

Research Article

Structural Model of Teacher Support and Student Engagement Mediated by Self-Esteem among Elementary School Students

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Abstract: Student engagement is a key indicator of successful learning, yet many elementary school students in rural areas demonstrate low participation and motivation. Although teacher support is recognized as an important predictor of student engagement, the dual role of self-esteem as both a mediator and a moderator has received limited attention. This study examined the direct effect of teacher support on student engagement and the mediating and moderating roles of self-esteem. A quantitative cross-sectional survey design was employed involving 240 students from Grades IV–VI in four rural public elementary schools. An instrument pilot test was first conducted with 60 students to establish validity and reliability. Data were collected using a four-point Likert-scale questionnaire and analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4, including measurement and structural model evaluation with bootstrapping (5,000 subsamples). The results showed that teacher support significantly predicted student engagement ($\beta = 0.699, p < .001$) and self-esteem ($\beta = 0.744, p < .001$), while self-esteem significantly predicted student engagement ($\beta = 0.251, p < .001$). Self-esteem partially mediated the relationship between teacher support and student engagement, whereas its moderating effect was not significant. These findings indicate that teacher support enhances student engagement directly and indirectly through self-esteem. The study contributes to educational psychology by providing an integrated structural model that simultaneously examines the dual role of self-esteem in rural elementary schools and offers evidence to guide teacher support and self-esteem enhancement programs for improving student engagement.

Keywords: perceived teacher support, rural elementary school, self-esteem, student engagement.

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INTRODUCTION

Student engagement in the context of primary schooling has become one of the important indicators of the success of the learning process (Fredricks & Paris 2016; Prananto et al. 2025). Students who are actively involved show higher learning motivation, stronger learning perseverance, and better emotional well-being (Aldrup et al. 2024; Saeed et al. 2023). In reality, there are still many elementary school students who show low levels of engagement, as reflected in their lack of active participation, passive attitudes in learning, and declining motivation in the classroom. This condition is a serious concern because low student engagement not only affects academic achievement but also has the potential to trigger long-term disengagement from education. Therefore, it is important to understand the factors that can drive student engagement, including the role of the learning environment in shaping that engagement, where one of the most studied factors is the support coming from teachers.

Teacher support has proven to be the most dominant external driver influencing student engagement in the learning process (Li, Wei, and Liu 2026; Liu, Tang, and Tang 2026). A teacher who is responsive to students' needs creates a safe and conducive learning environment for student engagement (Support, Buoyancy, and Skills 2022; Ye and He 2026). The influence of teacher support does not always occur directly, as there are factors within the students themselves that also affect whether the support truly has an impact. These internal factors are suspected to stem from the students' emotional conditions, one of which is self-esteem. Previous research has examined this relationship separately. Self-esteem has been proven to work as a pure mediator bridging the influence of social support on students' academic activities (Saeed et al. 2023). Self-esteem has also been proven to work as a moderator, where students with low self-esteem are most dependent on teacher support to engage actively (Zhou 2021). Strong self-esteem has been proven to minimize social anxiety, allowing students to participate more actively in class (Huang, Sang, and Chao 2022). Self-esteem has also been found to function as an internal anchor that directs external motivation into real engagement (Aldrup et al. 2024). High self-confidence encourages students to have a positive view of their abilities, making them more motivated to actively participate in learning (Aldrup et al. 2024). Self-esteem also significantly affects students' academic engagement through the reduction of avoidance behavior in learning activities (Acostagonzaga 2023).

Previous studies have not examined the dual role of self-esteem simultaneously as both a mediator and moderator within a single integrated structural model. Existing research examines these two roles separately and mostly in urban contexts, resulting in findings that are partial and cannot be generalized to populations with substantially different emotional characteristics and learning ecologies. The absence of this integrated model creates an empirical gap that remains unanswered and limits the understanding of the actual mechanisms linking teacher support with student engagement. The novelty of the present study lies not simply in testing two statistical roles simultaneously, but in determining whether self-esteem operates as an explanatory pathway, a boundary condition, or both within the same teacher support–student engagement model. Students in rural areas face conditions that are structurally different from urban students, including limited learning facilities, minimal access to information sources, and geographical isolation that consistently proves to strain students' emotional well-being. In such conditions, teachers become the most consistently accessible external figures that students can directly access as sources of academic and emotional support. Understanding how students' self-esteem weakens or

strengthens the influence of teacher support in this context of limitations has become very urgent to be answered empirically, as educational policies that do not consider the unique emotional characteristics of students in the region risk producing misdirected interventions.

This research fills that gap by investigating how teacher support shapes student engagement through testing self-esteem as a mediator and moderator in a single integrated structural model. This research distinguishes itself through the simultaneous integration of both roles of self-esteem in a context that has previously been overlooked by studies. The theoretical contribution of this research lies in the expansion of educational psychology literature through a more comprehensive integrated conceptual model in explaining the mechanisms of student engagement. Its practical contribution provides empirical guidance for educators and policymakers to design self-esteem reinforcement-based intervention programs to maximize the influence of teacher support on student engagement. The purpose of this research is to examine the role of self-esteem as a mediator and moderator in the relationship between teacher support and student engagement. In line with the research objectives, the hypotheses to be tested in the study are formulated as follows:

- H1: Teacher Support exerts a positive and significant direct effect on the Student Engagement of elementary school students.
- H2: Teacher Support has a positive and significant effect on the Self-Esteem of elementary school students.
- H3: Self-Esteem has a positive and significant effect on the Student Engagement of elementary school students.
- H4: Self-Esteem significantly mediates the relationship between Teacher Support and Student Engagement among elementary school students.
- H5: Self-Esteem significantly moderates the direct relationship between Teacher Support and Student Engagement among elementary school students.

THEORETICAL FRAMEWORK

Teacher Support

Teacher support is defined as students' perceptions of the extent of attention, care, guidance, and involvement provided by teachers to support their well-being, both academically and socio-emotionally (Malecki and Demaray 2003). This relationship is active and responsive, adapting to the unique needs of each student (Xu, Wu, and Wei 2023). Two complementary theoretical perspectives provide the foundation for understanding teacher support in this study. Self-Determination Theory (SDT) by Ryan and Deci (2020) explains why supportive teacher behavior can facilitate students' psychological needs for autonomy, competence, and relatedness, whereas Bronfenbrenner's Ecological Systems Theory (Zaatari 2022) explains the contextual position of teachers within the school microsystem. Because the interaction is continuous, teachers have a significant influence on the psychological development and engagement of students in learning (An, Yu, and Xi 2022).

This study uses four dimensions of teacher support from Malecki and Demaray (2003), namely emotional, instrumental, informational, and appraisal support (Pan and Yao 2023; Xu et al. 2023). Emotional support reflects the warm and empathetic attitude of the teacher, creating a sense of safety in the classroom. Instrumental support includes practical help, such as taking extra time to explain the material. Informational support encompasses guidance and feedback that help students understand the lesson. Meanwhile, appraisal support in the form of appreciation for students' efforts helps them evaluate their own progress (Malecki and Demaray 2003; Pan and Yao 2023). These four dimensions are measured based on

students' subjective perceptions, as the way students interpret their teachers' support has been proven to have a stronger psychological impact compared to the teachers' objective actions themselves (An et al. 2022; Pan and Yao 2023).

Self – Esteem

Self-esteem or self-worth is understood as a comprehensive assessment made by an individual regarding their own value and worth, which reflects the extent to which a person accepts and appreciates themselves as a capable and valuable individual (Rosenberg, 1965, dalam Acosta-gonzaga (2023)). Unlike beliefs in specific areas such as academic self-efficacy, self-esteem is global or comprehensive and is not limited to just one specific ability (Monteiro et al. 2022). This variable is based on the Sociometer Theory developed by Leary and refined by Orth and Robins (2022), which explains that self-esteem functions like an internal monitor that measures how well an individual's social relationships are with those around them. When students feel accepted, valued, and supported by their teachers, their self-esteem will increase; conversely, if they feel ignored or rejected, their self-esteem will decrease (Orth and Robins 2022).

Orth and Robins (2014, 2022) divide self-esteem into two main components, namely self-worth and self-respect. Self-esteem is an emotional aspect where students feel that they are important and deserve attention without always having to achieve perfect grades. Meanwhile, self-respect is a cognitive aspect where students are able to accept their strengths and weaknesses, and believe that they have the same value as their peers (Monteiro et al. 2022; Orth and Robins 2022). Thus, self-esteem in this study is understood as the emotional and cognitive evaluation of elementary school students regarding their self-worth and self-respect, which is formed through social interactions at school, while also serving as a psychological capital to face various learning challenges (Landa-blanco et al. 2024).

Student Engagement

Student engagement is defined as the level of psychological attachment, cognitive effort, and active participation demonstrated by students during school learning activities (Fredricks 2004). This construct is often utilized as the primary indicator for evaluating the depth of the student's learning process and to determine whether the student will succeed academically or is at risk of dropping out (Xu 2024). Student engagement does not arise spontaneously; rather, it is the result of the interaction between the personal characteristics of the students and the school environment conditions created by teachers and peers (Prananto et al. 2025).

This research uses the three-dimensional student engagement model proposed by (Fredricks 2004) and is still widely used in modern research (Pettersen et al. 2024; Zhang and Hu 2025). Behavioral engagement is evident from students' actual actions in the classroom, such as arriving on time, listening to the teacher's explanations, and actively answering questions. Emotional engagement describes students' feelings toward school, teachers, and their peers, which are shown through feelings of happiness, enthusiasm, and a sense of belonging to the class. Cognitive engagement relates to the mental effort of students to understand the material deeply, not just memorizing for the sake of grades (Fredricks 2004; Pettersen et al. 2024). Based on these three dimensions, student engagement in this study is synthesized as a whole concept that reflects the extent to which elementary school students commit

themselves to the teaching and learning process in the classroom (Gong 2024; Zhang and Hu 2025).

Teacher Support as a Predictor of Student Engagement

The relationship between teacher support and student engagement is primarily explained by the complementary roles of Self-Determination Theory (SDT) and Ecological Systems Theory. SDT explains the psychological mechanism through which supportive teacher behavior facilitates students' basic psychological needs, whereas Ecological Systems Theory explains why teachers constitute an important contextual influence within students' immediate school environment (He, Wang, and Lee 2025). Both theories explain that teachers are the closest and most influential people in students' learning lives at school. When teachers consistently provide support that makes students feel free, capable, and socially connected, students will be motivated to learn not out of obligation, but because they genuinely want to be actively involved in the learning process (Berhanu, Semela, and Moges 2025).

In the framework of SDT, the fulfillment of these three basic psychological needs theoretically serves as a prerequisite for the formation of intrinsic motivation, which becomes the foundation for sustained student engagement (Ryan and Deci 2020). Thus, SDT primarily explains the psychological pathway underlying the direct relationship between teacher support and student engagement. The ecological systems theory reinforces this argument by explaining that teachers, as part of the closest microsystem to students, have the greatest capacity to shape students' learning orientation compared to other environmental factors. Ecological Systems Theory therefore provides the contextual explanation for why teacher support is expected to be consequential for students' engagement within the school setting. The daily repetitive interactions between teachers and students cumulatively form a pattern of engagement that becomes ingrained in the students as a result of the adaptation process to their immediate learning environment.

Relationship Between Teacher Support and Self-Esteem

The sociometer theory explains that self-esteem functions like an internal measuring tool that monitors how well a person's social relationships are with those around them, so when students feel supported by teachers as authority figures in school, their self-esteem will increase (Orth and Robins 2022). When teachers provide attention, warmth, and constructive feedback, students interpret this as a sign that they are accepted, capable, and valuable (He et al. 2025; Ryan and Deci 2020). In the framework of sociometer theory, self-esteem is not merely a reflection of inherent personality but rather a construct that is dynamically shaped by the quality of interpersonal relationships experienced by the individual over time. Every positive interaction between teachers and students that contains elements of acceptance, appreciation, and trust serves as direct input for the students' sociometer system, which is then translated into increasingly positive self-assessment. Theoretically, therefore, teacher support provides relational information that contributes to the development of students' global self-evaluation, making self-esteem a plausible psychological mechanism through which supportive teacher relationships may subsequently influence learning behavior (Orth and Robins 2022).

The Relationship Between Self-Esteem and Student Engagement

Self-esteem is closely related to student learning engagement, and this relationship can be explained through identity-based motivation theory. This theory states that students who have a positive self-assessment find it easier to build intrinsic motivation, thus they are

encouraged to be active learners in the classroom (Acosta-gonzaga 2023; Ye and He 2026). A strong sense of self-worth makes students engage in learning activities not out of obligation or command, but because they themselves believe that learning is something valuable for their lives (Guo et al. 2025).

This theoretical framework posits that a positive self-identity encourages students to perceive learning activities as something that aligns with their self-conception as individuals, so that engagement in learning is no longer merely an obligation but a manifestation of the self-identity that has been formed. Strong self-esteem allows students to construct their identity as competent learners, and this identity consistently drives active learning behaviors, perseverance in facing academic challenges, and deeper cognitive engagement in every learning activity (Acosta-gonzaga 2023). Within the proposed model, Identity-Based Motivation Theory therefore provides the theoretical basis for the direct relationship between self-esteem and student engagement by explaining how students' positive self-evaluations can be translated into active and persistent learning behavior.

The Role of Self-Esteem as a Mediator between Teacher Support and Student Engagement

The influence of teacher support on student engagement in the classroom does not always occur directly, but can be explained through an indirect path by placing self-esteem as a mediating variable. The sincere attention and emotional guidance provided by teachers every day have proven capable of fostering a healthy self-assessment in students (Sun et al. 2025). A supportive social environment from teachers is very important in maintaining students' self-esteem, especially when they face academic pressure at school (Choi and Kim 2023; Granero-gallegos and Manuel 2023). Social Cognitive Theory reinforces this mediation mechanism by stating that the influence of the social environment on individual behavior does not work directly, but is first processed through the individual's belief and self-assessment system, which serves as an intermediary cognitive mechanism before finally manifesting in the form of actual behavior.

In this context, teacher support acts as an environmental input that is first absorbed and processed through the students' self-esteem system, which then generates a strong enough self-confidence to drive active engagement in learning (Sun et al. 2025). Accordingly, Social Cognitive Theory provides the specific theoretical rationale for the proposed mediation: teacher support represents the external social input, self-esteem represents the internal psychological process, and student engagement represents the resulting behavioral and cognitive outcome. This pathway explains why teacher support may influence engagement not only directly, but also indirectly through students' internal self-evaluation.

The Role of Self-Esteem as a Moderator between Teacher Support and Student Engagement

Self-esteem may also function as a moderating variable rather than only as a mediating mechanism. Students' self-esteem may alter the strength of the direct relationship between contextual environmental factors and children's learning behavior (Huang et al. 2022). These internal psychological characteristics function as boundary conditions that determine whether positive external stimulation can be optimally accepted or ignored by students in the classroom (Huang et al. 2022).

Cognitive Appraisal Theory theoretically explains that individuals with different internal resource capacities will evaluate and respond to the same external stimulus differently (Socastro et al. 2022). Students with limited self-esteem capacity tend to be more sensitive to variations in teacher support because they do not have enough internal resources to drive engagement independently, while students with strong self-esteem have relatively independent internal motivational resources from fluctuations in external support. Therefore, Cognitive Appraisal Theory provides the theoretical basis for the proposed moderation effect by explaining why the same level of teacher support may produce different levels of engagement depending on students' existing psychological resources.

The Integrated Theoretical Framework

Taken together, the theories used in this study have distinct but complementary explanatory functions. Self-Determination Theory explains why teacher support can directly foster student engagement by satisfying students' basic psychological needs. Ecological Systems Theory explains the contextual importance of teachers as proximal actors within the school microsystem. Sociometer Theory explains how teacher support can shape students' self-esteem through perceived acceptance, value, and social inclusion. Identity-Based Motivation Theory explains how positive self-evaluation can be translated into active learning engagement. Social Cognitive Theory explains the mediating pathway through which external teacher support is processed through students' internal self-evaluation before influencing engagement. Finally, Cognitive Appraisal Theory explains the moderating function of self-esteem by proposing that students with different internal psychological resources may respond differently to the same teacher support.

The integration of these theoretical perspectives leads to a model in which teacher support is expected to influence student engagement both directly and indirectly through self-esteem, while self-esteem simultaneously operates as a boundary condition that changes the strength of the direct teacher support–student engagement relationship. The mediating role addresses the question of how teacher support contributes to engagement, whereas the moderating role addresses when or for whom teacher support is more or less strongly associated with engagement. Consequently, the proposed framework does not treat mediation and moderation as redundant explanations; instead, it integrates them to provide a more complete account of the psychological mechanism and boundary condition underlying student engagement. Figure 1 presents the proposed integrated relationship among teacher support, self-esteem, and student engagement.

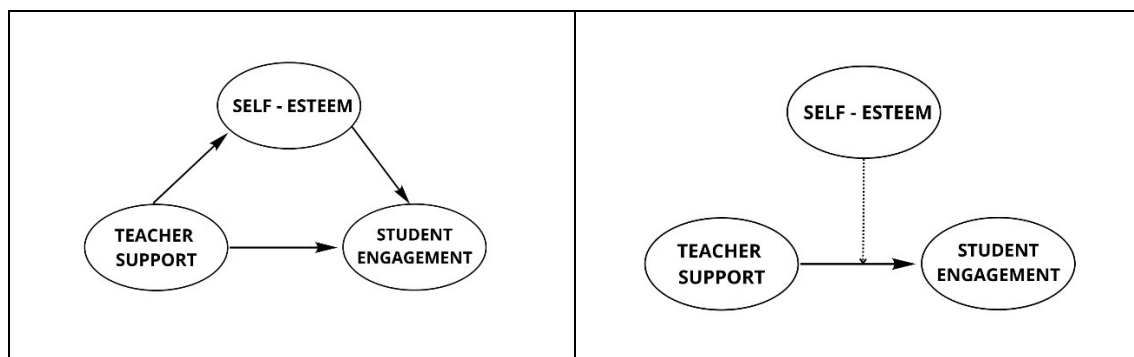


Figure 1. Model of the Relationship Between Research Variables

METHODS

Research Design

A quantitative approach with a cross-sectional survey design was employed in this study, in which data were collected at a single point in time to examine relationships among variables without repeated measurements of the same respondents. The quantitative approach was chosen because this study aims to empirically test the structural relationship between variables through standardized measurements that can be statistically analyzed. The cross-sectional design was selected because it allows for the efficient collection of data from many respondents within a single time period, thus aligning with the descriptive-explanatory nature of the research objectives.

Sample

This research involves two stages of data collection. The first stage is an instrument trial conducted at a public elementary school (School E) involving 60 upper-grade students in order to assess the psychometric properties of the measurement tool. The 60 students involved in the instrument trial were excluded from the main study and were not included in the final sample, thereby preventing overlap between the pilot and main-study respondents. The second stage is the main data collection conducted in four public elementary schools in rural areas (School A, School B, School C, and School D) using a total sampling technique, so that all students in grades IV, V, and VI who meet the criteria are sampled. The total number of primary respondents was 240 students with a response rate of 100%. The selection of students in the upper grades was based on the consideration that they have sufficient self-awareness to respond to psychological instruments validly.

Table 1. Characteristics of Respondents

Characteristic	Description	Label
School	Public elementary school where students receive education in a rural area (identity anonymized).	School A, School B, School C, and School D
Gender	The biological gender identity of the students who are respondents in the research.	Men, Women
Class	The higher grade levels attended by the respondents in elementary school.	Class IV, Class V, and Class VI

Note: The exact number of respondents from School A, School B, School C, and School D should be inserted in Table 1 based on the original sampling records.

Data Collection

Data collection was conducted in two stages, namely instrument testing and final data collection. In the first stage, the instrument consisting of 26 statements (Teacher Support: P1–P6, Self-Esteem: P7–P11, Student Engagement: P12–P26) was tested on 60 students outside the research sample to assess the readability and feasibility of each item. The results of the trial are presented in **Table 2**.

Table 2. Instrument Screening and Final Item Mapping

Variable	Original Items	Retained Original Items	Final Items
Teacher Support	P1–P6	P1, P4, P5, P6	P1–P4
Self-Esteem	P7–P11	P7, P11	P5–P6
Student Engagement	P12–P26	P17, P18, P19, P22, P23	P7–P11
Total	26	11	11

The indicators were declared valid based on the trial results, yielding 11 valid items that were subsequently used in the main data collection, namely Teacher Support with 4 items (P1, P4, P5, P6), Self-Esteem with 2 items (P7, P11), and Student Engagement with 5 items (P17, P18, P19, P22, P23). These items were renumbered to P1–P11 in the final instrument. The item deletion process was based on the outer-loading results from the pilot test, with indicators below the specified threshold removed from the final measurement model.

After the instrument was deemed valid, the main data collection was carried out using 11 selected statements. Data were collected directly through the distribution of questionnaires to all students in grades IV, V, and VI at four public elementary schools. The completion of the questionnaire was conducted collectively in the classroom with the assistance of the researcher to ensure the respondents' understanding of each statement. The questionnaire uses a four-point Likert scale as presented in **Table 3**.

Table 3. Likert Scale Measurement Criteria Points

Criteria	Point
Strongly Agree (SA)	4
Agree (A)	3
Disagree (D)	2
Strongly Disagree (SD)	1

Data Analysis

The research model test was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) through the SmartPLS 4 software (Henseler, Ringle, and Sarstedt 2015). The analysis was carried out in two stages, namely the evaluation of the measurement model (outer model) and the structural model (inner model). The outer model evaluation encompasses the assessment of outer loading, AVE, CR, and Cronbach's Alpha. An indicator is declared valid when the outer loading threshold reaches ≥ 0.70 , AVE exceeds ≥ 0.50 , and CR surpasses ≥ 0.70 . The retained indicators were subsequently evaluated in the final measurement model to confirm their reliability and convergent validity before the structural relationships were interpreted. The inner model evaluation encompasses path coefficients, R^2 , and hypothesis testing through bootstrapping with 5,000 subsamples at a significance level of 0.05 (T-statistic > 1.96 ; P-value < 0.05).

RESULT

Data Description

This study involved 240 students as respondents from four public elementary schools in rural areas, with class distribution including students from grades IV, V, and VI. The respondents were distributed across School A, School B, School C, and School D, with the specific number of students from each school reported in Table 1. The results of the descriptive statistical analysis showed that the three research variables had average values within the high range on a measurement scale of 1–4. Detailed descriptive statistics are presented in Table 4.

Table 4. Descriptive Statistics of Research Variables

Variable	Mean	SD	Min	Max
Teacher Support	3,23	0,67	1,50	4,00
Self-Esteem	3,21	0,70	1,00	4,00
Student Engagement	3,22	0,69	1,40	4,00

Based on Table 4, Teacher Support yielded the highest average value ($M = 3.23$; $SD = 0.67$), accompanied by a minimum score of 1.50, indicating generally favorable perceptions of teacher support among the respondents, although individual differences remained evident. Self-Esteem shows an average score of 3.21 ($SD = 0.70$) with a minimum score of 1.00, indicating that although the majority of students have positive self-esteem, there is individual variation in students' psychological resources. Student Engagement has an average score of 3.22 ($SD = 0.69$) with a minimum score of 1.40, reflecting that student learning engagement is generally high but still shows individual variations that need to be addressed. The relatively close mean values of the three variables (3.21–3.23) indicate generally favorable conditions across teacher support, self-esteem, and student engagement, but these descriptive similarities do not establish relationships among the variables; such relationships are examined through the structural model.

Measurement Model Evaluation

Prior to hypothesis testing, the outer loadings of the eleven indicators in the final structural model ($N = 240$) were re-examined through the bootstrapping procedure (5,000 subsamples) to verify convergent validity at the main-sample level, complementing the item screening previously conducted during instrument testing (Table 2). The results are presented in Table 5.

Table 5. Outer Loadings of the Main Structural Model

Indicator	Construct	Outer Loading	T-Statistic	P-Value	Result
P1	Teacher Support	0,776	30,421	0,000	Valid
P2		0,831	36,969	0,000	Valid
P3		0,833	43,619	0,000	Valid
P4		0,821	30,943	0,000	Valid
P5	Self-Esteem	0,857	40,365	0,000	Valid
P6		0,878	53,870	0,000	Valid
P7	Student Engagement	0,871	50,633	0,000	Valid
P8		0,863	39,931	0,000	Valid
P9		0,780	27,017	0,000	Valid
P10		0,794	25,751	0,000	Valid
P11		0,835	37,220	0,000	Valid

As presented in Table 5, all eleven indicators of the main structural model produced outer loadings above the recommended threshold of 0.70, ranging from 0.776 (P1, Teacher Support) to 0.878 (P6, Self-Esteem), and were statistically significant at $N = 240$ (T-statistics ranging from 25.751 to 53.870; $p < 0.001$ for all items). These results confirm that each indicator adequately represents its intended construct and that the measurement model demonstrates sufficient convergent validity to support the structural testing that follows.

Construct Reliability and Convergent Validity

Following the assessment of the outer loadings, the reliability and convergent validity of the measurement constructs were evaluated using Cronbach's Alpha, rho_A, Composite Reliability (ρ_c), and Average Variance Extracted (AVE). These criteria were examined to ensure that the retained indicators consistently measured their respective constructs and adequately represented the underlying latent variables. The results of the construct reliability and convergent validity assessment are presented in Table 6.

Table 6. Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability (ρ_c)	AVE	Result
Teacher Support	0.842	0.849	0.894	0.679	Valid and reliable
Self-Esteem	0.679	0.684	0.858	0.752	Valid and reliable
Student Engagement	0.884	0.891	0.914	0.681	Valid and reliable

The results in Table 6 indicate that Teacher Support and Student Engagement demonstrate satisfactory internal consistency, while Self-Esteem shows acceptable reliability for its two-indicator measurement. Cronbach's Alpha, rho_A, and Composite Reliability values are generally at or above the recommended threshold of 0.70, with the two-item Self-Esteem construct interpreted together with its high Composite Reliability and AVE. The AVE values for all constructs exceed 0.50, confirming adequate convergent validity. These findings support the reliability and convergent validity of the final measurement model and indicate that the retained indicators adequately represent their respective constructs.

Discriminant Validity

After establishing construct reliability and convergent validity, discriminant validity was assessed using the Heterotrait–Monotrait ratio (HTMT). This assessment was conducted to determine whether the three constructs are empirically distinct from one another and capture different theoretical concepts. The HTMT results for Teacher Support, Self-Esteem, and Student Engagement are presented in Table 7.

Table 7. Discriminant Validity Based on HTMT

Construct	Teacher Support	Self-Esteem	Student Engagement
Teacher Support	–	0.763	0.812
Self-Esteem	0.763	–	0.741
Student Engagement	0.812	0.741	–

The HTMT values presented in Table 7 are all below the conservative threshold of 0.85, indicating adequate discriminant validity among the three constructs. This finding suggests that Teacher Support, Self-Esteem, and Student Engagement represent empirically distinguishable constructs rather than measuring the same underlying concept. Therefore, the measurement model provides sufficient evidence of discriminant validity for subsequent structural-model assessment.

Structural Model Evaluation

Once the measurement model demonstrated satisfactory reliability, convergent validity, and discriminant validity, the structural model was evaluated to determine its explanatory power, effect sizes, predictive relevance, and overall model fit. The evaluation included the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and standardized

root mean square residual (SRMR). The results of the structural-model evaluation are presented in Table 8.

Table 8. Structural Model Evaluation

Endogenous Construct / Relationship	R ²	f ²	Q ²	SRMR
Self-Esteem	0.554	–	0.409	0.071
Student Engagement	0.739	–	0.487	0.071
Teacher Support → Student Engagement	–	0.786	–	–
Teacher Support → Self-Esteem	–	1.242	–	–
Self-Esteem → Student Engagement	–	0.102	–	–
Teacher Support × Self-Esteem → Student Engagement	–	0.001	–	–

The structural-model evaluation indicates that Teacher Support explains 55.4% of the variance in Self-Esteem, while Teacher Support and Self-Esteem jointly explain 73.9% of the variance in Student Engagement. The f^2 values indicate a large effect of Teacher Support on Self-Esteem and Student Engagement, whereas Self-Esteem demonstrates a small effect on Student Engagement. The interaction term produces a negligible effect, consistent with the nonsignificant moderation result reported in the hypothesis testing. The Q^2 values of 0.409 and 0.487 indicate adequate predictive relevance for Self-Esteem and Student Engagement, respectively. The SRMR value of 0.071 is below the commonly accepted threshold of 0.08, indicating an adequate overall model fit. Overall, these results indicate that the proposed structural model has satisfactory explanatory and predictive capability.

Hypothesis Testing

Prior to hypothesis testing, the measurement model of the main structural model ($N = 240$) was evaluated based on the outer loading results in Table 5, together with the construct reliability, convergent validity, and discriminant validity results reported in Tables 6 and 7. The measurement model was considered adequate before proceeding to the structural model and hypothesis testing. The subsequent hypothesis testing was conducted through a bootstrapping procedure with 5,000 subsamples at a significance level of 0.05, with acceptance criteria of T-statistic > 1.96 and P-value < 0.05 . A summary of the results of all hypothesis tests is presented in Table 9.

Table 9. Hypothesis Testing Results (Bootstrapping, $n = 5,000$ subsamples)

H	Hypothesis path	β	T-Stat	P-Value	Explanation
H1	Teacher Support → Student Engagement	0,699	15,232	0,000	Accepted
H2	Teacher Support → Self-Esteem	0,744	27,208	0,000	Accepted
H3	Self-Esteem → Student Engagement	0,251	5,144	0,000	Accepted
H4	Teacher Support → Self-Esteem → Student Engagement	0,187	5,042	0,000	Accepted
H5	Self-Esteem × Teacher Support → Student Engagement	0,006	0,217	0,828	Rejected

Based on Table 9, Teacher Support emerged as a dominant direct predictor in the model, with a significant influence on Student Engagement ($\beta = 0.699$; $T = 15.232$; $p < 0.05$) alongside its effect on Self-Esteem ($\beta = 0.744$; $T = 27.208$; $p < 0.05$), thus H1 and H2 are accepted. The positive coefficient indicates that higher perceived teacher support is associated with higher student engagement and higher self-esteem. The path from Teacher Support to Self-Esteem also showed the largest T-statistic among the direct paths reported in the model, indicating

a particularly strong statistical association between perceived teacher support and students' self-esteem. Self-Esteem subsequently proved to have a positive and significant effect on Student Engagement ($\beta = 0.251$; $T = 5.144$; $p < 0.05$), confirming that self-esteem functions as an internal psychological capital that independently drives student learning engagement, thus H3 is accepted.

Mediation testing shows that Self-Esteem significantly mediates the relationship between Teacher Support and Student Engagement with an indirect effect of 0.187 ($T = 5.042$; $p < 0.05$). Because the direct effect of Teacher Support on Student Engagement remained significant while the indirect effect through Self-Esteem was also significant, the findings support partial mediation. This indicates that Teacher Support is associated with Student Engagement through both a direct pathway and an indirect pathway operating through Self-Esteem. These findings reveal that Self-Esteem acts as a psychological amplifier that extends the reach of teacher support's influence to the internal motivational dimensions of students, thus H4 is accepted.

On the contrary, the testing of the moderating role of Self-Esteem did not yield a significant effect ($\beta = 0.006$; $T = 0.217$; $p = 0.828$), indicating that there was no statistically significant evidence that Self-Esteem changes the strength of the relationship between Teacher Support and Student Engagement. Therefore, H5 is rejected. The non-significant interaction coefficient suggests that the positive association between Teacher Support and Student Engagement does not differ systematically across levels of Self-Esteem in the present sample. The explanation that this finding was caused by homogeneity in students' self-esteem should be treated cautiously unless the distribution or variance of Self-Esteem provides empirical evidence for such an interpretation.

DISCUSSION

The measurement model evaluation confirmed that all indicators of Teacher Support, Self-Esteem, and Student Engagement loaded adequately (Table 5), providing a valid basis for interpreting the structural relationships tested below. The structural findings indicate that Teacher Support had a strong positive direct association with Student Engagement, while also showing a strong positive association with Self-Esteem. Self-Esteem was subsequently associated positively with Student Engagement and significantly mediated the relationship between Teacher Support and Student Engagement, whereas its moderating effect was not statistically significant. This pattern indicates that self-esteem operates more clearly as an explanatory psychological mechanism than as a condition that changes the strength of the teacher support–engagement relationship in the present sample.

Teacher support stands out as an important determinant of student engagement among elementary school students in rural areas. These findings are in line with Self-Determination Theory (Ryan and Deci 2020) which emphasizes that the fulfillment of autonomy, competence, and social relatedness needs by teachers is a prerequisite for the development of students' intrinsic motivation. The strength of the direct relationship can be understood from the proximal and recurrent nature of teacher–student interactions. Teacher support does not merely provide academic assistance; it simultaneously communicates that students are capable, socially connected, and worthy of attention, thereby addressing several psychological needs through the same interpersonal relationship. When these signals are experienced repeatedly during daily classroom interactions, students may have fewer psychological barriers to participating, responding, persisting, and investing effort in learning

activities. In the rural context, teachers may represent one of the most consistently accessible sources of structured academic and interpersonal support, so every form of emotional attention, instrumental guidance, and appreciation given consistently can become directly relevant to students' engagement in the learning process. These findings reinforce the results (Prananto et al. 2025) which proves that the quality of teacher-student interactions directly shapes persistent engagement patterns, and is consistent with the findings of He et al. (2025) who show that teachers, as part of the student's closest microsystem, have the greatest capacity to shape learning orientation compared to other environmental factors.

The strong direct effect of Teacher Support also suggests that teacher support cannot be reduced to a background contextual factor in the present setting. Rather, it appears to function as an immediate social and instructional resource that students encounter while learning. This interpretation is particularly relevant for elementary school students, whose learning behaviors are still strongly embedded in relationships with significant adults at school. Thus, the magnitude of the direct path is theoretically consistent with the combination of Self-Determination Theory and Ecological Systems Theory: the former explains the psychological needs activated by supportive interactions, while the latter explains why the teacher's position within the immediate school environment makes those interactions particularly consequential.

Teacher support has also proven to be the strongest predictor of student self-esteem, which in turn actively encourages learning engagement. This mechanism can be explained through the sociometer theory (Orth and Robins 2022) which asserts that self-esteem is dynamically shaped by acceptance signals from close authority figures. Every positive interaction that contains elements of trust and appreciation from the teacher serves as direct input for the student's self-assessment system. The particularly strong relationship between Teacher Support and Self-Esteem therefore suggests that students may internalize teacher responses as information about their own social value and competence. When teachers consistently provide recognition, guidance, and constructive interaction, students receive repeated interpersonal evidence that they are accepted and capable. Over time, such experiences may be incorporated into students' broader self-evaluations, explaining why Teacher Support showed a stronger relationship with Self-Esteem than Self-Esteem showed with Student Engagement. The self-esteem that is formed then encourages students to develop an identity as competent learners and demonstrate deeper cognitive engagement. These findings are in line with Aldrup et al. (2024) who demonstrated that self-esteem functions as an internal anchor that directs external motivation into actual engagement, and are further supported by (Acosta-gonzaga 2023) who proved that strong self-esteem significantly reduces avoidance behavior in learning activities, leading to more active academic involvement by students.

The partial mediation found confirms that teacher support works through two pathways simultaneously: a direct pathway that activates engagement, and an indirect pathway through the reinforcement of self-esteem. The coexistence of these two pathways is theoretically important because it indicates that students do not need to first develop stronger self-esteem before teacher support can influence their engagement. Teacher support can immediately facilitate participation and learning behavior while also gradually strengthening students' self-evaluations, which provide an additional route toward engagement. This pattern is consistent with Social Cognitive Theory, which asserts that the influence of the social environment is first processed through the individual's self-belief

system before being manifested in actual behavior. These findings expand on the evidence provided by (Saeed et al. 2023) which demonstrated the mediating role of self-esteem in the relationship between social support and academic activities, while also adding new context from the rural elementary school population that has been underrepresented in the literature.

The partial rather than full mediation is also informative. If self-esteem were the only mechanism linking Teacher Support to Student Engagement, the direct relationship would be expected to disappear after self-esteem was introduced into the model. Instead, the direct effect remained significant, indicating that teacher support retains an influence on engagement that cannot be fully explained by students' self-evaluations. This residual direct pathway is consistent with the multifaceted nature of teacher support, because instructional guidance, practical assistance, feedback, and classroom interaction can stimulate engagement through immediate behavioral and cognitive processes in addition to their influence on self-esteem.

Meanwhile, the moderating role of self-esteem was not found to be significant. Unlike Zhou's (2021) prediction that students with low self-esteem are most dependent on teacher support, this finding indicates that the strength of the relationship between Teacher Support and Student Engagement did not differ significantly according to students' levels of Self-Esteem in the present sample. One possible interpretation is that teacher support functions as a broadly relevant contextual resource rather than a resource whose effectiveness depends strongly on students' pre-existing self-esteem. In other words, supportive teacher behavior may facilitate engagement across students with different levels of self-esteem because the immediate benefits of guidance, attention, feedback, and classroom support remain relevant regardless of students' initial self-evaluation.

The nonsignificant moderation result should not, however, be interpreted as evidence that the sample was psychologically homogeneous. The present analyses did not directly test whether restricted variability in Self-Esteem caused the absence of moderation. Although limited variation in a moderator can reduce the statistical ability to detect an interaction, this explanation requires additional empirical evidence, such as an examination of the distribution and variance of Self-Esteem. Therefore, the current finding is more appropriately interpreted as indicating that Self-Esteem did not significantly change the strength of the Teacher Support–Student Engagement relationship in this sample. This finding differs from Zhou's (2021) prediction that students with low self-esteem are most dependent on teacher support and suggests that the moderating role of self-esteem may be context-dependent rather than universally applicable. The finding can also be considered alongside Huang et al. (2022), whose argument suggests that the expression of moderating effects may depend on differences in psychological characteristics across samples.

The contrast between the significant mediation and nonsignificant moderation provides the most important interpretive insight of the present study. Self-Esteem significantly explains part of the process through which Teacher Support is associated with Student Engagement, but it does not significantly determine the strength of the direct association. This means that self-esteem appears to function primarily as an internal mechanism through which supportive teacher experiences are translated into engagement, rather than as a boundary condition that determines which students benefit more strongly from teacher support. The distinction is important because it clarifies that strengthening students' self-esteem may

complement teacher support, but the effectiveness of teacher support itself does not appear to depend on students first possessing a particular level of self-esteem.

This research empirically contributes by demonstrating that teacher support operates through multiple, interconnected mechanisms in shaping student learning engagement in rural areas, a context that has previously been overlooked in integrated studies. More specifically, the simultaneous test of mediation and moderation shows that Self-Esteem has a significant explanatory role but not a significant conditioning role in the present model. This finding refines the theoretical understanding of self-esteem by distinguishing its function as a psychological pathway from its potential function as a boundary condition. The implication is that teacher interpersonal competence enhancement programs need to be integrated with interventions based on boosting students' self-esteem, such as public appreciation of small achievements and peer mentoring, so that the impact is more optimal compared to interventions that focus on only one aspect. At the same time, the significant direct effect of Teacher Support indicates that interventions should not rely exclusively on self-esteem enhancement. Strengthening teachers' capacity to provide emotional, instrumental, informational, and appraisal support remains essential because teacher support has both a direct contribution to engagement and an indirect contribution through students' self-esteem.

CONCLUSION

The findings indicate that Teacher Support is a strong positive predictor of Student Engagement among elementary school students in the rural schools examined. Teacher Support was positively associated with Self-Esteem, and Self-Esteem significantly mediated the relationship between Teacher Support and Student Engagement. However, Self-Esteem did not significantly moderate this relationship, indicating that its role was more evident as a mediating mechanism than as a condition that changes the strength of the direct relationship. These findings should not be interpreted as demonstrating that Teacher Support is the sole or main determining factor of Student Engagement, as other individual, interpersonal, instructional, and contextual factors may also contribute. Several limitations should be considered, including the cross-sectional design, reliance on self-reported questionnaire data, the restricted sample from four rural public elementary schools, and potentially limited variation in the study variables. The nonsignificant moderation effect should therefore not be attributed definitively to psychological homogeneity because this explanation was not directly tested. Future research should employ longitudinal designs, multiple data sources, and more diverse samples across rural and urban contexts to examine the consistency and generalizability of these relationships. Overall, the findings provide empirical evidence that Teacher Support is positively associated with Student Engagement both directly and indirectly through Self-Esteem, while these conclusions remain bounded by the study design, sample, and measurement approach.

REFERENCES

- Acosta-Gonzaga, E. (2023). The effects of self-esteem and academic engagement on university students' performance. *Behavioral Sciences*, 13(4), Article 348. <https://doi.org/10.3390/bs13040348>
- Aldrup, K., Carstensen, B., & Klusmann, U. (2024). The role of teachers' emotion regulation in teaching effectiveness: A systematic review integrating four lines of research. *Educational Psychologist*, 59(2), 89–110. <https://doi.org/10.1080/00461520.2023.2282446>
- An, F., Yu, J., & Xi, L. (2022). Relationship between perceived teacher support and learning engagement among adolescents: Mediation role of technology acceptance and

- learning motivation. *Frontiers in Psychology*, 13, Article 992464. <https://doi.org/10.3389/fpsyg.2022.992464>
- Berhanu, A., Semela, T., & Moges, B. (2025). Development and validation of a secondary school classroom engagement instrument in math and science in the Ethiopian context. *Educational Studies*, 51(3). <https://doi.org/10.3389/fpsyg.2025.1491615>
- Choi, H., & Kim, J. (2023). The role of teacher support in the self-esteem of Korean adolescents with burnout. *Journal of Psychologists and Counsellors in Schools*, 34(1). <https://doi.org/10.1177/20556365231207246>
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109. <https://doi.org/10.3102/00346543074001059>
- Gong, W. (2024). The influence of perceived teacher support on Chinese local college students' engagement: The mediating role of self-efficacy. *SAGE Open*, 15(4), 1–13. <https://doi.org/10.1177/21582440241293327>
- Granero-Gallegos, A., & Baena-Extremuera, A. (2023). Effect of a physical education teacher's autonomy support on self-esteem in secondary-school students: The mediating role of emotional intelligence. *Children*, 10(10), Article 1690. <https://doi.org/10.3390/children10101690>
- Guo, W., Wang, J., Li, N., & Wang, L. (2025). The impact of teacher emotional support on learning engagement among college students mediated by academic self-efficacy and academic resilience.
- He, J., Wang, Q., & Lee, H. (2025). Enhancing online learning engagement: Teacher support, psychological needs satisfaction and interaction. *BMC Psychology*, 13(1). <https://doi.org/10.1186/s40359-025-03016-0>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Huang, J., Sang, G., & Chao, T. (2022). Self-worth as a mediator and moderator between teacher–student relationships and student engagement in rural schools. *Frontiers in Psychology*, 12, Article 777937. <https://doi.org/10.3389/fpsyg.2021.777937>
- Landa-Blanco, M., Reyes, Y., Landa-Blanco, A. L., Cort, A., & Paz-Maldonado, E. (2024). Social media addiction relationship with academic engagement in university students: The mediator role of self-esteem, depression, and anxiety. *Heliyon*, 10(2), e24384. <https://doi.org/10.1016/j.heliyon.2024.e24384>
- Li, X., Wei, X., & Liu, H. (2026). The complex interplay between students' perceived teacher support, self-esteem, and demotivation in English learning. *Acta Psychologica*, 266, Article 106964. <https://doi.org/10.1016/j.actpsy.2026.106964>
- Liu, Z., Tang, W., & Tang, L. (2026). The relationship between perceived teacher support and learning engagement of Chinese adolescents: A moderated chain mediation model. *BMC Psychology*. <https://doi.org/10.1186/s40359-026-03990-z>
- Malecki, C. K., & Demaray, M. K. (2003). What type of support do they need? Investigating student adjustment as related to emotional, informational, appraisal, and instrumental support. *School Psychology Quarterly*, 18(3), 231–252. <https://doi.org/10.1521/scpq.18.3.231.22576>
- Monteiro, R. P., Lins, G., de Holanda Coelho, G., Hanel, P. H. P., de Medeiros, E. D., & Dyamond, P. (2022). The efficient assessment of self-esteem: Proposing the brief Rosenberg Self-Esteem Scale. *Applied Research in Quality of Life*, 17(2), 931–947. <https://doi.org/10.1007/s11482-021-09936-4>
- Orth, U., & Robins, R. W. (2014). The development of self-esteem. *Current Directions in Psychological Science*, 23(5). <https://doi.org/10.1177/0963721414547414>

- Orth, U., & Robins, R. W. (2022). Is high self-esteem beneficial? Revisiting a classic question. *American Psychologist*, 77(1), 5–17. <https://doi.org/10.1037/amp0000922>
- Pan, Y. (2023). Enhancing Chinese students' academic engagement: The effect of teacher support and teacher–student rapport. *Frontiers in Psychology*, 14, Article 1188507. <https://doi.org/10.3389/fpsyg.2023.1188507>
- Pettersen, E. B., Ertesvåg, S. K., Pöysä, S., Sørensen, G., & Virtanen, T. E. (2024). Students' situational engagement and its association with overall engagement: The application of the InSitu instrument in the context of a Norwegian lower secondary school. *Scandinavian Journal of Educational Research*, 68(4). <https://doi.org/10.1080/00313831.2023.2175245>
- Prananto, K., Cahyadi, S., Lubis, F. Y., & Hinduan, Z. R. (2025). Perceived teacher support and student engagement among higher education students: A systematic literature review. *BMC Psychology*, 13(1). <https://doi.org/10.1186/s40359-025-02412-w>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, Article 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Saeed, K. M., Ahmed, A. S., Rahman, Z. M., & Sleman, N. A. (2023). How social support predicts academic achievement among secondary students with special needs: The mediating role of self-esteem. *Middle East Current Psychiatry*, 30. <https://doi.org/10.1186/s43045-023-00316-2>
- Socastro, A., Everaert, J., Boemo, T., Blanco, I., & Rodríguez-Carvajal, R. (2022). Moment-to-moment interplay among stress appraisals and emotion regulation flexibility in daily life. *Affective Science*, 3(3), 628–640. <https://doi.org/10.1007/s42761-022-00122-9>
- Sun, W., Wu, Q., Zhang, X., He, D., & Liu, X. (2025). Does teacher support scaffold engagement? Academic self-efficacy as mediator and proactive personality as moderator among Chinese high school students. *Behavioral Sciences*, 15. <https://doi.org/10.3390/bs15111594>
- Teacher support and student buoyancy, engagement, and academic skills. (2022).
- Xu, B. (2024). Mediating role of academic self-efficacy and academic emotions in the relationship between teacher support and academic achievement. *Scientific Reports*, 14, 1–13. <https://doi.org/10.1038/s41598-024-75768-5>
- Xu, X., Wu, Z., & Wei, D. (2023). The relationship between perceived teacher support and student engagement among higher vocational students: A moderated mediation model. *Frontiers in Psychology*, 14, Article 1116932. <https://doi.org/10.3389/fpsyg.2023.1116932>
- Ye, X., & He, K. (2026). Teacher emotional support and learning engagement: A sequential mediation model of basic psychological needs satisfaction and enjoyment. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2026.1795248>
- Zaatari, W. E. (2022). How the Bronfenbrenner bio-ecological system theory explains the development of students' sense of belonging to school? *SAGE Open*, 12(4). <https://doi.org/10.1177/21582440221134089>
- Zhang, W., & Hu, J. (2025). The relationship between perceived teacher support and student engagement in Chinese senior high school English classrooms: The mediating role of learning motivation. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1563682>
- Zhou, L. (2021). Self-esteem and academic engagement among adolescents: A moderated mediation model. *Frontiers in Psychology*, 12, Article 690828. <https://doi.org/10.3389/fpsyg.2021.690828>