves professional competence by 0.182 units, assuming teacher self-development is constant. The coefficient for teacher self-development (0.201) indicates a slightly stronger effect, with every unit increase improving competence by 0.201 units when leadership remains constant.

This suggests that internal factors (self-development) have a marginally higher impact than external support (leadership). However, the small difference underscores the complementary roles of both predictors, highlighting the need for a balance between internal initiative and external guidance to optimize teacher professionalism.

The t-test values support the significance of both variables: principal leadership ($t = 5.272$, Sig. = 0.000) and self-development ($t = 4.927$, Sig. = 0.000)—both well below the 0.05 threshold. These results confirm statistically reliable and causal relationships between the predictors and professional competence.

The multiple correlation coefficient ($R = 0.740$) indicates a strong relationship between the combination of X1 and X2 with Y, suggesting a synergistic effect. The ANOVA test further confirms the model's strength with $F = 127.611$ and Sig. = 0.000, indicating a highly predictive and statistically valid model.

The R Square value (0.547) shows that 54.7% of the variation in professional competence is explained by the combined influence of leadership and self-development—greater than either variable's individual contribution (49.5% for leadership and 48.8% for self-development). The Adjusted R Square (0.543) confirms that this predictive strength remains consistent after adjusting for sample size and number of predictors. The remaining 45.3% is explained by other factors not included in the model.

Teachers' professional competence was assessed across five dimensions: (1) Commitment to Learners and Learning Process, (2) In-depth Subject Mastery, (3) Planning and Implementation of Learning, (4) Monitoring Student Learning Outcomes, and (5) Learning from Experience.

Among these, "Monitoring Student Learning Outcomes" had the highest extraction score (0.764), indicating it is the most dominant component in defining professional competence. It emphasizes the teacher's role as an effective evaluator—capable of conducting assessments, providing feedback, and using data to enhance instruction. High-performing teachers tend to excel in identifying learning achievements, addressing learning difficulties, and applying assessment tools effectively.

On the other hand, "Commitment to Learners and the Learning Process" received the lowest score (0.634)—still within acceptable limits but suggesting that this humanistic and relational aspect needs further development. It reflects a need to strengthen teachers' emotional engagement, understanding of individual student needs, and dedication to building a supportive learning environment. Addressing this gap is crucial for fostering meaningful and effective learning experiences.

In summary, both leadership and self-development have significant and complementary impacts on teachers' professional competence. A strategic focus on strengthening both aspects, especially relational commitment, can elevate educational quality more holistically.

CONCLUSION

This study underscores the pivotal roles of both internal and external factors in shaping the professional competence of senior high school teachers. The integration of school principal leadership and teacher self-development emerges as a comprehensive framework for improving teacher performance in the 21st-century educational context. The findings affirm that participatory leadership fosters a collaborative school culture, while self-driven learning enhances the teacher's

pedagogical mastery and adaptive capacity. Together, these variables form a dynamic system that empowers teachers to grow professionally within supportive institutional ecosystems. Moving forward, these insights call for systemic reforms in leadership practices, continuous teacher development, and policy innovation at the district level. Encouraging school leaders to embrace participative strategies and providing robust support structures for professional growth can elevate teaching quality and student outcomes. Future research should explore complementary dimensions, such as organizational culture, technological readiness, or intrinsic motivation, to construct a more holistic model. Ultimately, investing in both people and systems will sustain long-term educational transformation and foster professional excellence among educators.

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