



Teacher Performance Development Through Individual Ability, Self-efficacy, and innovation: Evidence from Public Elementary School in Peusangan District, Bireun Regency

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ARTICLE INFO

Article history:

Received: December, 2025

Received in revised from: January, 2025

Accepted: February, 2025

Available online: March, 31, 2026

Keywords: *teacher performance, individual ability, self-efficacy, innovative behavior, educational management;*

ABSTRACT

Teachers play a strategic role in improving educational quality through pedagogical, social, personal, and professional competencies. The swift evolution of education in the context of globalization and digitalization necessitates that educators exhibit elevated levels of personal competence, self-efficacy, and inventive conduct. This study seeks to examine techniques for enhancing teacher performance based on individual capability, self-efficacy, and innovation in public elementary schools within the Peusangan District of Bireuen Regency. The research utilized a mixed-methods approach with a sequential explanatory design. Quantitative data were gathered via surveys and analysed using path analysis and SITOREM (Scientific Identification Theory for Operational Research in Education Management), while qualitative data were acquired through interviews, observations, and documentation to enhance quantitative results. The sample comprised teachers from 28 public primary schools, with 147 participants chosen via Slovin's algorithm. The results demonstrate that personal capability, self-efficacy, and inventive conduct substantially enhance teacher performance. Educators possessing elevated self-efficacy exhibit increased initiative in fostering instructional innovation and adjusting to curriculum modifications. Nonetheless, various indices of innovation and human capability remain inadequate, especially in the exploration of novel teaching tactics and problem-solving methodologies. The study advocates for the fortification of professional development programs, the augmentation of teacher confidence, and the promotion of innovation-driven learning methodologies to elevate teacher performance and educational quality.

1. Introduction

Teacher performance has a significant impact on educational quality because teachers have direct control over instructional depth, student engagement, and the overall effectiveness of learning processes (Bahri et al., 2025; Kanya et al., 2021). Teacher competency includes not only topic knowledge but also pedagogical skills, classroom management, assessment literacy, and the capacity to motivate a varied range of learners (Shahat et al., 2025). Teachers that meet high professional standards provide structured yet dynamic learning settings that promote critical thinking, conceptual

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<https://doi.org/10.56806/jh.v7i1.408>

comprehension, and measurable academic performance(Dwikurnaningsih & Paais, 2022). In this view, teacher performance becomes a critical pillar of educational efficacy, deciding whether institutional objectives are translated into meaningful student results(Polhun et al., 2021). Institutions that promote outstanding teaching performance are better positioned to maintain academic standards, improve their reputation, and remain competitive in an increasingly performance-driven educational landscape(Sudarsih, 2023).

Within the framework of the Fourth Industrial Revolution, the strategic importance of teacher performance grows even stronger(Gao & Hew, 2022). Rapid technology advancement, digital integration, and changing labour demands necessitate educators constantly adapting and modelling flexibility, inventiveness, and responsiveness in their educational approaches(Instefjord & Munthe, 2017). Teachers are expected to effectively integrate technology, develop problem-solving skills, and equip students to function in complex, technologically rich situations while maintaining the educational focus on key learning objectives(Mintasih et al., 2024). Their ability to respond to cultural shifts and developing competences has a direct impact on how effectively institutions produce human resources capable of addressing modern issues(Reddy et al., 2023). As a result, teacher performance is more than just an instructional issue; it is also a critical role in ensuring that educational systems stay relevant, adaptive, and competitive in a period of rapid change(Amhag et al., 2019).

Teacher professionalism requires the ongoing development of teaching abilities, subject matter competence, social engagement, and personal integrity(Mailani, 2025). Effective learning results are inextricably tied to educators' abilities to create creative instructional strategies, meaningfully integrate technology into classroom practice, and adjust adaptively to curriculum changes(Anthony et al., 2019). Teachers in the Fourth Industrial Revolution are required to develop critical thinking, creativity, teamwork, and digital literacy in their students, in addition to transmitting knowledge.(Sari et al., 2025) This expanded role emphasizes the significance of ongoing professional development, which allows teachers to remain responsive to changing educational objectives and increasingly complex learning contexts(Salabi et al., 2023).

However, increasing the efficiency of teachers is still a serious challenge in Indonesia. International examinations, such as the Programme for International Student Assessment (PISA), continue to reveal discrepancies in student success, indicating ongoing difficulties with instructional quality and educational equity(Wijaya et al., 2024). At the same time, Indonesia's position in global innovation rankings implies that the country has limited ability for research, technological advancement, and knowledge-based competitiveness, all of which have an impact on educational institutions and pedagogical techniques(Mustoip et al., 2023). Addressing these difficulties necessitates systemic measures to improve teacher competence, establish an innovative culture in schools, and integrate professional development initiatives with larger national goals for educational transformation and global competitiveness(Sevilla et al., 2025).

Teacher effectiveness is affected by multiple elements, including personal attributes, organizational context, and psychological state(Prihatiningtyas et al., 2025). Individual ability, self-efficacy, and inventive conduct are seen as essential predictors of professional efficiency(Taridi et al., 2023). Individual ability signifies educators' proficiency in acquiring new knowledge, formulating teaching techniques, and addressing learning challenges. Self-efficacy denotes an individual's conviction in their ability to execute tasks effectively and harness cognitive and motivational resources(Ahmadi et al., 2011). Innovative conduct denotes the capacity to conceive, execute, and assess novel ideas in pedagogical methods(Wahid, 2024).

Prior research has shown that self-efficacy favourably affects teacher creativity and performance, while innovative conduct improves instructional effectiveness and learning quality (Jiang et al., 2025). Educators possessing elevated self-efficacy typically exhibit enhanced drive, inventiveness, and resilience when confronting educational problems (Ertmer & Ottenbreit-Leftwich, 2010). Likewise, innovative educators exhibit greater responsiveness to technological advancements and curricular modifications (Instefjord & Munthe, 2017).

Notwithstanding the theoretical significance of these variables, initial observations in public elementary schools in Bireuen Regency reveal that teachers' individual competencies and levels of innovation are subpar. Survey findings indicated that merely 53.67% of teachers exhibited sufficient individual competence. Teachers exhibited diminished engagement in investigating innovative pedagogical approaches and formulating resolutions to instructional challenges. These data indicate a disparity between anticipated and actual instructor performance (Gule et al., 2024).

Given this condition, it is necessary to examine strategies for improving teacher performance through strengthening individual ability, self-efficacy, and innovative behaviour. This study seeks to examine the evolution of teacher performance influenced by these factors in public elementary schools within the Peusangan District of Bireuen Regency. The results are anticipated to enhance educational management strategies and teacher professional development initiatives.

2. Methodology

This study utilized a mixed-methodologies approach with a sequential explanatory design, combining quantitative and qualitative methods to produce thorough and well-supported conclusions (Feldon & Tofel-Grehl, 2022). In the initial phase, quantifiable data were gathered and processed to investigate the causal links among the research variables and to evaluate the offered hypotheses. This phase sought to discover patterns, quantify the strength of correlations, and ascertain the statistical significance of the links examined. The outcomes of the quantitative analysis constituted the basis for the ensuing step. Throughout the second phase, qualitative methodologies were employed to offer enhanced insights and contextual explanations for the quantitative results. The qualitative data provided context on unexpected outcomes, elaborated on recognized trends, and captured participants' viewpoints that numerical analysis alone could not fully elucidate. By systematically linking both stages, the study facilitated a more thorough analysis of the data and enhanced the overall validity of the research findings.

2.1 Population and Sample

The research was carried out at public elementary schools situated in Peusangan District, Bireuen Regency. This location was chosen for obtaining empirical data directly from formal primary education institutions within the district. The population consisted of all educators employed in 28 public primary schools in the region, reflecting a varied spectrum of teaching experiences, educational qualifications, and professional duties. Slovin's formula was utilized to ascertain the suitable sample size, ensuring sufficient population representation and statistical reliability. A total of 147 teachers were chosen as responses based on this computation. The sampling method was structured to proportionately reflect educators from the involved schools, hence improving the generalizability and precision of the study's results within the specified research framework.

2.2 Data Collection Techniques

Data were gathered using various approaches to guarantee the thoroughness and accuracy of the results. Questionnaires were sent to assess the primary research variables, encompassing individual capability, self-efficacy, innovative behavior, and instructor performance. The questionnaire items

were designed to elicit respondents' thoughts and experiences regarding their professional competencies and work outcomes. Furthermore, interviews were performed with school principals and chosen educators to examine tactics employed to improve teacher performance and to obtain a deeper understanding of factors affecting professional growth within the educational environment. Documentation, including school reports and pertinent institutional records, was analyzed to corroborate and triangulate the empirical findings derived from the questionnaires and interviews. The research variables were categorized as independent, mediating, and dependent factors. The independent variables included Individual Ability (X1) and Self-Efficacy (X2), which were posited to affect teacher performance both directly and indirectly. Innovative Behavior (X3) acted as the mediating variable, elucidating the mechanism by which individual capacity and self-efficacy influence outcomes. The dependent variable in this study was Teacher Performance (Y), denoting the overall efficacy of educators in executing their professional responsibilities.

2.4 Data Analysis

Quantitative data were evaluated by means analysis to investigate both direct and indirect correlations among the research variables. This method allowed the researcher to evaluate the extent and importance of the causal relationships among individual ability, self-efficacy, innovative conduct, and teacher performance. The research, utilizing path coefficients and significance tests, revealed both the direct and indirect effects of the independent variables on teacher performance, with the latter mediated by innovative conduct. This methodology offered a more thorough comprehension of the structural linkages within the proposed research framework.

Furthermore, SITOREM (Scientific Identification Theory to Conduct Operation Research in Education Management) analysis was utilized to identify key indicators for enhancement. This analysis evaluated various criteria—cost, benefit, urgency, and significance—to pinpoint important areas necessitating immediate attention and intervention (Desianti, 2022). Simultaneously, qualitative data were examined through the triangulation of methods and theories to augment the credibility and reliability of the results. The study established the validity and trustworthiness of its conclusions by comparing data from surveys, interviews, and documents, and interpreting them through pertinent theoretical frameworks.

3. Results

In quantitative research, a survey method with a path analysis approach was used to prove the direct and indirect effects between variables. Meanwhile, to optimize each indicator of each research variable, weights were assigned to each indicator based on the criteria of 'cost, benefit, urgency, and importance' using SITOREM analysis ("Scientific Identification Theory to Conduct Operation Research in Education Management"). Hardhienata (2017:1) argues that, for the purpose of operations research in education management, we need to add the scientific identification theory mentioned above with statistical models and steps to obtain an optimal solution.

In qualitative research, the focus of the research is to test triangulation (observation, interviews, and data) using triangulation methods and theories. Method triangulation is carried out by comparing information or data in different ways, and theory triangulation is carried out by comparing information with relevant theoretical perspectives to avoid individual researcher bias on the findings or conclusions produced. The complete research flow can be seen in the following figure.

This quantitative study employs a survey method utilizing a path analysis approach. The independent variables comprise two factors: Individual Ability (X1) and Teacher Self-Efficacy (X2). In the interim, the mediating variables are Collaborative Individual Ability (X3), while Teacher

Professionalism (Y) serves as the dependent variable. The constellation of examined variables is delineated as follows.

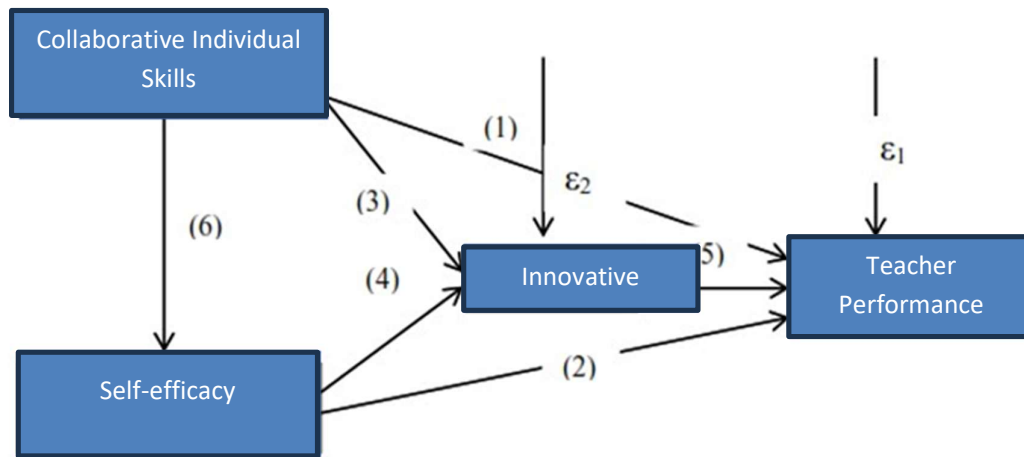


Fig. 1 Constellation of Problems

3.1 Individual collaborative skills.

The data in Table 1 reveals that the maximum empirical score for the innovation variable is 118, whereas the minimum score is 92. The mean score is 106.04 and the median is 106.00, suggesting that the distribution of scores is relatively symmetrical around the central value. The empirical scores go from 92 (minimum) to 118 (highest), resulting in a score range of 26. The results indicate that respondents' scores on the innovation variable are predominantly clustered within a moderate range. Specifically, 57 respondents (24%) are situated within the lowest score range of 92–98, whilst only 2 respondents (0.84%) are positioned in the highest score range, suggesting that a limited number of teachers exhibit exceptionally high levels of creativity relative to the overall distribution.

The optimal scoring range is from a maximum of 130 to a minimum of 26, yielding an ideal mean of 78 and an ideal standard deviation of 17.3. In comparison to the empirical mean of 106.04, the results indicate that respondents' innovation levels are generally above the theoretical midpoint. According to the specified criteria in the research methodology, the trend of the Collaborative Individual Attitude variable (X1) is further classified and displayed in Table 2 to elucidate its distribution and overall tendency.

Table 1. Frequency Distribution for Individual Collaborative Ability Scores (X1)

Class	Class Interval	Absolut Freq	Relative Freq	Cumulative Freq (%)
1	92 – 94	2	0,84	0,84
2	95 – 97	0	0,00	0,84
3	98 – 100	20	8,44	9,28
4	101 – 103	50	21,10	30,38
5	104 – 106	55	23,21	53,59
6	107 – 109	57	24,05	77,64
7	110 – 112	43	18,14	95,78
8	113 – 115	5	2,11	97,89
9	116 – 118	5	2,11	100

Total	237	100,00
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According to the data in Table 2, 69.62% of respondents are classified in the high group. This ratio signifies that almost two-thirds of the educators exhibit robust collaborative skills based on the defined classification standards. The prevalence of the high category indicates that the majority of teachers have the ability to collaborate well with peers, engage in collective problem-solving, and actively participate in team-oriented activities within the educational setting. Consequently, it can be inferred that the collaborative competencies of educators in public primary schools within Peusangan District predominantly fall inside the high group. This research indicates a favorable professional environment characterized by cooperation, mutual support, and shared accountability among teachers, which may enhance instructional practices and overall school performance.

Table 2. Level of Individual Attitude Variable Collaboration (X1)

Class	Class Interval	Observes		Category
		Freq	Relative Freq	
1	> 103 - highest score	165	69,62	High
2	>78 - 103	72	30,38	Moderate
3	>17,5 - 78	0	0	Low
4	> Lowest score - 17,3	0	0	Very low
Total		237	237	100,00*

3.2 Self – Efficacy

According to the data in Tables 3 and 4, the maximum empirical score for the self-efficacy variable (X2) is 126, the minimum score is 95, with a mean of 109 and a standard deviation of 6.10. The statistics reveal that the respondents' scores are predominantly clustered around the mean, exhibiting moderate variability. A total of 180 respondents (58.65%) achieved scores beyond the average, and 98 respondents were classified as having scores below the mean. This distribution indicates that most teachers exhibit a considerable degree of self-efficacy, signifying confidence in their capacity to execute professional responsibilities and surmount work-related obstacles. The optimal scoring range is from a maximum of 135 to a minimum of 27, yielding an ideal mean of 81 and an ideal standard deviation of 18. The data reveal that instructors' self-efficacy levels significantly exceed the theoretical midpoint when juxtaposed with the empirical mean of 109. According to the specified criteria in the research methodology, the trend of the Self-Efficacy variable (X2) is further classified and displayed in Table 4 for enhanced clarity in its overall inclination.

Table 3. Frequency Distribution for Self-Efficacy Score (X2)

Class	Class Interval	Absolut Freq	Relative Freq	Cumulative Freq (%)
1	112 – 116	4	1,69	1,69
2	117 – 121	9	3,80	5,49
3	122 – 126	32	13,50	18,99
4	127 – 131	52	21,94	40,93
5	132 – 136	64	27,00	67,93
6	137 – 141	44	18,57	86,50
7	142 – 146	28	11,81	98,31
8	147 – 151	0	0,00	98,31
9	152 – 146	4	1,69	100
Total		237	100,00	-

Table 4 reveals that 58.65% of respondents fall into the high self-efficacy category. This figure indicates that over fifty percent of teachers have a robust confidence in their ability to organize, administer, and manage instructional activities effectively. The prevalence of the high category indicates that educators typically possess confidence in managing classroom obstacles, attaining instructional objectives, and adjusting to professional requirements. Consequently, it may be inferred that the self-efficacy of public elementary school teachers in Peusangan District is predominantly categorized as high. This discovery indicates a beneficial psychological asset among educators, perhaps leading to enhanced teaching methods, resilience in overcoming challenges, and an overall improvement in teacher efficacy.

Table 4. Level of Self-Efficacy Variable Score (X2)

Class	Class Interval	Observes Relative		Category
		Freq	Freq	
1	> 132 - highest score	139	58,65	High
2	>99 - 148,5	98	41,35	Moderate
3	>45,5 - 99	0	0,00	Low
4	> Lowest score - 45,5	(0	0,00	Very low
Total Skor		237	100,00*	-

3.3 Innovative

Based on the data presented in Table 5, the highest empirical score for the Innovative Behaviour variable (X3) is 152, while the lowest score is 114. The mean score is 132.87 with a standard deviation of 7.12, indicating that respondents' scores are relatively clustered around the average with moderate dispersion. A total of 140 respondents (59%) obtained scores above the mean, whereas 97 respondents (41%) scored below the average. This distribution suggests that the majority of teachers demonstrate innovative behaviour at a level above the overall mean, reflecting a relatively strong inclination toward creativity, initiative, and the adoption of new approaches in their professional practice. In terms of ideal scoring, the highest possible score is 165 and the lowest possible score is 33, resulting in an ideal mean of 99 and an ideal standard deviation of 22. When compared to the empirical mean of 132.87, the findings indicate that teachers' innovative behaviour levels are considerably above the theoretical midpoint. Based on the criteria guidelines established in the research methodology, the tendency level of the Innovative Behaviour variable (X3) is further categorized and presented in Table 6 to provide a clearer interpretation of its overall distribution.

Table 5. Frequency Distribution of Innovative Variable Scores (X3)

Class	Class Interval	Absolut	Relative	Cumulative
		Freq	Freq	Freq (%)
1	112 – 116	4	1,69	1,69
2	117 – 121	9	3,80	5,49
3	122 – 126	32	13,50	18,99
4	127 – 131	52	21,94	40,93
5	132 – 136	64	27,00	67,93
6	137 – 141	44	18,57	86,50
7	142 – 146	28	11,81	98,31
8	147 – 151	0	0,00	98,31
9	152 – 146	4	1,69	100
Total		237	100,00	-

According to the data presented in Table 6, 58.65% of respondents are categorized as exhibiting high levels of innovative behavior among teachers in public elementary schools in Peusangan District. This number signifies that over fifty percent of the educators exhibit a robust inclination to embrace innovative concepts, execute unique pedagogical methods, and enhance their instructional practices. The prevalence of the high category indicates a favorable attitude towards transformation and professional development within the educational setting. Consequently, it can be inferred that, in general, teachers' innovative behavior in public elementary schools of Peusangan District is predominantly classified as high. This data indicates that the majority of instructors are actively involved in creating and implementing new methods in their practice, potentially boosting instructional quality and fostering greater educational outcomes.

Table 6. Innovative Variable Trend (X3)

Class	Class Interval	Observes		Relative Category
		Freq	Freq	
1	>132 - highest score	139	58,65	High
2	>99 - 148,5	98	41,35	Moderate
3	>45,5 - 99	0	0,00	Low
4	> Lowest score - 45,5	0	0,00	Very low
Total		Total	237	100,00*

3.4 Teacher Performance

According to the data in Table 7, the maximum empirical score for the Teacher Performance variable (Y) is 159, and the minimum score is 125. The mean score is 141.40, with a standard deviation of 7.62, suggesting that the score distribution is pretty uniform and not significantly varied from the mean. The little standard deviation indicates that variations in teacher performance among respondents are not significant. Among the total responses, 129 instructors (54%) achieved scores beyond the mean, whereas 108 teachers (46%) scored below the mean. This distribution exhibits a somewhat balanced pattern, while just over half of the respondents display performance levels exceeding the norm. The optimal scoring parameters indicate a maximum score of 175 and a minimum score of 35, yielding an ideal mean of 105 and an ideal standard deviation of 23. The empirical mean of 141.40, when juxtaposed with the ideal mean of 105, signifies that teacher performance generally exceeds the theoretical midway defined in the measuring framework. In accordance with the criteria outlined in the research methodology, these results are further categorized to ascertain the tendency level of the Teacher Performance (Y) variable. Table 8 presents a comprehensive categorization of this trend to facilitate a clearer and more systematic evaluation of the overall performance levels of teachers in the examined schools.

Table 7. Distribution of Teacher Performance Variable Frequency Data (Y)

Class	Class Interval	Absolut Freq	Relative Freq	Cumulative Freq (%)
1	123 - 126	6	1,10	1,10
2	127 - 130	13	4,80	5,90
3	131 - 134	38	8,60	14,50
4	135 - 138	28	18,80	33,30
5	139 - 142	33	16,70	50,00
6	143 - 146	56	17,70	67,70
7	147 - 150	39	16,70	84,40

8	151 - 154	19	14,00	98,40
9	155 - 158	5	1,60	100,00
	Total	Total	237	100,00

According to the statistics in Table 8, 60.15% of respondents are categorized as high performers in teaching. This fraction indicates that most public elementary school teachers in Peusangan District exhibit performance levels that meet or surpass the set requirements within the assessment framework. The prevalence of the high category indicates a consistent execution of professional duties, encompassing the planning, implementation, and assessment of educational activities. Consequently, it can be inferred that the performance of public elementary school teachers in Peusangan District generally falls within the high group. This finding indicates that the majority of instructors are performing their professional responsibilities competently, in alignment with the standards specified in the survey.

Table 8. Level of Teacher Performance Variable Propensity (Y)

Class	Class Interval	Observes Relative		Category
		Freq	Freq	
1	166 - highest score	152	60,15	High
2	124 - 165	85	35,86	Moderate
3	82 - 123	0	0,00	Low
4	Lowest score - 81	0	0,00	Very low
	Total	237	100,00	-

5. Conclusions

This study illustrates that individual competence, self-efficacy, and innovative behaviour are critical factors influencing teacher effectiveness in public primary schools. Educators possessing robust professional competencies and elevated self-efficacy are more inclined to execute successful instructional strategies, confront classroom problems with assurance, and attain enhanced performance results. These variables also foster creative teaching methods, allowing educators to address varied student requirements and changing educational demands. The findings reveal that specific elements of creativity and individual competency are inadequately developed, underscoring the necessity for focused professional development initiatives. The findings underscore the significance of systematic approaches to improve teacher efficacy via competency enhancement, ongoing professional development, and institutional support systems. Mentoring programs, collaborative professional communities, and positive performance feedback can bolster instructors' confidence and promote reflective practice. Furthermore, cultivating an organizational environment that encourages creativity and knowledge exchange is crucial for advancing innovation-oriented teaching methodologies and maintaining professional development. Improving teacher efficacy through these coordinated initiatives enhances educational quality and fosters institutional advancement. This study is, nevertheless, constrained in its scope and context. Future study should investigate wider institutional and organizational elements, such as leadership, school culture, and policy frameworks, and assess intervention programs designed to enhance innovation and self-efficacy to attain sustained enhancements in teacher performance.

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