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TRANSFORMATION OF EDUCATION QUALITY BASED ON EDUCATION REPORT CARD: LONGITUDINAL INPUT-PROCESS-OUTPUT (IPO) ANALYSIS IN JUNIOR HIGH SCHOOL

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ABSTRACT

This study aims to analyze the transformation of educational quality based on the Education Report through a longitudinal Input–Process–Output (IPO) framework and to formulate a Four-Phase Educational Quality Transformation Model at SMP Negeri 4 Rasau Jaya during the 2021–2025 period. The research employed a descriptive-analytical longitudinal design using secondary data obtained from the Education Report platform. Data were analyzed through document analysis, longitudinal trend analysis, annual percentage change, cumulative growth analysis, exploratory correlation analysis, and cross-dimensional linkage analysis within the IPO framework. The findings indicate that educational quality transformation occurred progressively and non-linearly through four phases: recovery, strengthening, stabilization, and acceleration. Significant improvements were observed in literacy (from 25.00 to 83.33; cumulative growth of 233.3%), numeracy (from 34.38 to 80.00; cumulative growth of 132.7%), teacher reflection (49.3%), and learning quality. Correlation analysis revealed a very strong relationship between the input and process dimensions (r = 0.92), while the relationships between process and output (r = 0.30) and input and output (r = 0.33) were relatively low, indicating a time-lag effect in translating institutional improvements into student outcomes. In conclusion, the proposed Four-Phase Educational Quality Transformation Model extends the conventional IPO framework by incorporating a longitudinal perspective, demonstrating that sustainable educational quality improvement is achieved through cumulative enhancement of teacher capacity, school governance, and learning processes over time rather than through short-term interventions.

Keywords: *Educational Quality Transformation, Education Report; Input–Process–Output (IPO), Longitudinal Analysis, School Effectiveness*

INTRODUCTION

The Government of Indonesia, through the Ministry of Primary and Secondary Education, introduced the Education Report as a data-based evaluation instrument designed to facilitate educational quality mapping, support reflective practices, and provide an evidence-based foundation for decision-making aimed at improving school quality [1]-[4]. This policy encourages schools to move beyond administrative planning toward a more strategic, objective, and sustainable approach, while strengthening a reflective culture for continuous quality improvement in education [3]-[5]. In terms of structure, the Education Report card indicators adopt an Input-Process-Output (IPO) framework, establishing the quality of the learning process as the core mediator between school institutional resources and student outcomes [2],[6],[7],[8]. Consequently, assessing educational quality requires a systematic and longitudinal approach to accurately capture dynamic and non-linear shifts [9].

SMP Negeri 4 Rasau Jaya was selected as the research site because it underwent significant educational quality transformation during the 2021-2025 period. The school's Education Report data indicate that improvements in educational quality did not occur in a linear pattern but rather through periods of recovery, strengthening, stabilization, and acceleration across various dimensions of school performance. Changes were observed not only in student learning outcomes but also in aspects of learning quality, teacher professional development, school governance, and reflective

teaching practices. These dynamics provide an critical context for examining how educational quality transformation develops over time and how interactions among input, process, and output dimensions contribute to sustainable school improvement.

Existing studies on Education Report Cards have primarily focused on policy implementation, dashboard utilization, and budget-based evaluation practices [10][13]. In addition, the methodologies employed are generally cross-sectional in nature, limiting their ability to explain how educational quality transformation occurs dynamically and non-linearly over extended periods [1],[14]. This study addresses this gap through a longitudinal analysis based on the Input–Process–Output (IPO) framework to explain patterns of educational quality transformation and the dynamic relationships among input, process, and output dimensions using Education Report data from SMP Negeri 4 Rasau Jaya for the 2021-2025 period. Beyond addressing the methodological gap of longitudinal analysis, this study proposes a Four-Phase Educational Quality Transformation Model derived from Education Report data. The model conceptualizes educational improvement as a dynamic progression through recovery, strengthening, stabilization, and acceleration phases. This framework extends the traditional Input–Process–Output (IPO) model by incorporating a temporal perspective that explains how educational quality evolves through cumulative interactions among input, process, and output dimensions over multiple years.

Therefore, this study contributes to the literature by providing a longitudinal empirical explanation of how educational quality evolves through the interaction of input, process, and output dimensions within the IPO framework. Unlike previous studies that predominantly emphasize static evaluation or short-term policy implementation, this research highlights the dynamic, phased, and non-linear nature of educational transformation over a five-year period. The findings are expected to enrich theoretical discussions on Educational Effectiveness Theory by emphasizing the mediating role of learning processes and the time-lag effect in translating institutional inputs into measurable student outcomes. In practical terms, this study offers evidence-based insights for school stakeholders and policymakers to strengthen data-driven school improvement strategies through the systematic use of Education Report data. Unlike previous studies that focus on cross-sectional evaluation, this study integrates longitudinal trend analysis, cumulative growth analysis, and phase-based educational transformation modeling.

RESEARCH METHODS

This study employed a descriptive-analytical longitudinal design using secondary data obtained from the Education Report platform for the period 2021–2025. The study aimed to examine patterns of educational quality transformation at SMP Negeri 4 Rasau Jaya through the Input–Process–Output (IPO) framework, which conceptualizes educational quality as the interaction between educational resources and conditions (input), instructional processes and school climate (process), and student learning outcomes (output) [6]. The research was conducted during the first semester of the 2026/2027 academic year at SMP Negeri 4 Rasau Jaya, Kubu Raya Regency, West Kalimantan. The school was purposively selected due to the availability of complete longitudinal Education Report data and its dynamic educational quality development over the observation period. The dataset consisted of indicator scores representing the input, process, and output dimensions of the Education Report. Data were collected through document analysis of Education Report records, supported by a

review of relevant educational policies and literature. The operationalization of the IPO dimensions is presented in Table I.

Table I.
Operationalization of IPO Dimensions

Dimension	Main Indicators
Input	Teacher training, school governance, resource utilization
Process	Learning quality, teacher reflection, instructional leadership, school climate
Output	Literacy, numeracy, character development

Data analysis followed a systematic workflow based on the IPO framework. The procedure began with the classification of indicators into input, process, and output dimensions, followed by longitudinal trend analysis and annual percentage change analysis to identify patterns of improvement, decline, fluctuation, and stability. Annual percentage change was calculated as:

$$\Delta P = ((Xt - Xt{-}1) / Xt{-}1) \times 100$$

where ΔP represents annual percentage change, Xt denotes the current-year score, and Xt−1 denotes the previous-year score.

Subsequently, cross-dimensional linkage analysis and exploratory correlation analysis were conducted to examine relationships among IPO dimensions. To strengthen interpretation, correlation findings were complemented by cumulative growth analysis and cross-dimensional trend examination. The findings were then synthesized to identify four phases of educational quality transformation, namely recovery, strengthening, stabilization, and acceleration. Because the longitudinal dataset consisted of only five annual observations (N = 5), correlation coefficients were interpreted as exploratory-descriptive evidence rather than inferential statistics. Therefore, the analysis was intended to identify directional patterns and potential associations among dimensions rather than establish causal relationships. Phase identification was based on trend direction, cumulative growth magnitude, and indicator stability across observation years. The overall analytical workflow is presented in Fig. 1.

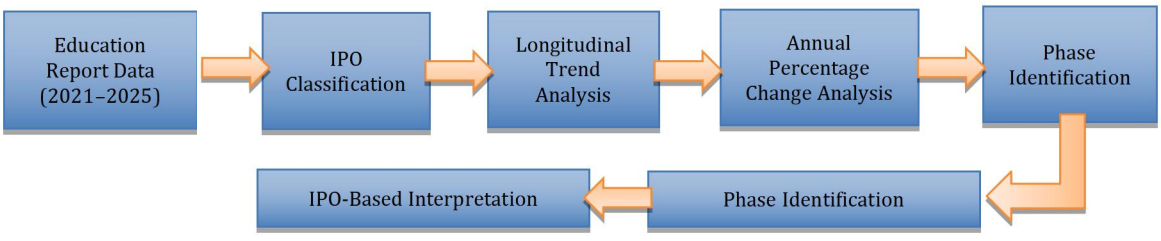

Fig. 1. Research analysis workflow based on the IPO framework.

RESEARCH RESULTS AND DISCUSSION

General Description of Education Report Data 2021-2025

Research data sourced from Education Report of SMP Negeri 4 Rasau Jaya for the 2021-2025 academic year obtained through the National Education Report platform. The data consist of educational quality indicator scores achieved by the selected

education unit, which are standardized and based on national assessments[3] . A five-year observation period was used to analyze the longitudinal dynamics of educational quality transformation, encompassing patterns of improvement, decline, fluctuation, and consistency in indicator achievement. Analysis study use approach Input-Process-Out (IPO) which classifies variables to in dimensions input, process, and output.

Table 2.
Dimensions and Indicators of the Education Report Framework

Aspect	No	Indicator
INPUT	C. GTK Competence & Performance	
	C.3	Experience PTK Training
	E. Management Participatory, Transparent and Accountable Schools	
	E.1	Participation inhabitant unit education
	E.2	Proportion utilization source Power school For improvement quality
	E.3	Utilization of ICT for management budget
	E.5	Programs and policies unit education
	E.6	Availability Educational Books
	E.7	Index Facility Education units
PROCESS	D. Quality and Relevance Learning	
	D.1	Quality learning
	D.2	Reflection and improvement learning by teachers
	D.3	Leadership instructional
	D.4	Security climate unit education
	D.6	Climate of Gender Equality
	D.8	Climate of Diversity
	D.10	Climate of Inclusivity
	D.18	Preparedness Disasters and Climate Change
	D.19	Seven Habits of Great Indonesian Children
OUTPUT	A. Quality and relevance results student learning	
	A.1	Ability literacy
	A.2	Ability numeracy
	A.3	Character

Longitudinal Trend Analysis of Education Quality

a. Output Dimension Trends

Table 3.
Longitudinal Trends in Output Dimension Indicators (2021–2025)

Indicator Code	Δ Score (2021-2022)	% Change (ΔP)	Δ Score (2022-2023)	% Change (ΔP)	Δ Score (2023-2024)	% Change (ΔP)	Δ Score (2024-2025)	% Change (ΔP)
A.1	25.00	100.00	23.91	47.82	-10.58	-14.31	20.00	31.58
A.2	-14.38	-41.83	32.17	160.85	17.83	34.18	10.00	14.29
A.3	1.97	4.01	0.74	1.45	0.18	0.35	2.85	5.48
Average	4.2	11.62	18.94	46.93	2.48	4.18	10.95	17.72

Longitudinal analysis of dimensions output that includes ability literacy, numeracy, character, and equality education quality at SMPN 4 Rasau Jaya for the 2021-2025 period demonstrates trend improvement significant, although no always linear. Cumulative growth analysis further reveals that literacy increased by 233.3%, numeracy by 132.7%, and character by 11.7% over the observation period, indicating substantial long-term educational improvement. The trajectory of educational quality transformation is presented in Figure 2.

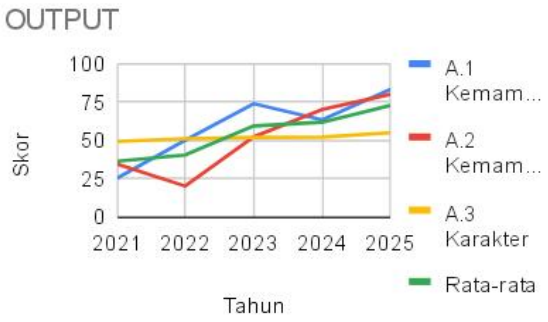

Fig. 2. Development Achievements Dimensions SMPN 4 Rasau Jaya Output for the 2021-2025 Period (Source: Education Report, processed data)

Literacy skills at SMP Negeri 4 Rasau Jaya experienced the highest increase, from a score of 25 in 2021 to 83.33 in 2025. Numeracy skills increased significantly from 34.38 to 80, despite fluctuations over several periods. Meanwhile, student character achievement increased gradually from 49.11 to 54.85. Based on longitudinal trends, the development of educational quality at SMP Negeri 4 Rasau Jaya is divided into three phases, namely the recovery phase (2021-2022), the strengthening phase (2022-2023), and the acceleration phase (2023-2025).

b. Dimension Trends Process

Table 4.
Longitudinal Trends in Process Dimension Indicators (2021–2025)

Indicator Code	Δ Score (2021-2022)	% Change (ΔP)	Δ Score (2022-2023)	% Change (ΔP)	Δ Score (2023-2024)	% Change (ΔP)	Δ Score (2024-2025)	% Change (ΔP)
D.1	-1.55	-2.66	-1.90	-3.35	-1.90	-3.17	2.57	4.43
D.2	8.92	21.68	10.03	20.04	10.03	19.69	0.44	0.72
D.3	5.77	14.35	9.66	21.01	9.66	21.95	-1.79	-3.34
D.4	-3.59	-5.31	4.33	6.76	4.33	6.70	-0.43	-0.62
D.8	13.35	26.48	-2.28	-3.58	-2.28	-3.24	-5.42	-7.97
D.10	-2.02	-3.77	5.25	10.19	5.25	10.34	1.12	2.00
D.6	N/A	N/A	3.34	4.79	3.34	5.17	-5.03	-7.40
Mean	4.03	7.63	4.06	7.07	4.06	7.01	-1.22	-1.74

Note: N/A suggests data is not available from the Education Report Card platform for that specific year.

Longitudinal analysis of dimensions *the process* that evaluate quality and

relevance learning at SMPN 4 Rasau Jaya for the 2021-2025 period demonstrates transformation positive and dynamic qualities. Dimensions This record development aspect instructional and sociocultural school, as summarized in Figure 3.

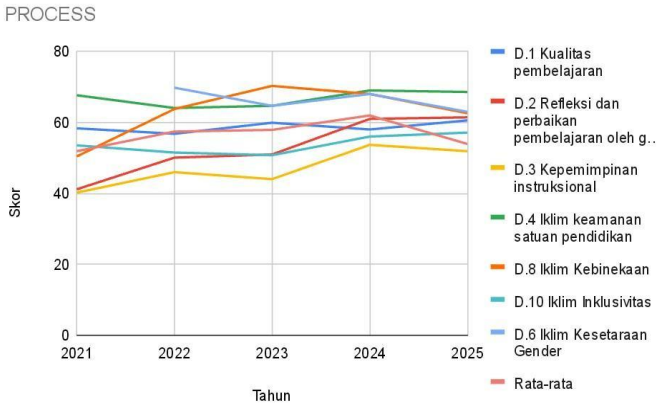

Fig. 2. Development Achievements Dimensions *Process of* SMPN 4 Rasau Jaya Period 2021-2025 (Source: Education Report, processed data)

The process dimension demonstrated an overall positive trend during the 2021–2025 period. Among all indicators, teacher reflection and learning improvement showed the most substantial increase, rising from 41.14 in 2021 to 61.42 in 2025. This finding suggests a strengthening culture of reflective practice and continuous instructional improvement among teachers at SMP Negeri 4 Rasau Jaya. Teacher reflection demonstrated the highest cumulative growth among process indicators, indicating the strengthening of a sustainable reflective teaching culture. Classroom instructional practices also improved gradually from 58.33 to 60.57, suggesting better classroom management, learning interactions, and the implementation of student-centered learning approaches. Furthermore, indicators related to school safety, inclusivity, and gender equality consistently increased, reflecting the development of a more supportive and equitable learning environment [17].

Nevertheless, instructional leadership and diversity climate indicators exhibited fluctuating patterns across observation periods, indicating that improvements in the learning process were not entirely linear. These fluctuations may reflect variations in leadership practices, policy implementation, and the readiness of school stakeholders to adapt to ongoing educational reforms. Overall, the longitudinal evidence suggests that the process dimension experienced gradual but sustainable improvement, with teacher reflective practices emerging as the most significant contributor to educational quality transformation during the study period [18].

c. Dimension Trends Input

Longitudinal analysis of the input dimension, which focuses on competency, the performance of Teachers and Education Personnel (GTK), and school governance at SMPN 4 Rasau Jaya for the 2021–2025 period, showed the most fluctuating dynamics compared to the other dimensions.

Table 5.
Longitudinal Trends in Input Dimension Indicators (2021–2025)

Indicator Code	Δ Score (2021-2022)	% Change (ΔP)	Δ Score (2022-2023)	% Change (ΔP)	Δ Score (2023-2024)	% Change (ΔP)	Δ Score (2024-2025)	% Change (ΔP)
C.3	73.33	274.95	N/A	N/A	N/A	N/A	-76.20	-100.00
E.1	11.12	20.77	1.82	28.15	1.39	2.09	-5.91	-8.71
E.2	-22.06	-56.28	15.22	88.80	8.46	26.14	-28.87	-70.73
E.3	50.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E.5	N/A	N/A	9.67	18.93	3.26	5.37	-2.35	-3.67
E.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Average	28.10	79.81	8.90	45.29	4.37	11.20	-28.33	-45.78

Note: N/A suggests data is not available from the Education Report Card platform for that specific year.

The input dimension at SMP Negeri 4 Rasau Jaya during the 2021–2025 period exhibited the greatest fluctuation among the three IPO dimensions The most substantial increase was observed in teacher training participation (C.3), which reached a peak score of 100 in 2022. Several school governance indicators also showed variations across the observation period, particularly those related to stakeholder participation, resource utilization, and school program implementation.

In general, teacher and educational staff (GTK) indicators demonstrated notable change across the study period, while governance related indicators showed both increases and decreases in different years. These fluctuations were reflected in variations in the overall input dimension score throughout the study period. Despite fluctuations, improvements in teacher development and school governance contributed positively to the strengthening of educational processes. The longitudinal trend of this dimension is illustrated in Figure 4.

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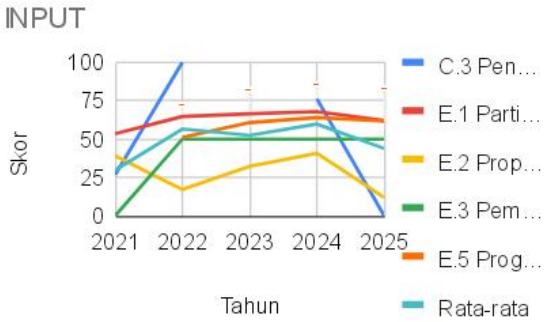

Figure 4. Development Achievements Dimensions SMPN 4 Rasau Jaya Input for the 2021–2025 Period (Source: Education Report, processed data)

The correlation analysis revealed a very strong associationship between the input and process dimensions (r = 0.92). Meanwhile, the correlations between the process and output dimensions (r = 0.30) and between the input and output dimensions (r = 0.33) were categorized as low.

d. Analysis Correlation Between IPO Dimensions

Correlation analysis was conducted to identify the strength of the relationship between the input, process, and output dimensions in the transformation of education quality at SMPN 4 Rasau Jaya for the 2021–2025 period. The correlation was calculated using the average score of each dimension for each year of longitudinal observation.

These findings suggest that improvements in teacher capacity and school governance were more directly associated with changes in instructional processes than with immediate improvements in student outcomes.

Table 6.

Correlation Coefficients Among IPO Dimensions (2021–2025)

Interdimensional Relationships	Coefficient Correlation (r)	Interpretation
input – process	0.92	Very strong
process – output	0.30	Low
input – output	0.33	Low

The correlation analysis revealed a very strong associationship between the input and process dimensions (r=0.92). This high coefficient suggests that improvements in school governance and teacher competence are directly followed by optimization in the learning process. Meanwhile, the correlations between the process and output dimensions (r=0.30) and between the input and output dimensions (r=0.33) were categorized as low, suggesting that changes in input and process do not immediately translate linearly into output achievements within this specific timeframe.

Table 7.

Cumulative Growth of Key Indicators (2021–2025)

Indicator Growth	(%)
Literacy	233.3
Numeracy	132.7
Character	11.7
Teacher Reflection	49.3
Learning Quality	3.8

IPO-Based Education Quality Transformation

The longitudinal findings indicate that education quality transformation at SMP Negeri 4 Rasau Jaya (2021-2025) is strongly influenced by the interaction between input, process, and output dimensions. Improvements in learning quality, teacher reflection, instructional leadership, and school climate contribute to increased student literacy, numeracy, and character development. Learning quality increased from 58.33 to 60.57, while literacy and numeracy improved significantly from 25 to 83.33 and 34.38 to 80, respectively. These results confirm that the learning process is a key determinant of educational outcomes [18]. The findings reinforce the central assumption of the Input–Process–Output (IPO) framework, which posits that educational outcomes are not solely determined by resource availability but by how effectively those resources are transformed into learning processes. This result is consistent with Educational Effectiveness Theory, which emphasizes that classroom-level processes act as the primary mechanism through which school inputs influence student achievement. The strong interaction observed between teacher development,

governance quality, and learning processes suggests that educational transformation should be viewed as a systemic process rather than a collection of isolated interventions. Therefore, improvements in student outcomes are more likely to emerge when institutional resources, professional capacity, and instructional practices develop simultaneously.

Teacher Development and Learning Quality

Teacher training and reflective practice were found to contribute substantially to the enhancement of instructional practices, including differentiated learning and student-centered strategies. The increase in learning quality indicators suggests that continuous professional development strengthens pedagogical capacity and enhances classroom implementation. This aligns with the view that teacher reflection is essential for sustainable instructional improvement [10],[11]. The substantial improvement in teacher reflection observed in this study supports Reflective Practice Theory, which posits that professional growth occurs when teachers continuously evaluate and adapt their instructional strategies. From the perspective of the reflective practitioner, reflective processes enable educators to bridge the gap between theoretical knowledge and classroom realities. Previous research has demonstrated that reflective teaching enhances pedagogical effectiveness, supports sustainable professional learning, and contributes to continuous instructional improvement [10], [11]. Therefore, teacher reflection should be viewed not only as an individual professional competency but also as an institutional mechanism that facilitates long-term school improvement and educational quality transformation.

School Governance and Learning Climate

Participatory and transparent school governance plays a critical role in shaping a conducive learning environment. The findings suggest that improvements in participatory governance contributed to the development of a safer and more inclusive school climate. This relationship can be summarized as:

Transparent Governance → Positive School Climate → Effective Learning

These findings emphasize that institutional management is a critical factor in sustaining learning quality improvements [15],[17],[18].

Process–Output Relationship in Education Quality

The study demonstrates a positive relationship between process quality and student outcomes, particularly in literacy, numeracy, and character development. However, the effect is not immediate, indicating a delayed impact of process improvements on output achievements. This suggests that consistent instructional quality and school environment development are required to produce sustainable learning outcomes [18].

Impact on Literacy, Numeracy, and Character

Improvements in learning quality and teacher reflection are followed by significant gains in literacy and numeracy. The relationship can be expressed as:

Learning Quality & Reflection → Literacy & Numeracy

For non-cognitive outcomes, a positive school climate contributes to character development, increasing from 49.11 to 54.85. A safe and inclusive environment strengthens values such as discipline, responsibility, and tolerance. This confirms that character education requires habituation within a supportive school ecosystem [18].

Non-Linearity of Educational Transformation

The findings indicate that education quality transformation is non-linear. Improvements in input and process variables do not always result in immediate changes in output. This reflects a time-lag effect in educational change processes. Therefore, sustained implementation and system consistency are essential to achieve long-term impact. Overall, the results support the IPO framework and Educational Effectiveness Theory, where the process dimension acts as the main mediator of educational transformation [7],[16],[18],[21].

Four-Phase Model of Educational Quality Transformation

One of the most critical findings of this study is the identification of a four-phase educational quality transformation model. Longitudinal evidence suggests that school improvement does not occur linearly but progresses through sequential stages characterized by different patterns of development in input, process, and output indicators. The first phase, recovery, reflects the school's efforts to restore learning quality and institutional capacity following educational disruptions. During this stage, improvements are primarily observed in teacher professional development and school governance indicators. The second phase, strengthening, is characterized by increased instructional quality, reflective teaching practices, and instructional leadership. Input improvements begin to translate into stronger process indicators. The third phase, stabilization, represents a period in which educational processes become more consistent and institutional practices are embedded within school culture. Although output gains may appear moderate, the process dimension demonstrates greater stability. The final phase, acceleration, occurs when sustained improvements in learning processes generate substantial gains in student outcomes, particularly literacy and numeracy achievement.

This stage reflects the cumulative effect of long-term investments in teacher capacity, governance, and learning quality. These findings suggest that educational transformation should be understood as a developmental process rather than an immediate outcome of policy interventions. The model extends the IPO framework by incorporating a temporal dimension that explains how improvements evolve across multiple years before producing significant learning outcomes.

Overall IPO Model Interpretation

The strongest relationship is observed between input and process variables ($r = 0.92$), indicating that improvements in teacher capacity, leadership, governance, and data-driven planning significantly influence instructional quality [18],[24]. However, weaker correlations between process–output ($r = 0.30$) and input–output ($r = 0.33$) indicate that educational outcomes are influenced by time-lag effects and external factors such as student readiness and family environment [25]. The strong input–process relationship supports the assumption that institutional capacity is translated into educational quality primarily through improvements in instructional processes. In relation to these structural dynamics, although the overall process dimension

experienced a minor technical decline averaging -1.22 during the 2024–2025 period due to temporary fluctuations in the diversity climate (D.8) and gender equality climate (D.6), core instructional indicators such as learning quality (D.1) consistently maintained a positive growth trend (2.57). This operational variance further explains why the overall correlation remains modest, suggesting that fundamental pedagogical practices remained resilient despite external socio-cultural or administrative adjustments within the school ecosystem. Variations during curriculum implementation also suggest that organizational readiness, leadership adaptability, and work culture significantly affect transformation outcomes [17]. Therefore, sustainable improvement requires data-driven decision-making and reflective school culture [15],[26].

Four-Phase Educational Quality Transformation Model

Based on the longitudinal evidence, this study proposes a Four-Phase Educational Quality Transformation Model that explains how educational quality develops progressively through the interaction of input, process, and output dimensions over time. The model synthesizes the observed patterns of recovery, strengthening, stabilization, and acceleration identified throughout the 2021–2025 observation period.

Longitudinal Educational Dynamics

Instructional quality, teacher reflection, and instructional leadership consistently contribute to improvements in student outcomes. Teacher reflection supports continuous pedagogical adaptation [10],[11], while instructional leadership fosters a supportive and inclusive school climate [8]. However, improvements occur gradually due to behavioral adaptation processes and external influences such as motivation and family support. Thus, sustainable educational transformation depends on continuous strengthening of reflective practice, active learning, and leadership capacity [17].

Theoretical and Practical Implications

Theoretically, this study contributes to the literature by extending the Input–Process–Output (IPO) framework through the integration of a longitudinal transformation perspective. While conventional IPO models explain the relationship between inputs, processes, and outputs, the proposed Four-Phase Educational Quality Transformation Model explains how these relationships evolve over time through recovery, strengthening, stabilization, and acceleration stages. This contribution provides a conceptual bridge between Educational Effectiveness Theory and contemporary school improvement literature by emphasizing the temporal dynamics of educational change. The study confirms the relevance of the IPO model and School Effectiveness Theory, emphasizing that the process dimension is the key mediator between input and output [8]. Educational effectiveness is driven not only by resources but also by teacher professionalism, reflective practice, and leadership quality [10],[11]. Practically, the findings highlight the importance of data-driven planning and the integration of Education Report data into school planning documents such as RKT and RKAS [14]. Schools should strengthen teacher professional development and implement transparent, accountable, and participatory governance systems. Educational transformation should be viewed as a continuous systemic process rather than short-term academic improvement [15],[27],[28].

Study Limitations

This study is limited by its single-school scope, which restricts generalizability. The use of secondary longitudinal data (2021-2025) also limits analytical depth. In addition, the study relies on descriptive analysis without inferential longitudinal modeling, making it difficult to establish causal relationships. External variables such as socio-economic background, parental support, and community environment were not included. Aggregated data also limits micro-level analysis at student and classroom levels.

CONCLUSION

This study demonstrates that the transformation of educational quality at SMP Negeri 4 Rasau Jaya during the 2021–2025 period occurred progressively and non-linearly through four sequential phases: recovery, strengthening, stabilization, and acceleration. Longitudinal analysis based on the Input–Process–Output (IPO) framework shows that improvements in teacher capacity, school governance, and instructional processes contributed to substantial gains in student learning outcomes, particularly literacy, which increased from 25.00 to 83.33 (233.3%), and numeracy, which increased from 34.38 to 80.00 (132.7%), while character development also improved gradually. Teacher reflection emerged as the strongest process indicator, increasing by 49.3%, indicating the development of a sustainable reflective teaching culture. Correlation analysis further revealed a very strong relationship between the input and process dimensions ($r = 0.92$), whereas the relationships between process and output ($r = 0.30$) and input and output ($r = 0.33$) were relatively weak, indicating the existence of a time-lag effect before improvements in institutional capacity are reflected in student achievement. These findings confirm that the quality of the learning process serves as the principal mediator of educational transformation and that sustainable school improvement requires continuous, data-driven enhancement of teacher professionalism, school governance, and instructional quality over multiple years.

BIBLIOGRAPHY

[1] P. Astuti and T. Haryati, “Mapping the Quality of Education Based on the Achievements of the 2024 Education Report at the Medono State Elementary School,” *JGK (Jurnal Guru Kita)*, vol. 9, no. 2, pp. 282–295, Mar. 2025, doi: 10.24114/jgk.v9i2.64395.

[2] Ministry of Education, Culture, Research and Technology, *Guide to Using the Education Report and Data-Based Planning Platform (PDB) for Primary and Secondary Education and One-Roof Education*. Jakarta, Indonesia, 2023.

[3] D. Shintia, M. Asbari, F. Khairunisa, and N. Azizah, “Indonesian education report: Quo vadis quality of Indonesian education?,” *Journal of Student Research*, vol. 2, no. 6, pp. 2020–2023, 2023.

[4] T. T. D. Susanto, L. Syafruddin, and S. F. Abdullah, “Improving the quality of decision making through data-based management in schools,” *J. Madinasika*, vol. 6, no. 2, pp. 235–250, 2025, doi: 10.31949/madinasika.v6i2.13723.

[5] Curriculum and Assessment Standards Agency, “Indonesian Education Report 2025,” Ministry of Education, Culture, Research and Technology, pp. 1–25, 2024. [Online]. Available: https://pusatinformasi.raporpendidikan.kemdikbud.go.id/hc/en-us/articles/6545029651609-Tentang-Rapor-Pendidikan-dan-Rapor-Mutu

[6] X. Zhao and S. Lertlit, "Assessing the Input-Process-Output model for quality management in ASEAN universities: Perspectives of Chinese students abroad," *J. Ilmiah Ilmu Terapan Univ. Jambi*, vol. 9, no. 2, pp. 810–822, Jun. 2025, doi: 10.22437/jiituj.v9i2.41668.

[7] L. Kyriakides and A. Panayiotou, "Using educational effectiveness research for promoting quality of teaching: The dynamic approach to teacher and school improvement," in *Effective Teaching Around the World: Theory, Empirical, Methodological and Practical Insights*, Cham, Switzerland: Springer, 2023, pp. 7–27, doi: 10.1007/978-3-031-31678-4_2.

[8] S. Belay, S. Melese, and A. Seifu, "Advancing teachers' human capital through effective leadership and institutional safety: Mediating effects of professional learning and teaching climate," *Cogent Educ.*, vol. 8, no. 1, p. 1912488, 2021, doi: 10.1080/2331186X.2021.1912488.

[9] J. M. Conejero, J. C. Preciado, A. E. Prieto, M. C. Bas, and V. J. Bolós, "Applying data driven decision making to rank vocational and educational training programs with TOPSIS," *Decis. Support Syst.*, vol. 142, p. 113470, Mar. 2021, doi: 10.1016/j.dss.2020.113470.

[10] M. Saimon and F. Mtenzi, "Reflective practices as the cornerstone for teacher development in the 21st century: Lessons from educators' action research projects," *J. Res. Policy Pract. Teach. Teach. Educ.*, vol. 11, no. 2, pp. 88–100, 2021, doi: 10.37134/jrpptte.vol11.2.7.2021.

[11] Z. Chen and R. Chen, "Exploring the key influencing factors on teachers' reflective practice skills for sustainable learning: A mixed methods study," *Int. J. Environ. Res. Public Health*, vol. 19, no. 18, p. 11630, 2022, doi: 10.3390/ijerph191811630.

[12] B. Pei *et al.*, "LearningViz: A dashboard for visualizing, analyzing and closing learning performance gaps—A case study approach," *Smart Learn. Environ.*, vol. 11, no. 1, pp. 1–25, 2024, doi: 10.1186/s40561-024-00346-1.

[13] T. Susnjak, G. S. Ramaswami, and A. Mathrani, "Learning analytics dashboard: A tool for providing actionable insights to learners," *Int. J. Educ. Technol. High. Educ.*, vol. 19, no. 1, p. 12, 2022, doi: 10.1186/s41239-021-00313-7.

[14] S. Hidayat, D. Pratomo, D. W. Piandani, and A. Fitriadi, "Financial management in improving school quality based on educational reports," *J. Manaj. dan Pendidik.*, vol. 4, no. 2, pp. 239–248, 2024. [Online]. Available: https://jurnal.fkip.unmul.ac.id/index.php/impian/article/view/4334

[15] C.-H. Adolfsson and J. Håkansson, "Data analysis for school improvement within coupled local school systems: Which data and with what purposes?," *Leadersh. Policy Sch.*, vol. 22, no. 3, pp. 714–727, Jul. 2023, doi: 10.1080/15700763.2021.2010101.

[16] M. Ozdogru *et al.*, "How does teacher self-efficacy mediate the relationship between student outcomes and principal leadership for learning? Results from meta-analytic structural equation modeling (MASEM)," *Acta Psychol.*, vol. 258, p. 105144, Aug. 2025, doi: 10.1016/j.actpsy.2025.105144.

[17] T. Wang, D. F. Olivier, and P. Chen, "Creating individual and organizational readiness for change: Conceptualization of system readiness for change in school education," *Int. J. Leadersh. Educ.*, vol. 26, no. 6, pp. 1037–1061, Nov. 2023, doi: 10.1080/13603124.2020.1818131.

[18] Š. Javornik and E. Klemenčič Mirazchiyski, "Factors contributing to school effectiveness: A systematic literature review," *Eur. J. Investig. Health Psychol.*

Educ., vol. 13, no. 10, pp. 2095–2111, Sep. 2023, doi: 10.3390/ejihpe13100148.

[19] W. Admiraal, W. Schenke, L. de Jong, Y. Emmelot, and H. Sligte, "Schools as professional learning communities: What can schools do to support professional development of their teachers?," *Prof. Dev. Educ.*, vol. 47, no. 4, pp. 684–698, Aug. 2021, doi: 10.1080/19415257.2019.1665573.

[20] H. Aifan, "Implementing a project-based collaborative learning approach using PowerPoint to improve students' 21st-century skills," *E-Learning Digit. Media*, vol. 19, no. 3, pp. 258–273, May 2022, doi: 10.1177/20427530211030642.

[21] Z. Yılmaz Bodur, A. F. Kılıç, and S. Aktan, "Perceived instructional environment and English achievement: The mediating role of student engagement," *J. Educ. Res.*, vol. 116, no. 2, pp. 100–112, Mar. 2023, doi: 10.1080/00220671.2023.2203093.

[22] Z. Salma, M. Nasution, and M. A. Panjaitan, "Development of teacher professionalism in the digital era," *Tarb. Bil Qalam J.*, vol. 8, no. 1, pp. 1–10, Jun. 2024, doi: 10.58822/tbq.v8i1.200.

[23] R. Kaliisa and J. A. Dolonen, "CADA: A teacher-facing learning analytics dashboard to foster teachers' awareness of students' participation and discourse patterns in online discussions," *Technol. Knowl. Learn.*, vol. 28, no. 3, pp. 937–958, 2023, doi: 10.1007/s10758-022-09598-7.

[24] D. P. Hardiyanto, I. Istaryatiningtias, I. E. Khuluqo, and I. Sandra, "Data-based planning analysis for improving the quality of private elementary schools," *Naradidik J. Educ. Pedagog.*, vol. 4, no. 3, pp. 468–476, Sep. 2025, doi: 10.24036/nara.v4i3.365.

[25] M. Sun, A. I. Kennedy, and S. Loeb, "The longitudinal effects of school improvement grants," *Educ. Eval. Policy Anal.*, vol. 43, no. 4, pp. 647–667, Dec. 2021, doi: 10.3102/01623737211012440.

[26] G. A. Koh, H. Askell-Williams, and S. Barr, "Sustaining school improvement initiatives: Advice from educational leaders," *Sch. Eff. Sch. Improv.*, vol. 34, no. 3, pp. 298–330, Jul. 2023, doi: 10.1080/09243453.2023.2190130.

[27] M. Syukri and Muammar, "Continuous quality improvement and quality standards," *VISA J. Vis. Ideas*, vol. 4, no. 2, pp. 15–25, Apr. 2024, doi: 10.47467/visa.v4i2.1579.

[28] S. Viano and M. M. Yurkofsky, "Adapting a school improvement partnership before and during COVID-19: A case study of the resilience of improvement science to complexity," *J. Educ. Adm.*, vol. 62, no. 6, pp. 623–637, Nov. 2024, doi: 10.1108/JEA-10-2023-0257.