



Modeling and Optimizing Teacher Creativity Based on Collaboration Effectiveness, Transformational Leadership, ICT Literacy, and Knowledge Sharing: A POP-SDM Study of Private Islamic Elementary School Teachers in Bogor City

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ARTICLE INFO

Keywords: Teacher Creativity, Knowledge Sharing, Collaboration Effectiveness, Transformational Leadership, ICT Literacy, POP-SDM

Received : 29, Decemboer

Revised : 30, January

Accepted: 28, February

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ABSTRACT

This study examines a modeling and optimization framework for enhancing teacher creativity using the POP-HRM approach. The research was conducted at private Islamic elementary schools in Bogor City, Indonesia, involving 248 teachers. A quantitative explanatory design was applied using survey data analyzed through path analysis and SITOREM. The findings indicate that all independent variables significantly influence teacher creativity, with knowledge sharing as the strongest predictor ($\beta = 0.483$), followed by collaboration effectiveness ($\beta = 0.202$), ICT literacy ($\beta = 0.153$), and transformational leadership ($\beta = 0.120$). Knowledge sharing also mediates the effects of collaboration, leadership, and ICT literacy on creativity. The proposed model demonstrates high explanatory power ($R^2 = 0.857$) and provides strategic guidance for systematic and sustainable teacher development.

INTRODUCTION

Teacher creativity has become a critical issue in contemporary education, particularly in response to rapid technological change, curriculum transformation, and increasing demands for innovative and student-centered learning. In the context of the Industrial Revolution 4.0 and the emergence of Society 5.0, teachers are required not only to master pedagogical competencies but also to continuously adapt, innovate, and creatively integrate technology into instructional practices. Creativity enables teachers to design meaningful learning experiences, motivate students, and respond flexibly to diverse learning needs. However, empirical evidence indicates that teacher creativity, especially at the primary education level, remains uneven and often underdeveloped.

Phenomenologically, preliminary observations in private Islamic elementary schools (Madrasah Ibtidaiyah Swasta) in Bogor City reveal that many teachers still rely on routine instructional methods, limited learning media, and minimal integration of technology. These conditions suggest that teacher creativity is not merely an individual attribute, but is strongly shaped by organizational and managerial factors within schools. Collaboration effectiveness, leadership practices, technological literacy, and knowledge-sharing culture emerge as contextual determinants that either stimulate or constrain teachers' creative performance. Despite their relevance, these factors are rarely examined simultaneously within a comprehensive and optimized model of teacher creativity.

From a theoretical perspective, existing studies tend to focus on partial relationships, such as the effect of leadership, ICT use, or professional development on teacher creativity. Limited attention has been given to the integration of human resource management perspectives that model both direct and indirect relationships among organizational variables. Moreover, the mediating role of knowledge sharing as a strategic mechanism linking collaboration, leadership, and ICT literacy to teacher creativity remains underexplored, particularly in faith-based primary education settings.

This study addresses these gaps by proposing a modeling and optimization framework for enhancing teacher creativity using the POP-HRM (Modeling and Optimization of Human Resource Management Strengthening) approach. The research captures a niche and underrepresented sample, namely teachers of private Islamic elementary schools in Bogor City, involving 248 respondents. By applying path analysis and SITOREM, this study not only identifies the strength and structure of causal relationships among variables, but also determines priority indicators for strategic intervention.

The contribution of this paper lies in three aspects. First, it enriches theory by integrating creativity research with human resource management modeling in education. Second, it provides empirical evidence on the mediating role of knowledge sharing in strengthening teacher creativity. Third, it offers a practical optimization model that supports systematic, data-driven, and sustainable teacher development. These contributions position the study as a meaningful advancement in both educational management research and practice.

LITERATURE REVIEW

Teacher Creativity Theory

Teacher creativity refers to the ability to generate novel and appropriate ideas, strategies, and learning practices that enhance instructional effectiveness and student engagement. In educational contexts, creativity is associated with flexibility, innovation, problem-solving, and the ability to integrate diverse resources, including technology, into the learning process. Creative teachers are more capable of designing meaningful learning experiences, motivating students, and adapting instruction to changing educational demands.

Collaboration Effectiveness, Transformational Leadership, ICT Literacy, and Knowledge Sharing

Collaboration effectiveness emphasizes collective interaction, communication, and shared commitment among teachers to achieve common instructional goals. Transformational leadership theory highlights the role of leaders in inspiring, motivating, and intellectually stimulating teachers to exceed routine performance. ICT literacy refers to teachers' capacity to effectively use digital tools and information technologies to support learning. Knowledge sharing theory explains how the exchange of ideas, experiences, and expertise among teachers fosters collective learning and innovation.

Previous Empirical Studies

Previous quantitative studies have shown that collaboration effectiveness positively influences teacher creativity through enhanced teamwork and professional interaction. Transformational leadership has been found to significantly predict creative teaching behaviors by fostering supportive and empowering school climates. ICT literacy consistently demonstrates a positive relationship with creativity, particularly through innovative instructional design. Several studies also confirm that knowledge sharing mediates the effects of collaboration, leadership, and ICT literacy on teacher creativity. However, some findings report weaker direct effects of leadership when knowledge sharing is limited, indicating the need for integrative modeling. These mixed results support the proposed hypotheses and justify further empirical testing within a comprehensive framework.

H1: Collaboration effectiveness has a positive and significant effect on teacher creativity.

H2: Transformational leadership has a positive and significant effect on teacher creativity.

H3: ICT literacy has a positive and significant effect on teacher creativity.

H4: Knowledge sharing has a positive and significant effect on teacher creativity.

H5: Knowledge sharing mediates the effect of collaboration effectiveness on teacher creativity.

H6: Knowledge sharing mediates the effect of transformational leadership on teacher creativity.

H7: Knowledge sharing mediates the effect of ICT literacy on teacher creativity.

After the hypothesis section, if your study is quantitative, please provide a contextual framework here, or your mind map, if qualitative.

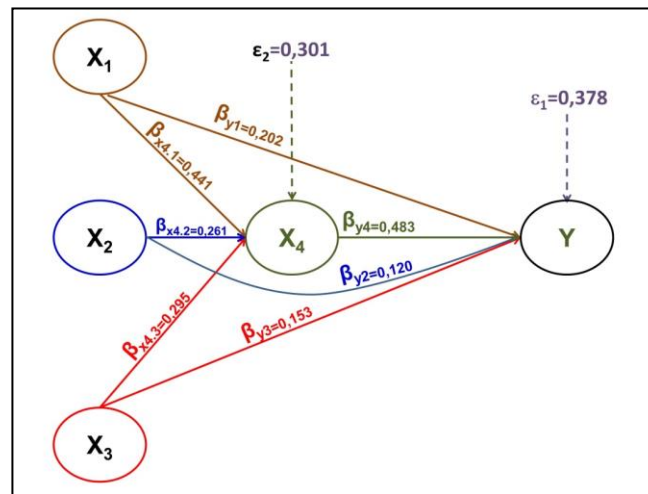


Figure 1. Conceptual Framework

METHODOLOGY

This study employed a quantitative explanatory design using a survey method. The population comprised private Islamic elementary school teachers in Bogor City, with 248 teachers selected through proportional sampling. Data were analyzed using path analysis and SITOREM to examine direct, indirect, and optimized effects.

RESULT AND DISCUSSION

The analysis followed several steps. Data were tested for validity, reliability, normality, and linearity. Path analysis was then applied to examine direct and indirect effects, including mediation testing. SITOREM analysis identified priority indicators for optimization. Results are summarized in numbered tables and path diagrams with coefficients and significance values.

Table 1. Three Box Method

Rank	Path Relationship	Coefficient (β)	t-value	Sig. (p)	Effect Type
1	Knowledge Sharing (X4) → Teacher Creativity (Y)	0.483	6.409	0.000	Direct
2	Collaboration Effectiveness (X1) → Knowledge Sharing (X4)	0.441	8.327	0.000	Direct
3	Collaboration Effectiveness (X1) → Teacher Creativity (Y)	0.202	2.681	0.008	Direct
4	ICT Literacy (X3) → Knowledge Sharing (X4)	0.295	7.251	0.000	Direct
5	ICT Literacy (X3) → Teacher Creativity (Y)	0.153	2.722	0.007	Direct

6	Transformational Leadership (X2) → Knowledge Sharing (X4)	0.261	6.013	0.000	Direct
7	Transformational Leadership (X2) → Teacher Creativity (Y)	0.120	2.057	0.041	Direct
8	Collaboration Effectiveness (X1) → Knowledge Sharing (X4) → Teacher Creativity (Y)	0.213	Sobel > 1.96	0.000	Indirect
9	ICT Literacy (X3) → Knowledge Sharing (X4) → Teacher Creativity (Y)	0.142	Sobel > 1.96	0.000	Indirect
10	Transformational Leadership (X2) → Knowledge Sharing (X4) → Teacher Creativity (Y)	0.126	Sobel > 1.96	0.000	Indirect

The findings confirm that teacher creativity is strongly influenced by organizational and managerial factors. Knowledge sharing plays a central role in translating collaboration, leadership, and ICT literacy into creative teaching practices. These results extend prior studies by demonstrating the importance of integrated human resource optimization in educational settings.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that teacher creativity is optimally enhanced through knowledge sharing supported by effective collaboration, ICT literacy, and transformational leadership. Schools are recommended to institutionalize knowledge-sharing practices and integrate human resource optimization strategies to ensure sustainable and data-driven teacher development.

FURTHER STUDY

This study is limited to a specific educational context and cross-sectional design. Future research should apply longitudinal or experimental approaches, include broader educational settings, and examine additional organizational and individual factors influencing teacher creativity.

ACKNOWLEDGMENT

The authors sincerely thank colleagues, school leaders, and participating teachers for their valuable contributions and support, as well as the institutions that provided academic and financial assistance for this research.

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