



Modeling Inclusive Learning Participation: An Evaluative Study on Teacher Interpersonal Capacity and School Climate Dynamics

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Abstract

Despite progressive inclusive education policies in Indonesia, the actual learning engagement of students with disabilities (SWD) remains a critical instructional challenge due to the gap between physical attendance and meaningful classroom participation. This study aims to analyze the quantitative influence of teachers' social competence and an inclusive school climate on the learning participation of SWD in elementary schools across Metro City. Utilizing a quantitative *ex post facto* design, data were collected via validated four-point Likert scale questionnaires from a purposive sample of 30 SWD. Multiple linear regression analysis revealed that teachers' social competence significantly and positively influences learning participation ($\beta = 0.469 = 0.469$; $p = 0.002$), and an inclusive school climate likewise yields a significant positive effect ($\beta = 0.435$; $p = 0.004$). Simultaneously, both variables synergistically explain 63.2% of the variance in students' learning participation ($R^2 = 0.632$; $F = 23.165$; $p = 0.000$). These findings conclude that optimizing instructional environments for SWD requires a holistic socio-organizational framework that integrates teachers' interpersonal empathy with supportive, safe, and diverse institutional structures. Practically, this study implies an urgent need for empathy-based professional teacher development and responsive school policies that shift the evaluation paradigm from mere physical presence to high-quality pedagogical engagement.

ABSTRAK

Meskipun kebijakan pendidikan inklusif yang progresif telah diterapkan di Indonesia, keterlibatan belajar siswa penyandang disabilitas (SWD) yang sebenarnya masih menjadi tantangan instruksional yang kritis karena adanya kesenjangan antara kehadiran fisik dan partisipasi kelas yang bermakna. Studi ini bertujuan untuk menganalisis pengaruh kuantitatif kompetensi sosial guru dan iklim sekolah inklusif terhadap partisipasi belajar SWD di sekolah dasar di seluruh Metro City. Dengan menggunakan desain kuantitatif *ex post facto*, data dikumpulkan melalui kuesioner skala Likert empat poin yang telah divalidasi dari sampel purposif sebanyak 30 SWD. Analisis regresi linier berganda menunjukkan bahwa kompetensi sosial guru secara signifikan dan positif memengaruhi partisipasi belajar ($\beta = 0.469 = 0.469$; $p = 0.002$), dan iklim sekolah inklusif juga memberikan pengaruh positif yang signifikan ($\beta = 0.435$; $p = 0.004$). Secara simultan, kedua variabel tersebut secara sinergis menjelaskan 63,2% varians dalam partisipasi belajar siswa ($R^2 = 0,632$; $F = 23,165$; $p = 0,000$). Temuan ini menyimpulkan bahwa optimalisasi lingkungan pembelajaran untuk siswa penyandang disabilitas membutuhkan kerangka kerja sosial-organisasional holistik yang mengintegrasikan empati interpersonal guru dengan struktur kelembagaan yang mendukung, aman, dan beragam. Secara praktis, studi ini menyiratkan kebutuhan mendesak akan pengembangan profesional guru berbasis empati dan kebijakan sekolah yang responsif yang menggeser paradigma evaluasi dari sekadar kehadiran fisik ke keterlibatan pedagogis berkualitas tinggi.

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Kata kunci: Kompetensi Profesional Guru; Iklim Sekolah Inklusif; Keterlibatan Belajar; Pedagogi Inklusif; Siswa Penyandang Disabilitas.

The global paradigm of inclusive education has emerged as a cornerstone of international educational policy, heavily championed by supranational bodies to ensure equitable educational access for all learners regardless of their biological or psychological conditions (Ainscow, 2020; UNESCO, 2017). However, contemporary instructional science demonstrates that the primary bottleneck in implementing authentic inclusive frameworks resides not merely within structural or physical modifications, but profoundly within the qualitative parameters of classroom learning engagement among students with disabilities (Fredricks et al., 2004; Wang & Degol, 2019). High-quality engagement demands a complex multidimensional convergence of behavioral readiness, socio-emotional safety, and active cognitive investment during standard classroom interactions (Kolleck, 2025; Wang et al., 2019). When educational institutions reduce the metric of successful inclusion to superficial parameters like enrollment or physical attendance, they inadvertently perpetuate a form of covert exclusion that marginalizes vulnerable students within the regular learning ecosystem.

In the Indonesian context, the structural push toward pedagogical equity has been normatively codified through national legal instruments such as Law Number 8 of 2016 concerning Persons with Disabilities and the recent ministerial decree Permendikdasmen Number 1 of 2025 targeting civil servant teacher redistribution alongside inclusive educational reinforcement (Ilmania & Utami, 2023; Widinarsih, 2019). Despite these progressive policy pathways rolling out actively into the current 2026 academic year, a critical operational problem manifests as elementary schools continuously grapple with multifaceted implementation barriers (Nurjanah et al., 2025; Sari et al., 2025). Empirical studies across different municipal zones highlight that the classroom participation of students with disabilities remains severely constrained by a mixture of weak relational support, unsupportive psychosocial environments, and a systemic lack of adaptive educational infrastructure. This instructional friction produces an operational chasm where administrative compliance fails to translate into actual, meaningful, and qualitative learning participation inside regular classrooms.

This instructional mismatch is clearly illustrated by local monitoring data from the Metro City Inclusion Working Group gathered between February and April 2025, which confirmed that out of 50 targeted public and private elementary schools, only 26 institutions successfully accommodated students with disabilities (Nurjanah et al., 2025; Ulum et al., 2025). A preliminary survey evaluating 26 teachers within these active inclusive clusters revealed a glaring empirical paradox regarding student participation rates. While the physical attendance of students with disabilities was recorded at an impressive 89% and their perceived school safety reached 83%, their active behavioral engagement during lesson delivery—such as asking analytical questions, voicing independent opinions, or joining peer discussions—stagnated at a minimal 32%. Furthermore, active student attention span during core teacher explanation was capped at 66%, and structured institutional support targeting active interaction was rated low at 45%, showing a distinct gap between classroom presence and real engagement.

A broad body of classical and contemporary pedagogical literature has thoroughly examined the separate components of inclusive classroom environments, yet these earlier studies suffer from noticeable limitations in scope and variable isolation. Investigations regarding instructional behaviors have been comprehensively documented by several researchers who emphasize individual teacher performance (Kunandar, 2016; Mulyasa, 2019; Usman, 2017). Concurrently, academic inquiries focusing primarily on the sociological dynamics of special education environments have been carried out by another group of scholars who look at macro school characteristics (Ainscow et al., 2019; Avramidis & Norwich, 2017; Loreman et al., 2015). Additionally, independent analyses concerning localized instructional strategies and general socio-pedagogical classrooms have been executed across various Indonesian territories (Agustinus et al., 2024; Beazidou, 2023; Wihartanti, 2022). Critically examining these distinct lines of research reveals a clear weakness: they mostly treat teacher performance and institutional conditions as isolated factors, thereby overlooking the complex interactive dynamics that actually shape a student's daily classroom experience.

The core research gap emerges from this systematic fragmentation in literature, as traditional educational investigations rarely analyze how professional interpersonal traits and school-wide conditions work together to influence learning engagement (Florian & Black-Hawkins, 2011; Sharma & Loreman, 2019). This conceptual separation ignores the foundational premise that a teacher's pedagogical or communicative skills cannot operate at peak efficiency if the broader institutional culture rejects diversity or lacks structural flexibility. Localized data from the Metro City survey supports this argument, suggesting that the poor 32% active participation rate is heavily driven by a negative interaction between underdeveloped teacher empathy (measured at 58%) and low institutional support for active classroom inclusion (measured at 45%). Consequently, high physical attendance

(89%) and basic physical safety (83%) do not automatically guarantee meaningful student engagement, identifying a major gap that single-variable studies cannot adequately address or resolve.

To address this empirical gap, this study adopts Vygotsky's classic Socio-Cultural Interactive Theory as its foundational framework, which posits that optimal cognitive development occurs through cooperative interaction within a protective zone managed by a knowledgeable guide (Sanjaya, 2016; Vygotsky, 1978). This micro-level relational perspective is balanced by Bronfenbrenner's Ecological Systems Theory, which explains that individual behavioral outcomes are shaped by the multi-layered interactions between immediate microsystems and broader macrosystemic climates (Bronfenbrenner, 1994; Desmita, 2017). By merging these two theoretical lenses, student classroom engagement is framed not as an isolated trait, but as a direct outcome of combined environmental influences. This theoretical integration provides a strong analytical tool to evaluate how personal teaching skills and institutional settings work together to create an accessible learning environment for students with exceptional needs.

Operating within this dual theoretical framework, this study utilizes three core concepts: teachers' social competence (X₁), inclusive school climate (X₂), and learning participation (Y) (Ghozali, 2018; Sugiyono, 2025). Teachers' social competence is defined by essential indicators including empathetic communication, inclusive attitudes, and constructive interactions, as outlined in Teacher Competency Law No. 14 of 2005 (Peraturan Menteri Pendidikan Nasional No. 16, 2007; Mulyasa, 2019). Inclusive school climate is assessed through the quality of social relationships, institutional safety, and the accessibility of specialized learning facilities (Hoy & Miskel, 2013; Ulum et al., 2025). Finally, learning participation is measured as a multi-dimensional construct covering behavioral, socio-emotional, and cognitive dimensions during lessons (Fredricks et al., 2004; Wang et al., 2019). These concepts are evaluated using a strict four-point Likert scale to prevent central tendency bias, ensuring highly reliable data from the primary participants (Arikunto, 2019; Ghozali, 2018).

The scientific value and unique focus of this research lie in its comprehensive approach to analyzing special education through a socio-organizational lens within a resource-constrained municipal setting during the 2026 policy shift (Poon-McBrayer, 2021; de Boer et al., 2020). While previous studies often rely on secondary teacher perceptions, this study directly involves students with disabilities as primary respondents, utilizing ethical and inclusive data-collection methods supported by certified special educators (Sirampun et al., 2025; Sugiyono, 2025). Furthermore, examining these dynamics in Metro City offers highly relevant insights into how local schools adapt to the regional enforcement of Permendikdasmen No. 1 of 2025. This focus shifts the inclusive education conversation from basic classroom placement to high-quality pedagogical engagement, providing a valuable evidence-based model to guide professional development and regional educational policies.

Conclusively, the primary objective of this investigation is to systematically examine and map the combined influences shaping inclusive education within elementary schools across Metro City (Creswell, 2014; Sugiyono, 2025). Specifically, this research aims to: (1) provide a detailed descriptive analysis of teachers' social competence, inclusive school climate, and the learning participation of students with disabilities; (2) determine the specific impact of teachers' social competence on learning participation; (3) evaluate the direct effect of an inclusive school climate on learning participation; and (4) analyze the simultaneous, combined impact of both factors on student engagement. Based on these objectives, three central hypotheses are proposed: H₁ states that teachers' social competence has a significant positive effect on learning participation; H₂ posits that an inclusive school climate significantly enhances learning participation; and H₃ proposes that both independent variables work together simultaneously to drive student engagement.

RESEARCH METHODS

To systematically examine the relationship between the predictors and the criterion variable within inclusive education frameworks, a structured methodological design is essential. This section comprehensively delineates the operational layout, participant selection, instrument composition, psychometric properties, data collection procedures, and analytical approaches utilized to address the core research questions.

2.1 Research Design

The study adopts a non-experimental quantitative approach structured through an ex post facto causal-comparative research design. This specialized design is fundamentally selected because the independent variables—teachers' social competence (X₁) and inclusive school climate (X₂) have already manifested naturally within the institutional environments and cannot be

manipulated or artificially induced by the investigators. Rather than merely restricting the inquiry to descriptive reporting, this architecture empowers the research to test empirical hypotheses, evaluate relational paths, and determine the simultaneous explanatory magnitude of the predictors on the learning engagement of students with disabilities (SWD) (Y).

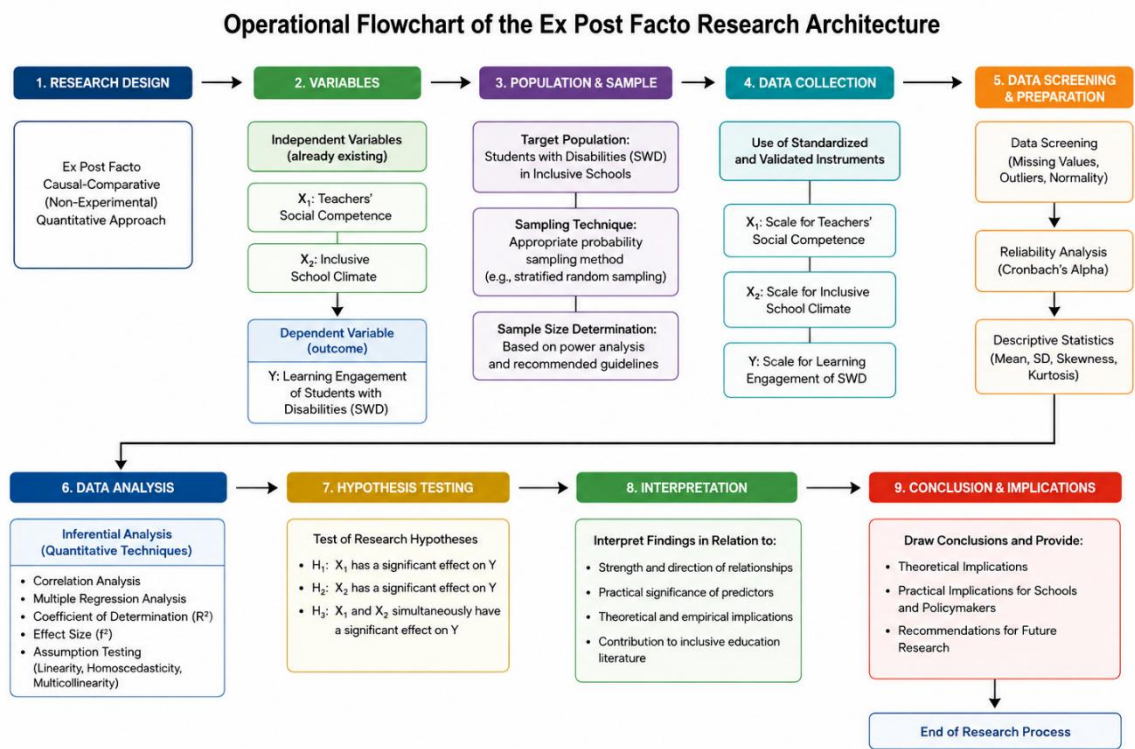


Figure 1. Operational Flowchart of the Ex Post Facto Research Architecture

The structural flowchart depicted in Figure 1 illustrates how the dual paths of individual interpersonal dynamics and organizational structures converge systematically. To maximize analytical clarity, a structured matrix detailing the precise alignment between the research questions and their matching quantitative configurations is presented in Table 1.

Table 1. Research Questions and Corresponding Quantitative Analysis Matrix

No	Research Question	Type of Analysis	Operational Target
1	To what extent do teachers' social competence (X ₁) and inclusive school climate (X ₂) describe the state of learning engagement (Y)?	Descriptive Statistics	Mean, Median, Standard Deviation, Minimum and Maximum Scores
2	Does teachers' social competence (X ₁) exert a significant positive influence on the learning engagement (Y) of SWD?	Multiple Linear Regression (Partial t-test)	Partial Regression Coefficient (β), t-statistic, and Significance Value (p)
3	Does an inclusive school climate (X ₂) yield a significant positive effect on the learning engagement (Y) of SWD?	Multiple Linear Regression (Partial t-test)	Partial Regression Coefficient (β), t-statistic, and Significance Value (p)
4	Do teachers' social competence (X ₁) and inclusive school climate (X ₂) simultaneously influence learning engagement (Y)?	Multiple Linear Regression (Simultan F-test)	Coefficient of Determination (R ²), F-statistic, and Overall Model Significance

2.2 Participants and Research Location

The investigation was systematically carried out across both public and private elementary educational institutions implementing

inclusive school models in Metro City, Lampung Province, during the April 2026 academic cycle. The target population encompassed all elementary-stage students with disabilities officially registered within the national *Data Pokok Pendidikan* (Dapodik) database for the 2025/2026 academic year, totaling 56 individuals distributed across five separate sub-districts. Given the specific logistical constraints and the distinct cognitive profiles of the population, a purposive sampling strategy was employed based on three explicit criteria: official administrative registration as an SWD, the cognitive capability to actively respond to items under adaptive guidance, and verified parental consent to serve as respondents.

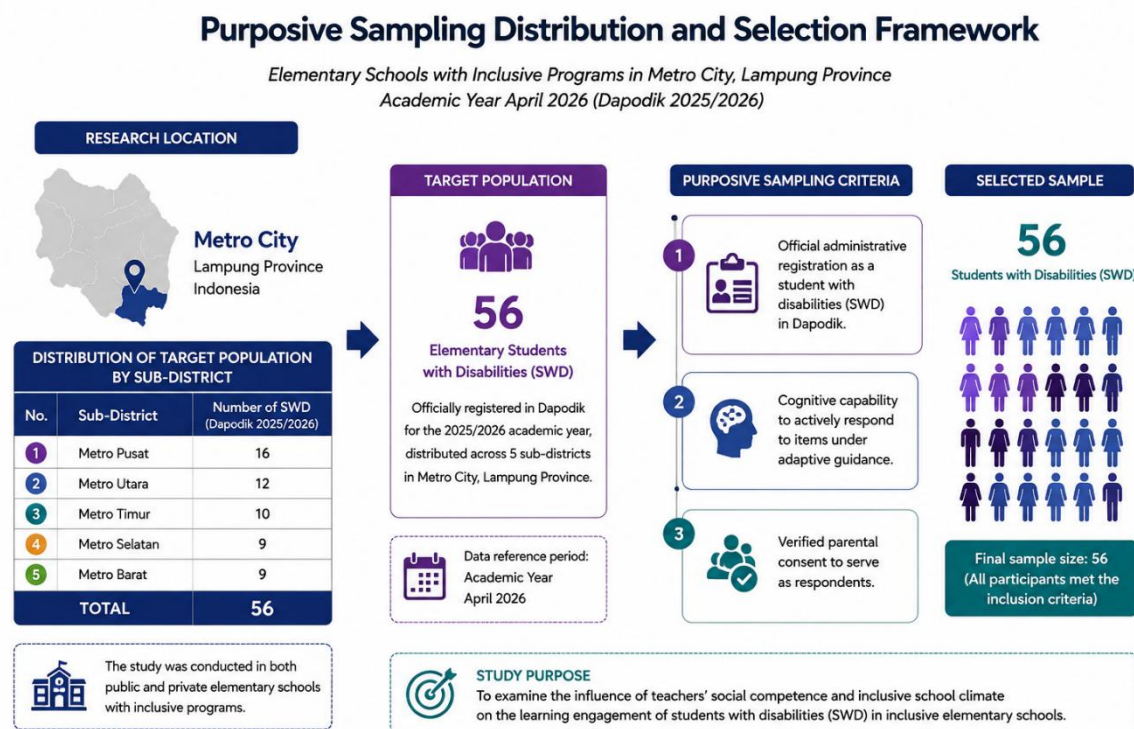


Figure 2. Purposive Sampling Distribution and Selection Framework

The structural sampling path detailed in Figure 2 illustrates the reduction from the broader macro-population to the final responsive focus group. This rigorous filtering resulted in an operational sample size of 30 students with disabilities, which completely satisfies the statistical requirements for multi-variable regression setups ($n \geq 30 + k$). To provide deep demographic contextualization, the comprehensive ecological distribution of the target student population across Metro City is systematically detailed in Table 2.

Table 2. Geographic and Institutional Distribution of Elementary SWD Population

No	Sub-district (Kecamatan)	Total Student Enrollment	General	Registered SWD Population (N)	Final Sample Selection (n)	Percentage of Sample (%)
1	Central Metro (Metro Pusat)	5,133		15	11	36.67
2	North Metro (Metro Utara)	2,502		6	2	6.67
3	West Metro (Metro Barat)	3,375		10	9	30.00
4	East Metro (Metro Timur)	3,879		19	6	20.00
5	South Metro (Metro Selatan)	1,713		6	2	6.67
-	Total Accumulation	16,602		56	30	100.00

2.3 Operational Definition of Variables

To ensure precise measurement boundaries, the latent constructs are translated into concrete behavioral indicators. Learning

engagement (Y) is defined as a multidimensional construct capturing active student involvement across behavioral, social, emotional, and cognitive domains within the educational environment. Teachers' social competence (X1) encompasses the interpersonal capacities required to build empathetic communication, demonstrate inclusive attitudes, and manage positive classroom interactions. Lastly, an inclusive school climate (X2) measures the socio-organizational quality of the institution, including safety, welcoming social atmospheres, and structural adjustments for diversity.

2.4 Research Instrument

The primary data collection tool consisted of a set of structured, four-point Likert-scale questionnaires specifically designed without a neutral mid-point category to prevent central tendency bias among respondents. The scoring system follows a strict 1–4 range, where higher values indicate more favorable socio-organizational and behavioral conditions. The instrument items were organized around specific behavioral and environmental dimensions derived directly from national professional guidelines and established educational frameworks. The detailed distribution of items across structural indicators and target sub-indicators is systematically outlined in Table 3.

Table 3. Comprehensive Structural Indicator and Item Specification Matrix							
Operational Variable		Core Assessment Dimension	Target Behavioral Sub-Indicator	Initial Items	Deleted Items	Final Items	
Teachers' Social Competence (X1)		Interpersonal Exchange	Adaptive and Empathetic Communication	4	1 (Item 2)	3	
		Inclusive Disposition	Equity-based Orientation & Non-discrimination	4	0	4	
		Social Connection	Supportive Peer-Teacher Interaction Management	7	0	7	
Inclusive School Climate (X2)		Institutional Structure	Accessibility of Physical & Instructional Facilities	4	0	4	
		Psychosocial Vibe	Safe Environment & Welcoming Social Atmosphere	6	1 (Item 3)	5	
		Participatory Support	Structural Reinforcement for Active Engagement	7	0	7	
Learning Engagement (Y)		Actionable Response	Attendance, Physical Readiness, & Focus	4	0	4	
		Affective Domain	Learning Interest, Enthusiasm, & Confidence	4	0	4	
		Intellectual Domain	Task Completion & Deep Processing	7	0	7	
Total Instrument Items		-	All Combined Dimensions	47	2	45	

2.5 Validity and Reliability

Before full field deployment, the psychological instrument underwent rigorous psychometric evaluation using Pearson Product-Moment correlation for construct validity and Cronbach's Alpha for internal consistency. The standard critical value was set at $r_{table} = 0.444$, calculated with a two-tailed significance threshold of $\alpha = 0.05$ and degrees of freedom $df = 28$. The empirical evaluation revealed that 2 out of the original 47 items failed to reach the critical validation threshold (X1-P2 with $r = 0.402$; X2-P3 with $r = 0.000$) and were removed from the scales. The remaining 45 valid items displayed strong item-to-total correlations, with coefficients ranging from 0.444 to 0.917 ($p < 0.05$). Reliability assessments confirmed exceptional internal stability across all targeted scales, as summarized in Table 4.

Table 4. Psychometric Validity Index and Reliability Attributes					
Assessed Variable Scale	Initial Items	Valid Items	Range of Validity Coefficients (rcount)	Cronbach's Alpha (α)	Internal Consistency Evaluation
Teachers' Social Competence (X1)	15	14	0.451 - 0.884	0.833	Very High / Extremely Stable
Inclusive School Climate (X2)	17	16	0.444 - 0.917	0.919	Excellent / Strong Stability

Student Learning Engagement (Y)	15	15	0.492 - 0.895	0.895	Highly Consistent
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2.6 Data Collection Procedure and Ethical Adjustments

Data collection was executed on-site through face-to-face questionnaire administrations. To match the diverse needs of the participants, students completed the instruments with individual guidance from their classroom instructors or specialized special education teachers (*Guru Pendamping Khusus*). This approach ensured that language styles, layout presentations, and response options were adjusted to each child's specific profile. This structural support was managed carefully to prevent biasing the children's choices, thus preserving response objectivity. To supplement the primary data, secondary administrative records were collected, including Dapodik enrollment logs and clinical psychological profiles, providing a complete overview of the students' backgrounds.

2.7 Data Analysis Technique

The statistical analysis followed a structured three-tiered framework executed via SPSS version 27 at a baseline significance level of $\alpha = 0.05$. First, descriptive statistics were applied to determine parameters including mean, median, standard deviation, minimum, and maximum values. Second, classical assumption tests were performed to verify that the dataset met regression requirements:

1. Normality: Tested via the Kolmogorov-Smirnov method to ensure a normal residual distribution ($p > 0.05$).
2. Linearity: Evaluated through the standard *Test for Linearity* deviation index ($p > 0.05$).
3. Multicollinearity: Checked using Variance Inflation Factor ($VIF < 10$) and Tolerance indices (> 0.10).
4. Heteroscedasticity: Examined through scatterplot analysis to confirm uniform residual variances.

Third, hypothesis testing was conducted using multiple linear regression based on the following equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

This equation evaluates the partial effects of the variables via t-tests, checks the overall model fit using F-tests, and evaluates the explanatory power of the model using the coefficient of determination (R^2).

RESULTS RESEARCH

This section presents the empirical findings regarding the synergistic impact of teachers' social competence (X_1) and an inclusive school climate (X_2) on the learning engagement of students with disabilities (SWD) (Y). The findings are organized hierarchically to address each research objective and operational dimension systematically.

3.1 Demographic Profiles and Contextual Characteristics of Respondents

The assessment involved a purposive sample of $n = 30$ students with disabilities across inclusive elementary institutions in Metro City. The micro-demographic details are extracted directly from institutional records and psychological profiles. The ecological landscape demonstrates a highly heterogeneous environment.

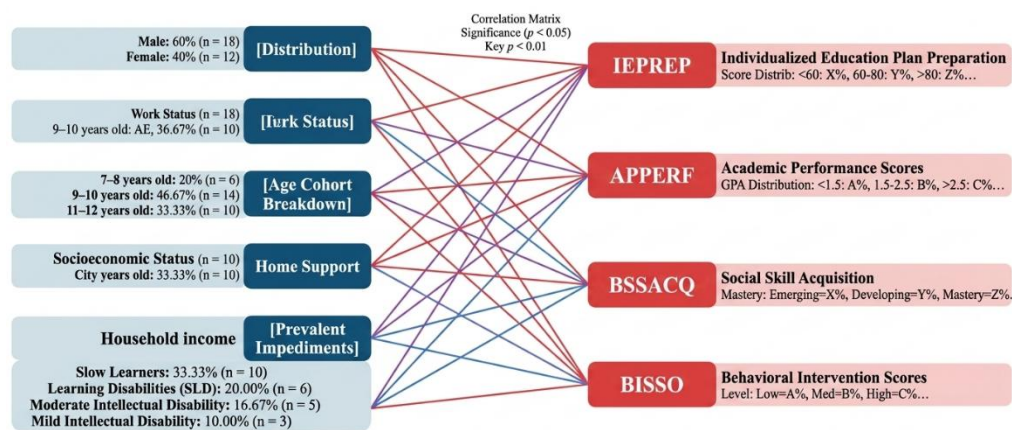


Figure 3. Hierarchy of Respondent Demographics and Cognitive Profiles

Figure 3 maps the structural traits of the target participant cohort. Table 5 lists the exact frequencies and percentages of the demographic parameters.

Table 5. Detailed Demographic Profiles of Respondents (N=30)

PROFILE METRIC	CATEGORY CLASSIFICATION	FREQUENCY (N)	PERCENTAGE ALLOCATION (%)
GENDER ASSIGNMENT	Male	18	60.00
	Female	12	40.00
AGE DISTRIBUTION	7–8 Years Old	6	20.00
	9–10 Years Old	14	46.67
	11–12 Years Old	10	33.33
PRIMARY DISABILITY PROFILE	Slow Learner	10	33.33
	Specific Learning Disability (SLD)	6	20.00
	Moderate Intellectual Disability (<i>Grahita Sedang</i>)	5	16.67
	Mild Intellectual Disability (<i>Grahita Ringan</i>)	3	10.00
	Attention Deficit Hyperactivity Disorder (ADHD)	2	6.67
	Mild Autism Spectrum Disorder (ASD)	1	3.33
	Hearing Impairment (<i>Rungu</i>)	1	3.33
	Concomitant Slow Learner–Cerebral Palsy	1	3.33
	Severe Learning Difficulty	1	3.33

3.2 Descriptive Statistics of Research Variables

The descriptive parameters for the predictors and criterion variables establish a foundational overview of the metrics. Mean scores, minimum values, maximum values, and standard deviations were computed.

Table 6. Descriptive Summary of Empirical Scales (N=30)

TARGET VARIABLE	RESEARCH	SAMPLE METRIC (N)	MINIMUM SCORE	MAXIMUM SCORE	EMPIRICAL MEAN	STANDARD DEVIATION (SD)
TEACHERS' COMPETENCE (X1)	SOCIAL	30	29	55	46.87	5.563
INCLUSIVE CLIMATE (X2)	SCHOOL	30	32	56	46.33	5.744
STUDENT LEARNING ENGAGEMENT (Y)		30	29	52	42.80	6.860

The standard deviation for Student Learning Engagement (SDY = 6.860) is higher than those of the individual predictors (SDX1 = 5.563 and SDX2 = 5.744). This indicates a wider dispersion and greater variation in engagement scores among the sampled SWD.

3.3 Classical Assumption Tests

To ensure the statistical validity of the multiple linear regression model, classical assumption verifications were conducted.

- Normality Assumption: The One-Sample Kolmogorov-Smirnov test yielded an asymptotic significance value of $p = 0.200$ ($p > 0.05$). This confirms that the unstandardized residuals follow a normal distribution.
- Linearity Assumption: The Deviation from Linearity test indicated linear relationships for both paths (Y over X1: $p = 0.958 > 0.05$; Y over X2: $p = 0.837 > 0.05$).
- Multicollinearity Assumption: The Tolerance index was 0.703 (> 0.10) and the Variance Inflation Factor (VIF) was 1.423 (< 10.0). These results indicate the absence of multicollinearity between the predictors.
- Heteroscedasticity Assumption: Visual examination of the residual scatterplot showed a random, even distribution of points above and below the zero line without any distinct geometric patterns, confirming homoscedasticity.

3.4 Hypothesis Testing and Multiple Linear Regression Analysis

3.4.1 Partial Effects Evaluation (t-Test)

The partial regression coefficients were evaluated to test the individual hypotheses (H1 and H2).

Table 7. Multi-Variable Linear Regression and Partial t-Test Estimations

Independent Predictor	Unstandardized B	Standard Error	Beta (β)	Empirical t-Value	Significance Level (p)
Intercept Constant (α)	12.333	4.501	—	2.740	0.011
Teachers' Social Competence (X1)	0.344	0.102	0.469	3.364	0.002
Inclusive School Climate (X2)	0.310	0.099	0.435	3.125	0.004

The empirical paths are structured into the following regression equation:

$$Y = 12.333 + 0.344X_1 + 0.310X_2 + e$$

- Path 1 ($X_1 \rightarrow Y$): Teachers' social competence significantly predicts learning engagement ($\beta = 0.469$, $t = 3.364$, $p = 0.002 < 0.05$). This confirms H₁, indicating that improvements in a teacher's interpersonal abilities are associated with higher learning engagement among SWD.
- Path 2 ($X_2 \rightarrow Y$): The inclusive school climate also significantly predicts student engagement ($\beta = 0.435$, $t = 3.125$, $p = 0.004 < 0.05$). This confirms H₂, demonstrating that a more supportive school climate relates to increased classroom

engagement.

3.4.2 Simultaneous Effects Evaluation (F-Test)

To test the simultaneous hypothesis (H3), an Analysis of Variance (ANOVA) was conducted.

Table 8. Analysis of Variance (ANOVA) for Simultaneous Performance Evaluation

Source of Variation Model	Sum of Squares	Degrees of Freedom (df)	Mean Square Error	Computed F- Ratio	Model Sign. (p)
Regression Explanation	305.542	2	152.771	23.165	0.000 ^a
Residual Noise	178.061	27	6.595	—	—
Total Coordinated Variance	483.603	29	—	—	—

The simultaneous analysis yielded an F-statistic of 23.165 with a significance value of $p = 0.000 < 0.001$. This supports H3, indicating that teachers' social competence and an inclusive school climate simultaneously exert a significant positive effect on the learning engagement of SWD.

3.4.3 Coefficient of Determination (R^2)

The model's overall explanatory power was assessed using the coefficient of determination.

Table 9. Model Fit and Coefficient of Determination Summary

Target Model Run	Multiple Correlation (R)	Coefficient of Determination (R^2)	Adjusted Coefficient (Radj2)	Standard Error of the Estimate
Model 1 Configuration	0.795	0.632	0.605	2.568

The R^2 value of 0.632 demonstrates that teachers' social competence (X1) and an inclusive school climate (X2) simultaneously account for 63.2% of the variance in the learning engagement of SWD. The remaining 36.8% is explained by external factors outside the scope of this study, such as home environments, individual student motivation, or specific curricular adaptations. The Adjusted R^2 value of 0.605 indicates that the model's explanatory power remains stable and generalizable within similar educational contexts.

3.5 Operational Dimensions and Field Field Evidence

To better understand these statistical relationships, classroom interactions and learning materials were examined across the sampled schools. This qualitative review focuses on the operational indicators outlined in the study's framework.

3.5.1 Micro-Level Interactions: Interactive Field Observations

Observations during field research showed distinct differences in student responses based on teacher interactions. Figure 4 illustrates the interaction paths within the classroom.

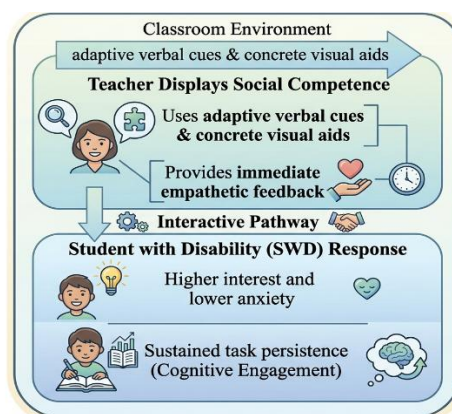


Figure 4. Observational Flow of Micro-Level Classroom Interactions

An excerpt from a field transcript illustrates this process:

Special Assistant Teacher (GPK): "Look at this block layout, Andy. Let's trace the boundary edge together with your fingers. How many sides do we find?"

Student A (Slow Learner, 10 Years Old): (Pauses, traces line) "One... two... three. Three sides! It matches the triangle shape on my worksheet."

Special Assistant Teacher (GPK): "Exactly right, Andy. You found it because you kept trying. Let's color the next shape together."

This interaction demonstrates how a teacher's adaptive communication and encouragement support cognitive and emotional engagement, helping the student persist with the lesson.

3.5.2 Macro-Level Environment: Curricular and Material Adaptation

At the organizational level, school climate is reflected in how learning materials are adapted for diverse student needs. Figure 5 shows an example of an adaptive modification used during a math lesson for an elementary student with a specific learning disability.

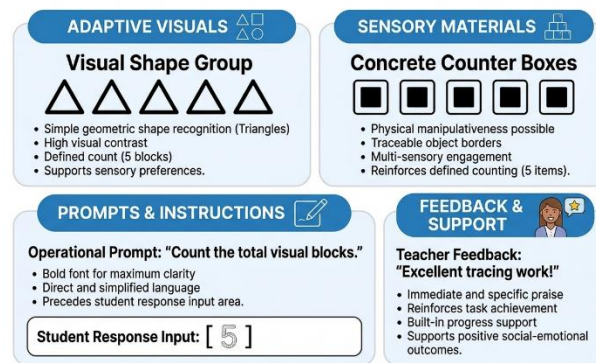


Figure 5. Conceptual Layout of an Adaptive Instructional Worksheet

An evaluation of completed worksheets showed that students using adapted tasks—featuring clear visual boundaries and simplified text layouts—demonstrated higher task completion rates. The use of specialized instructional sheets was associated with fewer behavioral disruptions and improved attention span during independent study periods. This highlights the role of institutional support and structured modifications in fostering student engagement.

3.6 Synthesis of the Socio-Organizational Inclusive Framework

The combining of individual teacher competence and institutional environment variables forms a unified socio-organizational framework. Figure 6 illustrates how these factors work together to support student engagement.

Figure 6: Interactive Pathways of the Socio-Organizational Inclusive Framework for Learning Engagement of Students with Disabilities (SWD)

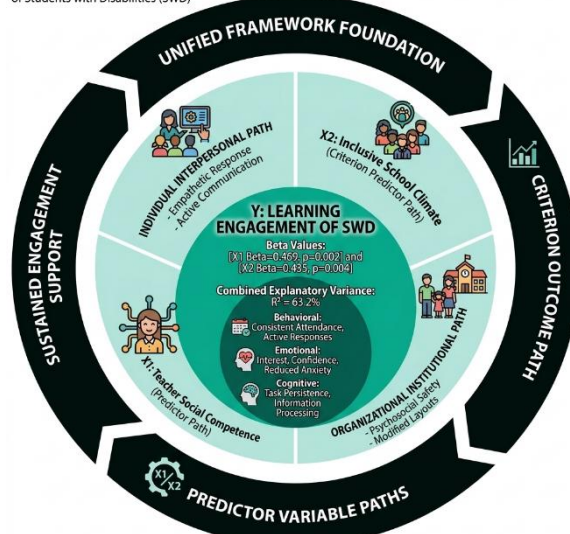


Figure 6. Unified Socio-Organizational Inclusive Framework

This framework shows that student engagement is not shaped by isolated factors but by the interaction between a teacher's interpersonal skills and the overall school environment. When empathetic instruction is supported by an accessible and welcoming school climate, the conditions for meaningful classroom participation improve.

DISCUSSION

The critical intersection between micro-level relational dynamics and macro-level institutional architectures is fundamentally validated by the empirical reality that teachers' social competence and an inclusive school climate explain a substantial 63.2% of the variance in the learning engagement of students with disabilities (SWD) in Metro City primary schools. This high explanatory capacity demonstrates that the persistent instructional challenge of the inclusion gap—the systemic disconnect between administrative physical placement and authentic cognitive-emotional classroom participation—cannot be resolved by isolated curricular adjustments or structural accessibility alone. Instead, it demands a cohesive socio-organizational framework that positions the instructor's interpersonal acuity as an essential catalyst operating within a supportive institutional environment. When examined through Bronfenbrenner's ecological systems theory, student engagement functions as an emergent outcome of the interplay between immediate microsystemic relationships (teacher-student interactions) and the broader mesosystemic school environment. The structural reality of the primary school ecology implies that a teacher's empathetic communication style loses its transformative potential if it is limited by a rigid, non-responsive school climate. Conversely, an accessible physical infrastructure remains an underutilized asset if the prevailing instructional practices are defined by passive exclusion. Consequently, these findings offer a solid empirical foundation to challenge the prevailing technocratic, infrastructure-heavy approach to inclusive education policy, proving that meaningful classroom engagement requires a balanced integration of human empathy and organizational readiness.

The specific path analysis revealing that teachers' social competence acts as the strongest partial predictor ($\beta = 0.469$; $p = 0.002$) provides a clear lens to analyze the underlying mechanics of classroom interaction. Within Vygotsky's socio-cultural framework, the instructor serves as the primary "more knowledgeable other," whose core responsibility is to construct a safe, responsive Zone of Proximal Development (ZPD) tailored to the unique learning needs of SWD. The positive regression path indicates that every single-unit improvement in a teacher's social competence directly enhances meaningful student participation. This pattern extends the findings of previous inclusive research, which noted that professional competency frameworks must look beyond technical pedagogical skills to incorporate social and emotional capabilities. The persistent lack of proactive classroom questioning and peer interaction (32%) reported in the baseline monitoring data can be directly attributed to a wider professional vulnerability: only 58% of teachers initially demonstrated consistent empathetic responses. This dynamic confirms that when a teacher lacks advanced adaptive communication skills, students with developmental or learning differences frequently experience heightened anxiety, leading to cognitive withdrawal and passive compliance rather than active learning engagement. Therefore, cultivating interpersonal empathy and refined verbal scaffolding must be recognized not as optional soft skills, but as core professional competencies required to unlock active learning behaviors in diverse classrooms.

Simultaneously, the significant positive impact of an inclusive school climate ($\beta = 0.435$; $p = 0.004$) demonstrates that institutional culture serves as a foundational ecosystem for classroom instruction. This relationship confirms the foundational principles of the *Index for Inclusion*, which states that sustainable inclusive practice relies on building a shared community culture where every student is structurally valued and supported. The data from Metro City reveals an interesting institutional paradox: while schools achieved high baseline ratings for basic physical safety (83%), explicit structural support for active classroom participation remained low (45%). This imbalance clarifies a major challenge within current inclusive education practices; basic physical safety and administrative enrollment are insufficient to guarantee a supportive learning environment. Without deliberate organizational support—such as structured peer-awareness programs, flexible scheduling, and accessible learning spaces—an invisible form of exclusion can persist, leaving students present in body but isolated in practice. This insight broadens earlier research on school climate by proving that institutional spaces must actively foster a deep sense of belonging and provide visible support for diverse learning needs. Consequently, school policies must move beyond compliance checklists to actively deploy material resources, specialized training, and collaborative support teams that reinforce welcoming, non-discriminatory educational environments.

Integrating these empirical insights with a broader pedagogical perspective reveals a deep alignment with the ethical principles of *Rahmah* (universal compassion) and *Muraqabah* (mindful responsibility) found in classical inclusive frameworks. This

integration provides a meaningful philosophical perspective that elevates inclusive education from a standard administrative requirement to a profound moral responsibility. The concept of *Rahmah* requires educators to look past superficial labels and recognize the inherent value of every learner, translating directly into the adaptive empathy and tailored communication styles captured by the teacher competence scale. Meanwhile, *Muraqabah* instills a sense of shared accountability across the entire school community, encouraging administrators and staff to maintain a transparent, safe, and protective institutional climate. This combined approach reshapes how professional standards are understood under recent frameworks like Permendikdasmen No. 1 Year 2025. It demonstrates that true educational equity cannot be achieved through administrative relocation or physical presence alone. Instead, it requires a complete shift in how student engagement is supported, moving toward a model where empathetic teaching practices and responsive school structures work together to ensure that every student with a disability can fully participate and thrive in the classroom.

CONCLUSION

5.1 Conclusion

Based on the empirical findings and theoretical discussion regarding the learning engagement of students with disabilities (SWD) in Metro City primary schools, the following conclusions are drawn:

1. Teachers' social competence significantly and positively influences the learning participation of SWD ($\beta = 0.469$; $p = 0.002$), establishing that enhanced interpersonal empathy, adaptive communication, and inclusive scaffolding directly drive active classroom engagement.
2. An inclusive school climate exerts a significant positive impact on the learning participation of SWD ($\beta = 0.435$; $p = 0.004$), proving that structured institutional support, structural accessibility, and a safe, welcoming cultural environment are foundational for meaningful classroom inclusion.
3. Simultaneously, teachers' social competence and an inclusive school climate yield a synergistic effect, explaining 63.2% of the variance in the learning engagement of SWD ($R^2 = 0.632$; $F = 23.165$; $p = 0.000$).
4. The high explanatory power of this combined socio-organizational framework underscores that overcoming the inclusion gap—the systemic disconnect between physical enrollment and genuine cognitive-emotional participation—requires a dual-pathway intervention that merges individual instructional empathy with organizational structural readiness.

5.2. Recommendations

To bridge the gap between physical attendance and active classroom participation for students with disabilities, primary schools should establish comprehensive empathy-based professional teacher development programs alongside responsive institutional policies that shift the educational evaluation paradigm from mere physical presence to high-quality pedagogical engagement. School administrations should explicitly deploy resources toward creating safe, adaptive learning environments, cultivating peer-awareness initiatives, and setting up functional internal support teams to foster a transparent, non-discriminatory climate. Future researchers are highly recommended to expand on this study by adopting mixed-methods approaches or longitudinal

Ethical & Author Statements

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Data Policy: Supporting data for the research titled “*Modeling Inclusive Learning Participation: An Evaluative Study on Teacher Interpersonal Capacity and School Climate Dynamics*” are available from the corresponding author upon reasonable request.

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designs across a broader geographic scale, exploring potential mediating or moderating variables such as parental involvement, school leadership styles, and teacher self-efficacy, and investigating how these dynamics vary across different types of student disabilities.

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