The Impact of the Implementation of the Independent Teaching Platform on Teachers' Pedagogical Competence

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ABSTRACT

This study aims to investigate the impact of implementing the Merdeka Mengajar (PMM) Platform on teachers' pedagogical competence. This study employed a quantitative method with a causal-associative research design. The study population consisted of 202 teachers, with a sample of 137 teachers determined using the Krejcie and Morgan table through a proportional random sampling technique. Data were collected using a Likert scale questionnaire that was tested for validity and reliability. The results showed that the implementation of PMM reached 80.67% and teachers' pedagogical competence was 79.24%. There was a significant relationship between the implementation of PMM and teachers' pedagogical competence, with a calculated r value of 0.319 (greater than the r table value of 0.167) and a calculated t value of 3.911 (greater than the t table value of 1.977) at a 95% significance level. In conclusion, the implementation of PMM has a significant effect on teachers' pedagogical competence. It is recommended that school principals regularly conduct training, teachers actively develop competencies through PMM, the Education Office provide policy and infrastructure support, and conduct periodic monitoring and evaluation to optimize the implementation of PMM.

INTRODUCTION

Education is a long-term investment in human resource development (HRD), which serves as the foundation for a nation's progress (Sumual et al., 2024; Nwachukwu, 2024). In the era of globalization, the world of education must continually adapt to current developments to remain competitive globally (Akintayo et al., 2024). Teachers, as professional educators, play a crucial role in producing a quality generation ready to face future challenges. Teacher pedagogical competence is key to creating an effective learning process (Amaliah et al., 2024; Naningsih et al., 2024; Basri et al., 2024). In this context, the continuous

development of teacher pedagogical competence is crucial for improving the quality of education in Indonesia (Ningrum, 2024).

However, in reality, there is still a gap between the expected pedagogical competence and that achieved by most teachers. Based on observations at public high schools in Koto Tangah District, West Sumatra, many teachers do not fully understand the characteristics of student learning and struggle to choose appropriate learning methods. The lack of comprehensive evaluation and the low utilization of technology in the learning process indicate that many teachers are still not optimally managing learning by the demands of the Independent Curriculum (Wahid et al., 2024). This presents a significant challenge that must be addressed to improve the quality of education. Field observations indicate that the implementation of the Freedom to Teach Platform (PMM) in public high schools throughout Koto Tangah District has not been optimal. Several issues have been identified, including teachers' difficulty accessing and operating the PMM application, some teachers' inability to effectively utilize PMM features, and inadequate technical support. Training schedules often clash with teachers' daily workloads, which also poses a barrier. This highlights the need to evaluate and identify solutions to these issues to optimize PMM utilization.

Previous research has demonstrated a positive correlation between the implementation of PMM and teacher pedagogical competence. Arikunto & Jabar (2017) found that teachers who actively participated in self-development programs through PMM experienced significant improvements in teaching quality. Fitria (2023) also revealed that PMM contributed 32.5% to improving pedagogical competence, while Pratama & Susanti (2023) found a significance value of 0.412, indicating a moderately significant relationship. These studies confirm that PMM has great potential for improving pedagogical competence; however, further research is needed to understand the factors that inhibit its implementation in the field.

However, although various studies have demonstrated the positive impact of PMM on pedagogical competence, these studies remain deficient. Many studies fail to address the technical and non-technical barriers that teachers face when implementing PMM. Further research is needed to comprehensively explore the factors influencing the effectiveness of PMM use. Furthermore, previous research has tended to focus on general understanding without considering contextual factors in the field, such as time constraints and limited training. This study aims to address this gap.

This research is novel in its analysis of PMM implementation in public high schools throughout Koto Tangah District. The primary focus of this study is to identify factors influencing the effectiveness of PMM use and examine the relationship between PMM use and the improvement of teachers' pedagogical

competence. Furthermore, this study will explore challenges encountered during PMM implementation, which have not been widely addressed in previous research. By identifying these challenges and providing practical solutions, this study aims to contribute to the more effective implementation of PMM.

This study aims to measure the impact of implementing the PMM on the pedagogical competence of teachers in public senior high schools in Koto Tangah District, West Sumatra. Based on the findings, this study will identify inhibiting factors in the implementation of the PMM and seek solutions to optimize the platform's utilization. The results are expected to provide policymakers in the education sector with recommendations for improving technical support and training for teachers to maximize the use of the PMM.

RESEARCH METHOD

This research employed a quantitative method, which, according to Sugiono (2020), aims to test formulated hypotheses by collecting numerical data and analyzing it using statistical techniques. Arikunto (2020) states that quantitative research focuses on numerical data used to answer research questions through statistical analysis. This study aimed to measure the influence of the Merdeka Mengajar (PMM) Platform on teacher pedagogical competence in public senior high schools throughout Koto Tangah District, West Sumatra.

The variables in this study consisted of two types: the independent variable (X) and the dependent variable (Y). PMM served as the independent variable (X), while teacher pedagogical competence served as the dependent variable (Y). The population in this study consisted of 202 teachers, representing all teachers in public senior high schools throughout Koto Tangah District. The sample size was determined using the Krejcie and Morgan table with a 5% margin of error. The sampling technique employed was Proportional Random Sampling, resulting in a sample size of 137 teachers.

Data collection was conducted by distributing a Likert-based questionnaire with the following response options: Strongly Agree (SA), Agree (A), Somewhat Agree (SA), Disagree (D), and Strongly Disagree (SD). Before being distributed to respondents, the questionnaire was piloted on 30 respondents outside the sample to ensure the validity and reliability of the research instrument. Validity and reliability testing were conducted using SPSS 26.0, resulting in 23 valid PMM statement items and 39 valid and reliable teacher pedagogical competency statement items.

After the instrument was declared valid and reliable, prerequisite tests were conducted, including normality tests, linearity tests, hypothesis tests, and coefficient of determination tests using the t-test. These tests aimed to ensure the feasibility of the analytical model used in this study.

RESULT AND DISCUSSION
Result
Description of Teacher Pedagogical Competence Data

Data on teacher pedagogical competence were collected by distributing a 39-question questionnaire to 137 teachers (respondents). The highest score was 191, and the lowest was 117. Data processing using SPSS 26.0 yielded a mean score of 154.74, a a median of 153, a a mode of 158, and a a standard deviation of 17.16.

Table 1. Achievement Results for Teacher Pedagogical Competence Indicators

No	Indikator	Total		
		Rata-rata	TCR	Classification
1	Mastery of student characteristics	3,75	75,00%	**Fairly Good**
2	Mastery of learning theories and principles of educational learning	3,92	78,40%	**Fairly Good**
3	Curriculum development	4,05	81,00%	**Good**
4	Implementation of educational learning	3,95	79,00%	**Fairly Good**
5	Utilization of information and communication technology	3,88	77,60%	**Fairly Good**
6	Development of student potential	3,92	78,40%	**Fairly Good**
7	Effective communication	4,04	80,80%	**Good**
8	Implementation of learning assessment and evaluation	4,02	80,40%	**Good**
9	Utilization of learning assessment and evaluation results	4,08	81,60%	**Good**
10	Reflective learning	4,01	80,20%	**Good**
	Average score	**3,96**	**79,24%**	**Pretty good**

The table above shows that the highest average score was found in the utilization of learning assessment and evaluation results indicator, namely 4.08, representing a percentage of 81.60%. While the lowest average score was found in the mastery of student characteristics indicator, namely 3.75, representing a percentage of 75.00%. Overall, the average score for teacher pedagogical competence in public senior high schools in Koto Tangah District, West Sumatra, was 3.96, representing a percentage of 79.24%. This indicates that teacher pedagogical competence in public senior high schools in Koto Tangah District, West Sumatra, has been implemented quite well.

Merdeka Mengajar Platform Data Description

Data collection for the Merdeka Mengajar Platform was obtained by distributing a 39-question questionnaire to 137 teachers (respondents). From the collected questionnaire results, the highest score was 109 and the lowest score was 60. From the results of data processing using SPSS 26.0, the average score was obtained = 93.02, median = 93, mode = 92 and standard deviation = 6.35.

Table 2. Results of PMM Indicator Achievements

No	Indicator	Total		
		Average	TCR	Classification
1	Usage Activity	4,01	80,20%	**Good**
2	Usage Feedback	4,17	83,40%	**Good**
3	Frequency of Use	3,92	78,40%	**Fair**
	Average score	4,03	80,67%	**Good**

The table above shows that the highest average score for the PMM was found in the usage feedback indicator, namely 4.17, with a percentage of 83.40%. Meanwhile, the lowest average score was found in the frequency of use indicator, namely 3.92, with a percentage of 78.40%. Overall, the average score for the Merdeka Mengajar Platform at the West Sumatra Provincial Education Office was 3.99, with a percentage of 79.67%. This indicates that the implementation of the Merdeka Mengajar Platform in public senior high schools throughout Koto Tangah District, West Sumatra, has been successful.

Normality Test Results

The normality test is part of the classical assumption test, which is a statistical requirement that must be met in regression analysis. A good regression model has residual values that are normally distributed. The normality test for variables in this study was conducted using the Kolmogorov-Smirnov formula. The rule used to determine whether the data distribution is normal is $p > 0.05$, indicating normal distribution, while $p < 0.05$ indicates abnormal distribution. The results of the normality test can be seen in the following table:

Table 3. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		**137**
Normal Parametersa, b	Mean	.0000000
	Std. Deviation	16.26668500
Most Extreme Differences	Absolute	.092
	Positive	.079
	Negative	**-.092**

Test Statistic	.092
Asymp. Sig. (2-tailed)	.006c
a. Test distribution is Normal.	
b. Calculated from data.	
c. Lilliefors Significance Correction.	

The results of the classical assumption test for residual normality, using the One-Sample Kolmogorov-Smirnov (K-S) test, yielded a significance value of 0.06, which is greater than the alpha value of 0.05. This result indicates that the residuals are normally distributed.

Linearity Test Results

The linearity test for the variables in this study used the ANOVA test. The results of the linearity test are shown in the following table:

Table 4. Linearity Test Results

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Teacher Pedagogical	Between Groups	(Combined)	10067.330	23	437.710	1.649	.045
		Linearity	4077.773	1	4077.773	15.361	.000
Competence *		Deviation from	5989.558	22	272.253	1.026	.440
Merdeka		Linearity					
Mengajar	Within Groups		29996.728	113	265.458		
Platform	Total		40064.058	136			

Based on the results of the classical assumption test for linearity, the probability of deviation from linearity (Sig. 0.440 > 0.05) indicates no difference in linearity between variable X and variable Y. This indicates that the data for variable X and variable Y are linear.

Hypothesis Test Results

To determine the correlation coefficient between variables X and Y, the product-moment correlation formula was used to test this research hypothesis. Data analysis using product-moment correlation yielded a calculated r-value of 0.319, while r-value of 0.167 at a significance level of 5%. This means that the calculated r-value is greater than the calculated r-value. Thus, there is a significant relationship between the two variables. To determine the significance of the relationship, a t-test was used. The calculation results yielded a calculated t-value of 3.911, while t-value of 1.977 at a 95% confidence level and 2.626 at a 99% confidence level. A simple regression equation was analyzed.

To determine the simple regression equation, the a and b values were analyzed. The results of the data analysis obtained the equation is Y = 74.611 + 0.861X which states that for every 1% increase in the value of the personnel information system, the performance value increases by 0.861. The regression coefficient is positive. So it can be said that the direction of the influence of variable X on variable Y is positive. To determine the magnitude of the influence between the Merdeka Mengajar Platform carried out on teacher pedagogical competence, the coefficient of determination formula is used, namely $r^2 = 0.102$, this means that variable X has an influence on variable Y of 10.2%.

Table 5. Partial Significance Test (t-Test)

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	74.611	20.536		3.633	.000
	Independent Teaching Platform	.861	.220	.319	3.911	.000

a. Dependent Variable: Teacher Pedagogical Competence

Table 6. Coefficient of Determination (r^2)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.319a	.102	.095	16.32682

a. Predictors: (Constant), Merdeka Mengajar Platform

b. Dependent Variable: Teacher Pedagogical Competence

Based on the test results above, the Merdeka Mengajar Platform has a significant influence on teacher pedagogical competence in public senior high schools in Koto Tangah District, West Sumatra. Therefore, the hypothesis that there is an influence between the Merdeka Mengajar Platform and teacher pedagogical competence in public senior high schools in Koto Tangah District, West Sumatra, is accepted.

The Influence of the Personnel Information System on Employee Performance

The results of data analysis and hypothesis testing indicate that the calculated t-value is greater than the tabulated t-value, namely 3.911 > 1.977, with a significance level of 0.00 < 0.05. This indicates that the Merdeka Mengajar Platform has a positive and significant influence on teacher pedagogical competence. This is further supported by the coefficient of determination (r^2) test result of 10.2, indicating a significant influence between the Merdeka Mengajar Platform (X) and teacher pedagogical competence (Y) of 10.2%.

To derive the simple regression equation, the formula was used (details can be found in the appendix). The data analysis yielded the equation $Y = 74.611 + 0.861X$, which states that for every 1% increase in the personnel information system score, the performance score increases by 0.861. The regression coefficient is positive, indicating a positive influence of the Merdeka Mengajar Platform (PMM) on teacher pedagogical competence. This means that the higher the implementation of the Merdeka Mengajar Platform, the higher the level of teacher pedagogical competence.

Discussion

The results of this study indicate a significant positive effect of implementing the Merdeka Mengajar Platform (PMM) on teacher pedagogical competence in public senior high schools in Koto Tangah District, West Sumatra. This finding aligns with Utamimah & Nur Aisyah (2025) and Fitria's (2023) research, which also found a positive contribution of PMM to improving teacher pedagogical competence. However, these findings also revealed that despite the effective implementation of PMM, some indicators, such as mastery of student characteristics, showed lower scores than others. This aligns with the findings of Nurdiansari et al. (2025), who revealed that teachers who actively participated in the PMM program experienced improved teaching quality. However, they still faced difficulties in comprehensively understanding student characteristics.

The theoretical implication of this finding is that the use of technology in education, as provided by PMM, can enhance teachers' pedagogical competence, particularly in areas such as communication, assessment, and learning management. However, this study also reminds us that technology cannot completely replace a deep understanding of student characteristics, which is an integral part of pedagogical competence. Therefore, a more holistic and integrative approach between technology and an understanding of student characteristics needs to be implemented in developing teachers' pedagogical competence.

Practically, these findings have important implications for education policy, particularly regarding the use of PMM as a tool to improve teachers' pedagogical competence. The Education Office and school principals need to ensure that all teachers receive adequate technical training and ongoing support in using PMM. Furthermore, it is crucial to ensure that training schedules do not conflict with teachers' teaching schedules, so that PMM use can be maximized. This also aligns with the findings of Pratama & Susanti (2023), who emphasized the importance of ongoing technical support in implementing educational technology.

On the other hand, although the test results indicate that PMM has a positive effect on teachers' pedagogical competence, there is still room for improvement, particularly in the aspect of mastery of student characteristics. This should be a focus for future PMM platform development, with greater attention to this aspect. This study also highlights the need for regular evaluation of PMM's effectiveness in the local context of each school, given the technical and non-technical challenges identified in this study. This potential topic for further research could delve deeper into the obstacles and solutions to PMM implementation. In conclusion, this study makes a significant contribution to our understanding of how PMM affects teachers' pedagogical competence. While the results demonstrate a positive impact, continued evaluation and further development are essential to improve the effectiveness of PMM's use in broader contexts. These findings can serve as a reference for policymakers in formulating more effective strategies for developing teachers' pedagogical competence through technology-based platforms such as PMM.

CONCLUSION

The study concludes that the implementation of Platform Merdeka Mengajar (PMM), is considered substantial. Teachers have optimally utilized PMM, particularly in aspects such as usage activity and feedback. Additionally, teachers' pedagogical competencies are also categorized as substantial, with effective management of learning, use of information technology, and assessment. A positive and significant relationship was found between the implementation of PMM and teachers' pedagogical competence, indicating that increased usage and quality of PMM positively influence pedagogical competence.

Based on the findings, recommendations include providing periodic technical training and support to teachers to optimize PMM features, particularly in areas such as digital teaching materials and assessment tools. Schools should provide adequate infrastructure, including stable internet and technology. Teachers should actively engage in self-paced learning, workshops, and best practice forums, and regularly reflect on their teaching practices. The Department of Education is encouraged to support policies and budgets for PMM training and provide ongoing assistance and resources to facilitate effective implementation. Regular monitoring and evaluation are also essential to ensure the impact of PMM on teachers' pedagogical competence, ultimately enhancing the quality of teaching and student outcomes.

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