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Academic Supervision, Work Motivation, and Collaborative Learning Practices in Enhancing Teacher Performance at Public Senior High Schools in Berau Regency

Ellen Rotua Basaria Sitorus[1], Haeruddin[2]
SMP Negeri 5 Kelay[1], Indonesia; Universitas Mulawarman,Indonesia[1,2]
ellensitorus83@gmail.com, haeruddin@pkif.unmul.ac.id
Correspondence author Email: ellensitorus83@gmail.com
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Abstract
This comprehensive study examines the influence of academic supervision, work motivation, and collaborative learning practices on teacher performance in three public senior high schools in Berau Regency. Using a quantitative approach with cluster random sampling, the research involved 159 teachers from three accredited "A" schools out of a total population of 280 teachers across five schools. Data collection was carried out through validated and reliable questionnaires, and the data were analyzed using multiple linear regression techniques. The results reveal that academic supervision significantly affects teacher performance, accounting for 35% of the variance, with work motivation contributing an additional 6.9%. Similarly, collaborative learning practices exert an influence comparable to that of academic supervision, also at 35%. Collectively, these factors explain 35% of the variability in teacher performance, with the remaining influence attributed to other unmeasured factors. This study underscores the importance of a synergistic approach, where academic supervision provides constructive feedback, incentives motivate teachers, and collaborative learning fosters ongoing professional development. Recommendations include enhancing academic supervision through targeted training for school principals, implementing performance-based rewards by local governments, and establishing sustainable collaborative learning programs within schools to promote innovation and continuous improvement in teaching practices. The findings serve as valuable input for educational policymakers in Berau Regency and contribute to the broader goal of elevating the quality of education in Indonesia. The research highlights the critical role of effective supervision, motivation, and collaborative practices in fostering high-performing teachers and improving educational outcomes.
Keywords: Academic Supervision; Work Motivation; Collaborative Learning Practices; Teacher Performance

1. Introduction

Education is a deliberate effort to create a learning environment that supports the development of students' potential. According to Law Number 20 of 2003 concerning the National Education System, education aims to cultivate intelligence, personality, noble character, and skills beneficial to individuals, society, the nation, and the state(Iai et al., 2020).

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Enhancing teacher performance through strong leadership is essential for improving national education quality. If principals effectively fulfill their roles, educational quality will improve significantly. Conversely, neglecting these roles will perpetuate the decline in student learning outcomes. Principals are expected to act as agents of change who mobilize all educational components toward common goals. Teacher performance is crucial to educational quality. Low professionalism among teachers and weak leadership in managing human resources are often linked to Indonesia's educational challenges (Mujiwati et al., 2024; Nur & Anggrini, 2023).

Despite efforts such as curriculum improvements, teacher training, and enhancements to facilities, the quality of education in Indonesia, particularly at the primary and secondary levels, still faces significant challenges (Tampubolon et al., 2021). Therefore, principals must adopt strategic approaches to enhance teacher performance through academic supervision, motivation, and discipline(Irna Fadillah et al., 2024).

This study aims to analyze how academic supervision by principals influences teacher performance and examines the effects of principals' motivation and work discipline on teachers. The research focuses on the interplay of these factors in improving educational quality in Indonesia. The school principal holds a strategic role in advancing education by managing school administration, fostering educational staff, and conducting academic supervision to improve teacher performance (Mardiah et al., 2023). As a motivator, the principal should encourage teachers to work with enthusiasm and dedication (Irwan et al., 2023).

However, many teachers appear motivated more by fear of the principal than intrinsic drive, and their performance often declines in the principal's absence. This indicates that principals have yet to fully succeed as effective motivators. Furthermore, irregular academic supervision and weak work discipline contribute to low teacher performance(Siregar et al., 2024).

The findings are expected to contribute theoretically to educational management knowledge and provide practical policy recommendations for principals to design effective supervision strategies and enhance teacher motivation and discipline. Thus, this study holds both academic and practical significance for Indonesia's education sector. Overall, the research seeks to offer concrete solutions for improving education quality by optimizing the principal's leadership role. Principals can use these insights to strengthen their leadership effectiveness and support teacher performance to better achieve national educational goals.

2. Method

2.1. Approach and Type of Research

This study employs a quantitative approach with a case study method. The quantitative approach was chosen because it is suitable for objectively and systematically testing the relationships between variables through the collection of measurable data. The case study

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method is used to obtain structured and measurable data from a number of respondents in a relatively short time, as well as to understand teachers' perceptions of academic supervision, work motivation, and work discipline implemented by the principal and their relationship to teacher performance.

2.2. Location and Time of Research

The research will be conducted at three high schools, namely SMAN 2, SMAN 6, and SMAN 7 in Berau Regency, East Kalimantan. The research will take place from June to December 2024.

2.3. Population and Sample

The study population consists of all teachers at the three schools. The sample will be taken randomly to ensure adequate representation from the teacher population. The sample size will be determined based on relevant statistical considerations to ensure the validity and reliability of the research results.

2.4. Research Variables

This study involves independent and dependent variables. The independent variables include academic supervision, work motivation, and work discipline of the principal, which are measured through teachers' perceptions of the practices carried out by the principal in these three aspects. The dependent variable is teacher performance, which is measured based on teachers' perceptions of their effectiveness in carrying out teaching tasks, achieving learning objectives, and the quality of interactions with students.

2.5. Research Instruments

The main instrument is a carefully designed questionnaire to measure teachers' perceptions of the research variables. The questionnaire consists of a number of relevant statements using a Likert scale, allowing respondents to provide measurable assessments for each statement. Before use, the instrument's validity and reliability are tested through a pilot test and statistical analysis (e.g., content validity and Cronbach's alpha reliability).

2.6. Data Collection Procedures

The data collection process begins with instrument preparation, verification, and pilot testing. Next, data is collected through the distribution of questionnaires to teachers at the three schools. The data collected includes teachers' perceptions of academic supervision, work motivation, principal work discipline, and teacher performance.

2.7. Data Analysis Techniques

The data obtained were analyzed using regression analysis techniques to test the influence of the independent variables (academic supervision, work motivation, work discipline) on the

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dependent variable (teacher performance). Regression analysis allows researchers to determine the contribution of each independent variable to the variation in teacher performance and to identify the most influential factors. The analysis results are presented in tables and graphs to facilitate interpretation.

2.8. Justification for School Selection

The selection of three schools was based on considerations of representativeness and ease of data access, with the aim of obtaining a representative picture of the conditions of academic supervision, motivation, work discipline, and teacher performance in the Berau Regency area. This is also to avoid bias in data collection and to ensure that research results can be reasonably applied in a broader context.

3. Findings and Discussion

3.1. Description of Data

3.1.1. Overview of SMA Negeri 2 Berau

SMA Negeri 2 Berau is one of the leading senior high schools located at Jalan Marsma Iswahyudi RT.02, Rinding Village, Teluk Bayur District, Berau Regency, East Kalimantan. Established on February 11, 2009, the school spans approximately 12,500 square meters and is equipped with modern educational facilities such as science laboratories, computer labs, a library, and comfortable classrooms. With an "A" accreditation based on the BAN-SM decision, SMAN 2 Berau is a trusted institution in the community for educating the youth in the region.

SMAN 2 Berau implements the 2013 Curriculum, which focuses on character development through competency-based learning and creative activities. In addition to academic pursuits, the school supports various extracurricular activities such as sports, arts, and student organizations to develop non-academic potential. With the vision of "Noble Character, Knowledgeable, Achieving, and Globally Aware," SMAN 2 Berau is committed to producing competitive graduates at both national and international levels.

3.1.2. Overview of SMA Negeri 6 Berau

SMA Negeri 6 Berau is located on Jalan Betet, Labanan Jaya Village, Teluk Bayur District, Berau Regency, East Kalimantan. The school was established with the aim of providing quality educational access for the community in the Labanan Jaya area and its surroundings. With an accreditation of "A" and the implementation of the 2013 Curriculum, SMA Negeri 6 Berau offers supportive learning facilities such as science and computer laboratories, a representative school library, and adequate classrooms to enhance the teaching and learning process.

SMA Negeri 6 Berau actively participates in various academic and non-academic activities at both the district and provincial levels. Student achievements in sports, cultural arts,

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and science olympiads are tangible evidence of the quality of education at this school. Additionally, extracurricular activities such as scouting and flag-raising organizations provide students with opportunities to develop leadership skills and teamwork. With the support of professional educators, SMA Negeri 6 Berau continues to strive to produce highly competitive graduates.

3.3.1. Overview of SMA Negeri 7 Berau

SMA Negeri 7 Berau is located on Jalan Kedaung, Sungai Bedungun Village, Tanjung Redeb District, Berau Regency, East Kalimantan. The school was established on February 20, 2009, with the aim of expanding access to quality education for the community in the Sungai Bedungun area and its surroundings. With an "A" accreditation status from BAN-SM, SMA Negeri 7 Berau offers educational facilities such as science and computer laboratories, a well-equipped school library, and sports fields to support holistic student learning.

SMA Negeri 7 Berau is known for its active role in improving educational quality through various flagship programs. The school library won first place in the provincial library competition in 2021, demonstrating the school's commitment to student literacy. Additionally, extracurricular activities such as traditional dance and sports are part of efforts to develop students' talents. With qualified educators and a conducive learning environment, SMA Negeri 7 Berau continues to strive to produce young generations who excel both academically and in character.

3.1.4. Academic Supervision

Academic supervision is a systematic effort undertaken by superiors to monitor and enhance the activities, creativity, and performance of educators and educational staff during the learning process. Its goal is to improve the quality of education in schools through assistance and guidance focused on developing teachers' knowledge, teaching skills, and commitment. By concentrating on issues directly related to the learning process, academic supervision aims to help teachers facilitate effective student learning(Zohriah et al., 2023).

In practice, academic supervision can be implemented through various approaches, such as classroom observations, feedback discussions, training sessions, and individual mentoring. The chosen approach should be tailored to the needs and characteristics of the teachers while considering the overall context of the school(Sumarsono & Sriwidodo, 2010). Effective academic supervision involves open and honest communication between supervisors and teachers, with a focus on the continuous professional development of educators. Thus, academic supervision is not merely a monitoring activity but also a collaborative process aimed at enhancing the quality of learning and educational standards(Handayani et al., 2024).

Academic supervision is a systematic effort to improve the quality of learning through monitoring, guidance, and professional development of teachers. By focusing on the learning

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process and implementing appropriate approaches, academic supervision aims to assist teachers in facilitating effective student learning, thereby enhancing the overall quality of education. Effective academic supervision involves open communication, collaboration, and a commitment to the ongoing professional development of teachers(Rizqi et al., 2023).

3.1.5. Motivation Work

Motivation is viewed as an internal force that drives individuals, including teachers, to act and achieve their goals. This force arises from the needs, desires, or hopes of the individual, triggering actions to fulfill them. In the workplace, motivation encourages teachers to improve their performance, develop themselves, and give their best for students (Azmi & Serang, 2019).

Motivation is understood as a complex psychological process that involves the interaction of internal factors (needs, values, interests, hopes) and external factors (work environment, reward systems, social support) (Putra & Abidin, 2024). This process includes assessing the situation, setting goals, planning actions, executing them, and evaluating the results. Understanding this process is essential for designing effective motivation strategies for teachers. Teacher motivation can be understood as a strong internal drive to act and achieve goals, as well as a complex psychological process involving the interaction between internal and external factors. Understanding both aspects is crucial for developing effective motivation strategies that enhance teacher performance and professionalism(Kurroti A'yun et al., 2021).

3.1.6. Collaborative Learning Practices

Collaborative learning practices are an educational approach that emphasizes cooperation among students during the learning process. In this model, students are encouraged to interact, discuss, and complete tasks together, creating a more dynamic and interactive learning environment (H. Yasin, 2020). Through collaboration, students not only gain knowledge from teachers but also learn from their peers. This approach encourages them to share ideas, perspectives, and diverse experiences, enriching their understanding of the subject matter in a deeper way(Abida & Kamalia, 2024).

In practice, collaborative learning can be implemented through various methods such as group discussions, joint projects, or team presentations. For example, in science education, students can be divided into several groups to conduct experiments and analyze the results collectively. Each group member has a specific role that complements one another, requiring them to work together to achieve a common goal. This approach not only enhances students' academic abilities but also develops social skills such as communication, teamwork, negotiation, and leadership. Thus, students learn to appreciate the contributions of each group member and understand the importance of synergy in achieving success(Muh Hamim Miftahul Khoiri et al., 2024).

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In addition to academic and social benefits, collaborative learning practices can also increase student motivation and engagement in the learning process. When students feel like part of a team and have responsibility for the group's outcomes, they tend to be more enthusiastic about participating in lessons. An environment that supports collaboration fosters trust and respect among students, which can reduce anxiety while simultaneously boosting their confidence. Therefore, collaborative learning practices not only lead to a deeper understanding of the subject matter but also help shape students' character to face real-world challenges.

3.1.7. Teacher Performance

Teacher performance, defined as the work behavior or actions taken in carrying out tasks, requires skills, effort, and abilities to achieve educational goals. Various experts define performance as the quality and quantitative results of work in accordance with responsibilities, as well as the outcomes achieved from the execution of specific tasks(Putri & Arifin, 2022). Performance assessment aims to evaluate teachers' achievements, provide compensation, enhance accountability, develop human resources, increase motivation and work ethic, and strengthen the relationship between teachers and leadership. The criteria for measuring performance include work quantity, cooperation, and effective communication, all of which directly impact the quality of education received by students(Muslikhin, 2024).

The assessment of teacher performance encompasses aspects such as lesson planning, implementation, and interpersonal relationships. Instruments like APKG are used to evaluate teachers' performance related to career development and positions; this assessment includes teachers' abilities in carrying out their duties and mastery of competencies, where academic supervision, work motivation, and work discipline from principals play a crucial role in improving teacher quality and educational standards. Based on the total score values from respondents for each variable, the scores are first converted (Ananda et al., 2024) using the formula:

$X = \text{score} - X_{min} X_{max} - X_{min} \times 100 X = X_{max} - X_{min}$ score - $X_{min} \times 100$

Where:

XX = conversion value

$X_{max} X_{max}$ = maximum ideal score

$X_{min} X_{min}$ = minimum ideal score

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Tabel 1. Frequency Distribution of Scores for the Variables Academic Supervision (X_1), Work Motivation (X_2), Collaborative Learning Practice (X_3) in Relation to Teacher Performance (Y)

Variable Score		Frekuensi (F)	Presentase (%)
Interval	Catagories		
80 < X ≤ 100	Very High	81	33,2
60 < X ≤ 80	High	76	31,1
40 < X ≤ 60	Medium	63	25,8
20 < X ≤ 40	Low	24	9,8
0 < X ≤ 20	Very Low	0	0,00
Total		244	100
Maximum Score		97,62	
Minimum Score		21,43	
Average score		66,94	
Standard deviation		19,36	

Tabel 2. Descriptive of Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Academic Supervision	244	6,25	97,92	72,9936	21,96484	482,454
Motivation Work	244	22,22	97,78	60,2551	16,27578	264,901
Collaborative Learning Practices	244	28,89	97,78	74,5632	15,76397	248,503
Teacher Performance	244	21,43	97,62	66,9401	19,36992	375,194
Valid N (listwise)	244					

The results of this study indicate that academic supervision, work motivation, and collaborative learning practices have a linear and significant relationship with teacher performance at SMAN 2, SMAN 6, and SMAN 7 in Berau. These findings are consistent with previous research by (Rizqi et al., 2023) and (Handayani et al., 2024), which emphasize the crucial role of academic supervision in enhancing teacher professionalism and performance. Furthermore, this study found that collaborative learning practices make a substantial contribution to improving teacher performance, aligning with the findings of (Abida &

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Kamalia, 2024), who highlighted the benefits of collaboration in learning for the development of students' social and academic skills.

However, there is an inconsistency between the variables described in the introduction, specifically "work discipline," and the results of the analysis, which place greater emphasis on "collaborative learning practices." This inconsistency emerged because, during data collection and analysis, the collaborative aspects of teacher learning were found to have a more dominant influence on performance than work discipline, which was initially intended as a primary variable. Therefore, it is important to clarify that the focus of the research shifted to collaborative practices in response to empirical findings in the field, without disregarding the importance of work discipline as a supporting factor.

In addition, the regression analysis shows that the research model explains only about 35% of the variance in teacher performance, leaving 65% unexplained. This suggests that there are other factors beyond academic supervision, work motivation, and collaborative learning practices that also affect teacher performance. Potential factors contributing to the unexplained variance may include high teacher workload, school culture, parental support, and external factors such as local education policies and community environment. These findings are in line with (Putri & Arifin, 2022), who underscore the importance of considering environmental factors and support systems in efforts to optimally improve teacher performance.

Thus, this study not only reinforces previous findings regarding the importance of supervision and motivation but also offers new insights into the role of collaborative learning practices in the context of secondary schools in Berau. Further research is recommended to explore additional factors that may account for the remaining variance in teacher performance, so that efforts to improve educational quality can be carried out more comprehensively and effectively.

3.2. Prerequisite Analysis Test

3.2.1. Normality Test

The normality test aims to determine whether the disturbance variables, or residuals, in the regression model follow a normal distribution. This is important because both the T-test and F-test assume that the residuals are normally distributed (Isnaini et al., 2025). The normality test for each analysis group was conducted using SPSS version 25 for Windows, with a significance level of 5% (0.05). The complete results are presented in the appendix.

Tabel 3. The Results of Normality Test

Variable	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Academic Supervision	0.160	244	0.092
Motivation Work	0.084	244	0.184

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Variable	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Collaborative Learning Practices	0.091	244	0.156
Teacher Performance	0.102	244	0.103

Based on the data analysis results using SPSS 25, as shown in Table 3, the Asymp. Sig. (2-tailed) column from the normality test indicates that the significance value for each variable is greater than 0.05. This confirms that the data for each variable are normally distributed.

3.2.2. Linierity Test

The linearity test is a statistical procedure used to determine whether there is a significant linear relationship between independent (explanatory) variables and dependent (response) variables in a study(Cahyo et al., 2019). This test is one of the primary requirements in linear regression analysis, as linear regression can only be applied if the relationship between the two variables is linear. By ensuring the presence of a linear relationship, researchers can build a valid predictive model that aligns with the characteristics of the data. For example, in research on the effect of study hours on students' exam scores, a linearity test is necessary to ensure that an increase in study hours has a direct and proportional relationship with an increase in exam scores (Aqilah et al., 2024).

The linearity test process is typically conducted using statistical software such as SPSS or R, employing analysis of variance (ANOVA) or scatter plots. In SPSS, the linearity test is performed through an ANOVA table by examining the significance value (p-value) in the "Linearity" column. If the p-value is less than 0.05, the relationship between the variables is considered significantly linear. Conversely, If the p-value is greater than 0.05, the relationship is considered non-linear. Additionally, scatter plots are commonly used to visualize the pattern of relationships between variables: a consistent straight line indicates a linear relationship, while a curved or irregular pattern suggests a non-linear relationship.

The linearity test plays an important role in ensuring the validity of research models and interpreting results. For instance, If the test results indicate a non-linear relationship between the independent and dependent variables, researchers should consider alternative approaches, such as non-linear regression or data transformation, to achieve more accurate results. Therefore, the linearity test serves not only as a technical step in data analysis but also helps researchers gain a deeper and more precise understanding of the nature of the relationships between variables.

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Tabel 4. The Results of Linierity Test

Variable	Signifikansi	Note
Academic Supervision Towards Teacher Performance	0,150	Linier
Motivation Work Towards Teacher Performance	0,054	Linier
Collaborative Learning Practices Towards Teacher Performance	0,137	Linier

Based on the results of the linearity test analysis using the SPSS 25 program, the significance values (sig.) for all independent variables are 0.150 for X_1, 0.054 for X_2, and 0.137 for X_3, respectively. Since the significance values are greater than 0.05, it can be concluded that there is a significant linear relationship between each independent variable and the engagement variable (Y).

3.2.3. Multicollinearity Test

Multicollinearity is a statistical phenomenon that occurs when two or more independent variables in a regression model are highly linearly correlated. This correlation can make it difficult to accurately determine the individual effect of each variable on the dependent variable(Paul Karolus Pasaribu et al., 2022). For example, in a study examining the impact of education and work experience on income, these two independent variables are often closely related. If undetected, multicollinearity can lead to inaccurate regression coefficient estimates, resulting in misleading interpretations of research findings. The effects of multicollinearity are significant in regression analysis(Nurcahya et al., 2023). When multicollinearity occurs, regression coefficient estimates become unstable, standard errors increase, and the statistical significance of independent variables may diminish. This makes it difficult to draw valid conclusions about the effect of each variable on the dependent variable.

To address this issue, researchers can consider several solutions, such as removing one of the highly correlated variables, transforming the data (for example, by using logarithms), or applying alternative regression techniques like ridge regression, which is specifically designed to handle multicollinearity. By taking these steps, researchers can enhance the validity of their regression models and ensure that the results accurately represent the true relationships among the variables under study.

Table 5. The Results of Multicollinearity Test

Variable	Tolerance	VIF	Conclusion
Academic Supervision	0,773	1,293	Multicollinearity did not occur
Motivation Work	0,811	1,233	Multicollinearity did not occur

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Variable	Tolerance	VIF	Conclusion
Collaborative Learning Practices	0,772	1,295	Multicollinearity did not occur

Based on the results of the multicollinearity test conducted using SPSS 25, the VIF value obtained was 1.29. Since this VIF value is less than 10, it can be concluded that there is no multicollinearity among the independent variables in the regression model.

3.2.4. Heteroskedasticity test

The heteroskedasticity test is a statistical procedure used to determine whether the variance of the residuals in a regression model is constant. Heteroskedasticity occurs when the residual variance varies at different levels of the independent variables, violating the classical linear regression assumption of homoscedasticity (constant residual variance)(Nasar et al., 2024). For example, in a study examining the effect of income on consumption expenditure, if the error variance increases as income increases, the model experiences heteroskedasticity. This condition can cause the regression coefficient estimates to become inefficient, making the analysis results difficult to interpret properly. Therefore, the heteroskedasticity test is crucial to ensure the validity of the regression model used.

Several specific methods are used to detect heteroskedasticity, such as the Breusch-Pagan test, White test, and Glejser test. The Breusch-Pagan test examines the relationship between the squared residuals and the independent variables using an auxiliary regression. If the significance value (p-value) is less than 0.05, it indicates the presence of heteroskedasticity. The White test is a more flexible method because it does not require the assumption of residual normality and can detect more complex forms of heteroskedasticity. Meanwhile, the Glejser test involves regressing the absolute values of residuals on the independent variables; if the regression coefficients are statistically significant (p-value < 0.05), heteroskedasticity is detected. Researchers often use software such as SPSS, EViews, or R to perform these tests automatically.

Table 6. The Results of Heteroskedasticity Test

Variable	Sig	Conclusion
Academic Supervision	0,000	Heteroskedasticity did not occur
Motivation Work	0,003	Heteroskedasticity did not occur
Collaborative Learning Practices	0,005	Heteroskedasticity did not occur

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The table of heteroskedasticity test results shows that the significance values of the three independent variables are all greater than 0.005 for Y, specifically 0.000 for X_1, 0.003 for X_2, and 0.005 for X_3. Therefore, it can be concluded that there is no heteroskedasticity in the regression model.

3.2.5. Hypotthesis Test

Hypothesis testing was conducted for each hypothesis sequentially: the effect of academic supervision (X_1) on teacher performance (Y), the effect of work motivation (X_2) on teacher performance (Y), and the combined effect of collaborative learning practice (X_3) on teacher performance (Y). The following is a description of the results of testing these three variables (Yam & Taufik, 2021).The statistical techniques used to test the hypotheses were the t-test and F-test. All tests were performed with the assistance of SPSS version 25 to examine the proposed hypotheses.

Hypothesis testing was carried out sequentially for each hypothesis: the effect of academic supervision (X_1) on teacher performance (Y), the effect of work motivation (X_2) on teacher performance (Y), and the effect of collaborative learning practice (X_3) on teacher performance (Y), as well as their combined effect on teacher performance (Y). The following section describes the results of testing these three variables.

3.2.5.1. The Effect of Academic Supervision (X_1) on Teacher Performance (Y)

The first hypothesis tested was the null hypothesis (H_0), which states that there is no effect of academic supervision (X_1) on teacher performance (Y), against the alternative hypothesis (H_1), which states that there is an effect of academic supervision (X_1) on teacher performance (Y). After conducting regression analysis using SPSS software, the data obtained is as follows:

Table 8. ANOVA of the Regression of Academic Supervision (X_1) on Teacher Performance (Y)

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	31877,113	3	10625,704	43,008	0,000[b]
	Residual	59294,945	240	247,062		
	Total	91172,058	243			

In Table 8, ANOVA for the significance test of the regression of academic supervision (X1) on teacher performance (Y) shows a significance value of 0.000 < 0.05, so H_0 is rejected

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and H_1 is accepted. Therefore, there is a significant effect of academic supervision on teacher performance.

Table 9. Coefficient Test of Academic Supervision (X_1) on Teacher Performance (Y)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	13,193	5,411		2,438	0,015
1	Academic Supervision	0,356	0,119	0,404	6,822	0,000

In Table 9, the coefficient test of academic supervision (X_1) on teacher performance (Y) produces the simple linear regression equation: $Y = 13.193 + 0.356\ X_1$. This equation indicates that every one-unit increase in academic supervision will increase teacher performance by 0.356 units. The significance level also shows $0.000 < 0.05$, so H_0 is rejected and H_1 is accepted, meaning the coefficient of academic supervision has a significant effect on teacher performance.

The data analysis results show that academic supervision has a significant effect on teacher performance, although it only contributes 35% of the factors influencing performance(Affandi et al., 2022). This indicates that academic supervision, which teachers generally experience at a moderate level, can still be optimized by school principals to improve teacher performance. This finding emphasizes the importance of the school leader's role in nurturing, embracing, and uniting the vision and mission of all staff with that of the school, so that teachers are motivated to collaborate and fulfill their responsibilities effectively.

More personalized and needs-based academic supervision can be carried out through more targeted training for supervisors, adjustments in supervision methodology, and the development of supervision systems that better fit real conditions in the field. By ensuring quality and effective academic supervision, it is expected that each teacher will receive optimal support in developing their professional competencies, thereby improving the quality of learning and overall teacher performance. This requires comprehensive improvement measures focused on planning, organizing, directing, controlling, and evaluating, all based on real data and needs in the field.

3.2.5.2. The Effect of Work Motivation (X_2) on Teacher Performance (Y)

The second hypothesis tested was the null hypothesis (H_0), which states that there is no effect of work motivation (X_2) on teacher performance (Y), against the alternative hypothesis

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(H1), which states that there is an effect of work motivation (X2) on teacher performance (Y). After conducting regression analysis using SPSS software, the data obtained in Table 4.30, Model Summary Analysis of the Pearson correlation coefficient between work motivation (X2) and teacher performance (Y), is as follows:

Tabel 10. ANOVA for the Significance Test of the Regression of Motivation (X2) on Teacher Performance (Y)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13190,734	1	13190,734	2,241	0,000
	Residual	14261,126	31	460,036		
	Total	63720,197	211	301,991		

In Table 10. ANOVA for the significance test of the regression of work motivation (X2) on teacher performance (Y) shows a significance value of 0.000 < 0.05, so H0 is rejected and H1 is accepted. Therefore, there is a significant effect of motivation on teacher performance. The research results indicate a significant influence of work motivation on the performance of public junior high school teachers. This finding aligns with previous studies which state that increasing work motivation can improve teacher performance, and currently, teacher performance is still considered good. Thus, it can be concluded that work motivation plays an important role in driving teacher performance.

Although the work motivation of public junior high school teachers falls into the moderate category, teachers are able to adapt to their work environment, including coping with pressure, differing goals, workload, as well as varying targets and expectations. They remain capable of carrying out their main tasks such as planning, implementing, and evaluating learning. This demonstrates that teachers have good resilience in facing challenges in their work environment.

3.2.5.3. The Effect of Collaborative Learning Practice (X3) on Teacher Performance (Y)

The third hypothesis tested was the null hypothesis (H0), which states that there is no effect of collaborative learning practice (X3) on teacher performance (Y), against the alternative hypothesis (H1), which states that there is a significant effect of collaborative learning practice (X3) on teacher performance (Y). After conducting regression analysis using SPSS software, the results obtained in Table 11, Model Summary Analysis of the Pearson correlation coefficient between collaborative learning practice (X3) and teacher performance (Y), are as follows:

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Table 11. ANOVA for the Significance Test of the Regression of Collaborative Learning Practice (X_3) on Teacher Performance (Y)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2583.359	1	2583.359	46.311	0.000
	Residual	13499.428	242	55.783		
	Total	16082.787	243			

In Table 11. ANOVA for the significance test of the regression of collaborative learning practice (X_3) on teacher performance (Y) shows a significance value of 0.000 < 0.05, so H_0 is rejected and H_1 is accepted. Therefore, there is a significant effect of collaborative learning practice on teacher performance.

Tabel 12. Coefficient Test of Collaborative Learning Practice (X_3) on Teacher Performance (Y)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.798	3.314		5.974	0.000
	Collaborative Learning Practices	0.460	0.068	0.401	6.805	0.000

In Table 12, the coefficient test of collaborative learning practice (X_3) on teacher performance (Y) produces the simple linear regression equation: $Y = 19.798 + 0.460X_3$. This equation indicates that every one-unit increase in collaborative learning practice will increase teacher performance by 0.460 units. Based on the significance level, which also shows 0.000 < 0.05, H0 is rejected and H_1 is accepted, meaning the coefficient of collaborative learning practice has a significant effect on teacher performance.

3.2.5.4. The Effect of Academic Supervision (X_1), Work Motivation (X_2), and Collaborative Learning Practice (X_3) on Teacher Performance (Y)

The fourth hypothesis tested was the null hypothesis (H_0), which states that there is no effect of academic supervision (X_1), work motivation (X2), and collaborative learning practice (X3) on teacher performance (Y), against the alternative hypothesis (H_1), which states that there is a significant effect of academic supervision (X_1), work motivation (X_2), and collaborative learning practice (X_3) on teacher performance (Y). After conducting correlation coefficient analysis using SPSS software, the results obtained in Table 4.18, Model Summary Analysis of the Correlation Coefficient of Academic Supervision (X_1), Work Motivation (X_2), and Collaborative Learning Practice (X_3) on Teacher Performance (Y), are as follows:

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Tabel 13. ANOVA for the Significance Test of the Regression of Academic Supervision (X_1), Work Motivation (X_2), and Collaborative Learning Practice (X_3) on Teacher Performance (Y)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31877,133	3	10625,704	2,241	0,000
	Residual	59294,945	240	86,957		
	Total	91172,058	243			

In Table 13, ANOVA for the significance test of the regression of Academic Supervision (X_1), Work Motivation (X_2), and Collaborative Learning Practice (X_3) on Teacher Performance (Y) shows a significance value of 0.000 < 0.05, so H0 is rejected and H1 is accepted. Therefore, there is a significant combined effect of academic supervision (X_1), work motivation (X_2), and collaborative learning practice (X_3) on teacher performance (Y). To determine the regression coefficient values for each variable, the results can be seen in the following Table 16:

Tabel 14. Coefficient Test of Academic Supervision (X_1), Work Motivation (X_2), and Collaborative Learning Practice (X_3) on Teacher Performance (Y)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.799	3.329		2.643	0.009
	Academic Supervision	0.312	0.046	0.404	6.822	0
	Work Motivation	0.19	0.064	0.171	2.956	0.003
	Collaborative Learning Practice	0.194	0.068	0.169	2.855	0.005

In Table 14. the coefficient test of Academic Supervision (X_1), Work Motivation (X_2), and Collaborative Learning Practice (X_3) on Teacher Performance (Y) produces a multiple linear regression equation: Y = 8.799 + 0.312X1 + 0.190X2 + 0.194X3. This equation indicates that: (1) each increase of 0.312 in the academic supervision score can improve the teacher performance score by one unit, assuming other variables are ignored; (2) each increase of 0.190 in the work motivation score can improve the teacher performance score by one unit, assuming other variables are ignored; (3) each increase of 0.194 in the collaborative learning practice

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score can improve the teacher performance score by one unit, assuming other variables are ignored.

4. Conclusion

Research conducted at public senior high schools in Berau Regency reveals that academic supervision significantly influences teacher performance by 35%, while work motivation has a significant impact of 6.9%. When academic supervision, work motivation, and collaborative learning practices are implemented simultaneously, they contribute 35% to teacher performance, indicating that other factors outside this study also play a significant role in influencing teacher performance.

Future research is recommended to explore additional factors affecting teacher performance in Berau Regency's public senior high schools, as 65% of the variation in teacher performance remains unexplained by academic supervision, work motivation, and collaborative learning practices. Subsequent studies could consider variables such as transformational leadership of school principals, organizational climate, teacher welfare, availability of learning resources, or support from parents and the community to provide a more comprehensive understanding and targeted recommendations for improving teacher performance.

Moreover, future research could employ mixed methods (qualitative and quantitative) to gain deeper insights into teachers' experiences and perspectives regarding the factors influencing their performance. This approach would enhance the understanding of the complex dynamics impacting teacher effectiveness and provide actionable strategies for educational improvement.

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