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The Relationship between Self-Efficacy, School Climate, and Student Engagement in Elementary Education

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Abstract

Although self-efficacy, school climate, and student engagement are widely recognized as important determinants of academic participation, empirical understanding of their interrelated dynamics in elementary education remains limited. This study aims to examine the individual and collective relationships among self-efficacy, school climate, and student engagement among upper-grade elementary students. A quantitative correlational approach was employed, involving 43 students selected through total sampling. Data were collected using Likert-scale instruments and analyzed using Pearson correlation, multiple regression, and first-order partial correlation with IBM SPSS Statistics 25. The findings reveal that self-efficacy has a statistically significant positive relationship with student engagement ($r = 0.606$, $p < .05$), as does school climate ($r = 0.570$, $p < .05$). Together, self-efficacy and school climate explain 43.8% of the variance in student engagement ($R^2 = 0.438$, $p < .05$). Partial correlation analysis further confirms that self-efficacy ($r = 0.409$, $p < .05$) and school climate ($r = 0.332$, $p < .05$) each remain significantly associated with student engagement after mutual statistical control. These findings indicate that student engagement in elementary education is shaped by both intrapersonal factors and contextual learning

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environments. This study contributes to educational psychology and elementary education literature by integrating personal and environmental perspectives on student engagement. Practically, the findings imply that schools should strengthen students' self-belief while fostering supportive, inclusive, and motivating school climates to enhance learning engagement.

Keywords: Self-Efficacy; School Climate; Student Engagement; Elementary Education; Learning Environment

INTRODUCTION

Student learning engagement has become a major concern in the global education agenda because of its crucial role in determining students' academic success and psychological well-being in schools. Nevertheless, a persistent obstacle within the Indonesian educational landscape is the inconsistent nature of student learning engagement. This phenomenon of low engagement often manifests in the form of a lack of participation in class and high rates of academic procrastination among students (Ahmed et al., 2023). Student engagement is a multidimensional construct that significantly influences learning outcomes, persistence, and wellbeing in educational settings. Across the reported literature, low engagement emerges as a precursor or correlate of reduced motivation, higher risk of withdrawal, and poorer academic performance, underscoring the need for holistic, context-sensitive strategies within schools (Constante et al., 2024). Engagement is consistently portrayed as a central predictor of academic success, with higher engagement associated with better performance and lower dropout risk in several studies, though the strength and direction of associations can vary by context and measurement approach (Crespo et al., 2024). Engagement is described not merely as a stable trait of the student but as a state that emerges from the interaction of individual motivations, social-relational supports, and the instructional environment. This aligns with broader syntheses showing that motivation intrinsics, perceived autonomy-supportive teaching, and perceived organizational climate jointly shape engagement levels (Latorre et al., 2024). Reduced learning engagement not only jeopardizes immediate academic performance but can also impede the cultivation of vital life skills. Contemporary literature emphasizes that students' classroom participation and enthusiasm are heavily shaped by a dynamic interplay between internal personal attributes and external environmental conditions.

School climate is a multi-dimensional construct that captures the quality and character of the learning environment, including safety, relationships, instructional practices, and organizational processes. A positive school climate is consistently linked to higher student engagement, better academic outcomes, and reduced risk of disengagement and burnout (Ismail et al., 2021). Across multiple studies, school climate is portrayed as comprising safety and discipline, teaching and learning quality, relationships, and the overall environmental and organizational medium; in some work, the climate dimensions are further parsed into policy, climate for students, and climate for teachers (Harbatkin et al., 2024). Longitudinal work demonstrates a predictive relation where more positive climate perceptions forecast higher engagement over time, and in some designs, engagement and burnout reciprocally relate to climate (Grazia, 2022). In general, the literature suggests that a positive school climate is associated with higher levels of engagement both behaviorally and affectively, although the strength of this relationship may vary by country and grade level (Jiang et al., 2024). A classroom climate perceived as positive is also correlated with increased student motivation to learn and engagement, as outlined in a study of the relationship between school climate, teacher student relationships, and engagement (Fan & Williams, 2018). Within the educational landscape, a positive school climate serves as a pivotal determinant of success, underpinning critical student outcomes such as emotional safety, academic motivation, and social proficiency. A healthy school climate, opportunities for meaningful participation, and a sense of belonging are repeatedly identified as predictors of student engagement and retention. Conversely, disconnection from school processes, poor classroom management, or ineffective organizational routines can contribute to disengagement and fatigue (Suárez & Fuentes, 2023). On the other hand, self-efficacy denotes a person's belief in their own agency to execute necessary actions and achieve goals. It operates as a cognitive appraisal through which individuals assess their ability to conquer challenges and produce beneficial impacts within their social environment. Student self-efficacy, namely self confidence in learning abilities, has been widely associated with student learning engagement in general, including in the realm of mathematics and classroom learning (D. Yang et al., 2023). Cross-cultural research shows that the relationship between self-efficacy and engagement can vary depending on the school context (Matsumura, 2021). Students struggling with poor self-efficacy and an unsupportive school environment are generally reluctant to participate actively, express viewpoints, or question concepts in class. Characterized by a perceived lack of peer or teacher support and low academic drive, these

students often internalize feelings of inadequacy, which directly leads to withdrawing behavior and the evasion of academic tasks (Mardiah, 2023). This prevailing issue underscores the urgency of examining internal and contextual factors to sustainably reinforce learning engagement.

In light of these issues, the researchers argue that learning engagement is shaped by two distinct dimensions: intrinsic self-efficacy and the extrinsic school climate. Self-efficacy acts as a core motivational engine. Drawing from Albert Bandura's social cognitive theory, students with high levels of self-efficacy are systematically more persistent and resilient when confronting educational hurdles (Schunk & DiBenedetto, 2022). Conversely, school climate underpins students' ability to feel secure and connected to their learning community. Consistent with the ecological systems perspective, a healthy school environment positively influences students' focus and willingness to commit to academic tasks. By mitigating classroom challenges, a favorable school climate directly reinforces students' emotional, cognitive, and behavioral involvement. Driven by this dynamic, this study investigates the interplay between self-efficacy (internal) and school climate (external) to understand how they collectively drive learning engagement at the elementary school level.

A substantial body of empirical literature has previously investigated the interrelationships among these specific variables. For instance, a study conducted by (Lailiyah et al., 2022) demonstrated that school climate has a significant relationship with student engagement in learning, contributing approximately 29.3% to the variance. Furthermore research by (Ansyar et al., 2023) identified a statistically significant positive link between self-efficacy and student engagement, establishing that students with stronger confidence in their abilities exhibit greater levels of active involvement.. In addition, research by (Muhibbin et al., 2025) found that while school climate and family support simultaneously influence engagement, school climate serves as a more significant partial predictor for students in educational settings. Contemporary evidence further confirms that self-efficacy serves as an intermediary pathway through which teacher-driven emotional support translates into enhanced interactive learning behaviors among students. This suggests that emotional support from educators enhances students' internal self-belief, which subsequently drives their active participation in the classroom (Zhou et al., 2023). Likewise, school climate factors, such as teacher-student relationships, have been shown to influence students' achievement through behavioral engagement at the elementary students level (Y. Yang et al., 2021).

This study diverges from previous literature by examining how self-efficacy and school climate concurrently shape the learning engagement of elementary school students. It fills an established empirical gap by bridging two foundational frameworks: Bandura's Social Cognitive Theory, which highlights self-efficacy as a pivotal driver of motivation and action (Gebauer et al., 2021). In parallel, the school climate framework delineates core dimensions such as safety, relationships, and the institutional environment. This model underscores that a positive atmosphere contributes to improved student well-being and academic persistence. Nurturing both personal agency and environmental support remains critical for helping students navigate academic challenges. By bridging these two domains, this research aims to provide a holistic framework demonstrating how self-efficacy and the school atmosphere concurrently shape and sustain student engagement. Therefore, study objective is to examine the specific relationships among self-efficacy and school climate, with elementary school students' learning engagement in the Indonesian educational setting.

METHODS

This research utilizes a quantitative methodology grounded in a correlational design. A quantitative research design was deliberately chosen to rigorously assess the relationships among the hypothesized variables through structured instrumentation and objective statistical testing. The study is driven by precise research inquiries and objective data collection methods. The correlational design is specifically applied to determine the magnitude and direction of the associations between the variables. Its primary objective is to examine how the independent variables self-efficacy and school climate relate to the dependent variable, students' learning engagement. To maintain ecological validity, all data were gathered in a natural, non-manipulated environment (Sugiyono, 2021).

This study was carried out at SDN Sungai Raya 1 between March and May 2026, a site chosen due to the alignment of its student demographics with the study's objectives. The target population is Grades IV and V, selected under the premise that they possess adequately developed reading and comprehension abilities to accurately complete the research questionnaire. Utilizing a total sampling approach, the entire population of 43 students was enrolled as the sample.

For data collection, a Likert-scale questionnaire was employed a standard tool for quantifying individuals' or groups' attitudes, opinions, and perceptions regarding specific

phenomena (Abdullah et al., 2022). The responses yield quantitative scores that objectively reflect the participants' stances on the measured constructs. Depending on the variables' hierarchical structure, the collected data can be classified into four fundamental measurement scales essential for research assessment: nominal, ordinal, interval, and ratio scales (Creswell & Creswell, 2018).

Data analysis in this study was conducted through inferential statistical procedures, the application of which was predicated on the fulfillment of two fundamental prerequisite assumptions: that the dataset conformed to a normal distribution and that the variables were measured at either the interval or ratio level of measurement. (Field, 2018). All statistical computations were executed using IBM SPSS. Specifically, the research implemented three primary analytical techniques, which are:

1. Bivariate Correlation Analysis: Initially, intervariable correlation was utilized to evaluate the specific hypotheses regarding individual relationships. This procedure measured the magnitude (strength) and trajectory (direction) between self-efficacy and students' learning engagement, as well as between school climate and learning engagement.
2. Multiple Regression Analysis: Subsequently, a simultaneous multiple regression was conducted to assess the combined effect of both self-efficacy and school climate on the learning engagement.
3. First-Order Partial Correlation: Finally, as a supplementary procedure was conducted to isolate specific relationships. Drawing on (Nurgiyantoro et al., 2019), this technique determines the "pure" association between two variables by holding a third variable constant. In the context of this study, it was used to assess the specific link between self-efficacy and learning engagement while controlling for school climate, and conversely, the link between school climate and learning engagement while controlling for self-efficacy.

RESULTS

Data derived from the sample questionnaires were subjected to a two-phase analytical procedure. Initially, prerequisite statistical tests were executed to evaluate normality, linearity, and multicollinearity. Upon satisfying these foundational assumptions, the analysis then proceeded to the primary hypothesis testing stage.

Normality Test

The normality assumption is a prerequisite before employing parametric statistical techniques. Consequently, the gathered data were evaluated for normality using Shapiro-Wilk test. A summary of these test results is presented below:

Table 1. Normality Test

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Self Efficacy (X1)	.063	43	.200*	.970	43	.321
School Climate (X2)	.094	43	.200*	.966	43	.225
Student Engagement (Y)	.093	43	.200*	.953	43	.078
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

The results presented in Table 1 demonstrate that Self-Efficacy, School Climate, and Students' Engagement were normally distributed. This conclusion is supported by significance values of 0.321, 0.225, and 0.078, respectively, all of which are above the 0.05 criterion. Therefore, the assumption of normality required for subsequent statistical analyses was fulfilled.

Linearity Test

The linearity test was performed to examine the nature of the relationship between independent and dependent variable.

Table 2. Linearity Test between Self-Efficacy and Student Engagement

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Student Engagement (Y) * Self Efficacy (X1)	Between Groups	(Combined)	13896.512	36	386.014	2.459	.130
		Linearity	5457.901	1	5457.901	34.764	.001
		Deviation from Linearity	8438.611	35	241.103	1.536	.311
	Within Groups		942.000	6	157.000		
	Total		14838.512	42			

Table 2 Linearity Test between Self-Efficacy and Students' Engagement shows a *Deviation from Linearity* significance value of 0.311. Since this value is greater than 0.05, the association is considered linear, thereby fulfilling the linearity requirement for further statistical testing.

Table 3. Linearity Test between School climate and Students' engagement

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Student Engagement (Y) * School Climate (X2)	Between Groups	(Combined)	12208.512	31	393.823	1.647	.192
		Linearity	4815.491	1	4815.491	20.141	.001
		Deviation from Linearity	7393.020	30	246.434	1.031	.507
	Within Groups		2630.000	11	239.091		
	Total		14838.512	42			

The results shown in Table 3 Linearity Test between School climate and Students' engagement, the significance value for School Climate and Students' Learning Engagement *Deviation from Linearity* was 0.507. This value exceeds the recommended cutoff point of 0.05, indicating the relationship between the two variables meets the requirements for further parametric analysis.

Multicollinearity Test

To assess potential multicollinearity among the independent variables, a multicollinearity test was performed prior to the regression analysis. This procedure is essential because excessive correlations between predictors may compromise the accuracy of estimating their individual contributions to the dependent variable. Following commonly accepted standards, multicollinearity is considered absent when Tolerance values are greater than 0.10 and VIF values are lower than 10. These benchmarks served as the basis for determining whether the regression model met the multicollinearity assumption.

Table 4. Multicollinearity Test

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
Model		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	12.959	10.446		1.241	.222		
	Self Efficacy (X1)	.471	.166	.415	2.836	.007	.656	1.524
	School Climate (X2)	.392	.176	.326	2.228	.032	.656	1.524
a. Dependent Variable: Student Engagement (Y)								

As shown in Table 4 multicollinearity test confirm that the model is free from multicollinearity problem. The Tolerance values for Self-Efficacy (X1) and School Climate (X2) were both 0.656, exceeding the cutoff value of 0.10, while the corresponding VIF values were 1.524, well below the threshold of 10. These results confirm that the independent variables do not exhibit excessive intercorrelation. Therefore, the model satisfies the

necessary prerequisites for conducting further inferential analyses and testing the proposed hypotheses.

Hypothesis Testing

The research hypotheses were tested using bivariate correlation analysis to examine the relationships among the study variables.

Table 5. Correlation Between Self-Efficacy and Students' learning engagement

Correlations			
		Self Efficacy (X1)	Student Engagement (Y)
Self Efficacy (X1)	Pearson Correlation	1	.606**
	Sig. (2-tailed)		.000
	N	43	43
Student Engagement (Y)	Pearson Correlation	.606**	1
	Sig. (2-tailed)	.000	
	N	43	43
**. Correlation is significant at the 0.01 level (2-tailed).			

As reported in Table 5 Correlation Between Self-Efficacy and Students' learning engagement, the analysis demonstrates a significant positive correlation. The Pearson correlation coefficient was 0.606, accompanied by a level of p = 0.000. Because the probability value is lower than 0.05, the null hypothesis is rejected, providing support for the alternative hypothesis. The magnitude of the correlation indicates a strong positive relationship, as the coefficient lies within the commonly accepted range of 0.600 to 0.799.

Table 6. Correlation Between School climate and Students' Learning Engagement

Correlations			
		School Climate (X2)	Student Engagement (Y)
School Climate (X2)	Pearson Correlation	1	.570**
	Sig. (2-tailed)		.000
	N	43	43
Student Engagement (Y)	Pearson Correlation	.570**	1
	Sig. (2-tailed)	.000	
	N	43	43
**. Correlation is significant at the 0.01 level (2-tailed).			

As shown in Table 6 Correlation Between School climate and Students' Learning Engagement, the analysis demonstrates a significant positive correlation between School Climate and Students' Learning Engagement. Pearson correlation coefficient was found to be 0.570, with a significance value of p = 0.000. Since the obtained probability value is lower

than 0.05, the null hypothesis is rejected in favor of the alternative hypothesis. Furthermore, the strength of the relationship can be classified as moderate because the correlation coefficient lies within the interval of 0.400 to 0.599.

The assessment of the joint influence of Self-Efficacy and School Climate on Students' Learning Engagement was undertaken using multiple linear regression analysis. This approach enabled the evaluation of the collective predictive power of the independent variables, with all analyses performed in IBM SPSS Statistics version 25.

Table 7. Multiple Correlation Analysis

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.662[a]	.438	.409	14.444	.438	15.562	2	40	.000
a. Predictors: (Constant), School Climate (X2), Self Efficacy (X1)									

Table 7 Multiple Correlation Analysis summarizes the results of the multiple regression analysis conducted to examine the combined influence of Self-Efficacy and School Climate on Students' Learning Engagement among 43 participants. The model summary revealed a coefficient of determination (R^2) of 0.438, demonstrating that the two independent variables collectively account for 43.8% of the variation in the dependent variable. This proportion reflects a moderate degree of explanatory power. Accordingly, 56.2% of the variance in Students' Learning Engagement remains unexplained by the model and may be associated with other variables not incorporated into the current investigation.

Following the assessment of the model's explanatory power, the overall fit of the regression model was examined through the F-test to determine whether Self-Efficacy and School Climate collectively exert a significant influence on Students' Learning Engagement. The analysis yielded an F-test significance value of 0.000, which is below the predetermined alpha level of 0.05. As a result, the regression model is considered statistically significant. These findings provide sufficient evidence to reject the null hypothesis and accept the alternative hypothesis, indicating that Self-Efficacy and School Climate jointly demonstrate a significant relationship with Students' Learning Engagement.

Table 8. Partial Correlation Between X1 and Y After Controlling for X2

Correlations					
Control Variables			Self Efficacy (X1)	Student Engagement (Y)	School Climate (X2)
-none-[a]	Self Efficacy (X1)	Correlation	1.000	.606	.587
		Significance (2-tailed)	.	.000	.000
		df	0	41	41
	Student Engagement (Y)	Correlation	.606	1.000	.570
		Significance (2-tailed)	.000	.	.000
		df	41	0	41
	School Climate (X2)	Correlation	.587	.570	1.000
		Significance (2-tailed)	.000	.000	.
		df	41	41	0
School Climate (X2)	Self Efficacy (X1)	Correlation	1.000	.409	
		Significance (2-tailed)	.	.007	
		df	0	40	
	Student Engagement (Y)	Correlation	.409	1.000	
		Significance (2-tailed)	.007	.	
		df	40	0	
a. Cells contain zero-order (Pearson) correlations.					

The first-order partial correlation results reported in Table 8 demonstrate a significant positive relationship between (X1) and (Y) after (X2). The partial correlation analysis yielded a coefficient of 0.409, accompanied by a significance value of $p = 0.007$. Given that this p-value falls below the predetermined alpha threshold of 0.05, sufficient statistical evidence exists to reject the null hypothesis and accept the alternative hypothesis. These findings demonstrate that the relationship between self-efficacy and students' learning engagement retained its statistical significance even upon controlling for the confounding influence of school climate.

Table 9. Partial Correlation Between X2 and Y After Controlling for X1

Correlations					
Control Variables			School Climate (X2)	Student Engagement (Y)	Self Efficacy (X1)
-none-[a]	School Climate (X2)	Correlation	1.000	.570	.587
		Significance (2-tailed)	.	.000	.000
		df	0	41	41
	Student Engagement (Y)	Correlation	.570	1.000	.606
		Significance (2-tailed)	.000	.	.000
		df	41	0	41
	Self Efficacy (X1)	Correlation	.587	.606	1.000
		Significance (2-tailed)	.000	.000	.
		df	41	41	0
Self Efficacy (X1)	School Climate (X2)	Correlation	1.000	.332	
		Significance (2-tailed)	.	.032	
		df	0	40	
	Student Engagement (Y)	Correlation	.332	1.000	
		Significance (2-tailed)	.032	.	
		df	40	0	
a. Cells contain zero-order (Pearson) correlations.					

As presented in Table 9, the first-order partial correlation analysis revealed a statistically significant positive association between School Climate (X_2) and Students' Learning Engagement (Y) subsequent to controlling for the influence of Self-Efficacy (X_1). The computation yielded a partial correlation coefficient of 0.332, accompanied by a significance value of $p = 0.032$. As the obtained p-value falls beneath the predetermined alpha criterion of 0.05, adequate statistical grounds exist to reject the null hypothesis in favor of the alternative hypothesis. Consequently, these results substantiate that the relationship between School Climate and Students' Learning Engagement persists as statistically significant even when the contributory effect of Self-Efficacy is held constant, underscoring the independent predictive relevance of school climate in explaining variability in student engagement.

DISCUSSION

The present study investigated the interrelationships among self-efficacy, school climate, and student engagement within an elementary school population. The empirical findings demonstrated that both self-efficacy and school climate exhibited statistically significant positive associations with student engagement, manifesting at both the individual and combined levels of analysis. Collectively, these results underscore that students' active participation in the learning process is substantially shaped by the dynamic interplay between intrinsic psychological capacities and extrinsic environmental circumstances.

The first finding established a statistically significant positive relationship between self-efficacy and student engagement ($r = 0.606$, $p < 0.05$), indicating that students who harbor greater confidence in their academic competencies demonstrate a heightened propensity for active participation in learning activities. Pupils exhibiting elevated levels of self-efficacy characteristically approach academic tasks with sustained persistence, allocate considerable effort toward surmounting challenges, and preserve robust motivational orientations when confronted with adversity. As a consequential outcome, such students are more inclined to manifest engagement across behavioral, emotional, and cognitive dimensions throughout the learning process. This finding aligns consonantly with Bandura's Social Cognitive Theory, which posits that an individual's perceived beliefs regarding their own capabilities exert a substantive influence over their motivational drives, persistence, and overall academic performance. The result also supports previous studies by (Ansyar et al.,

2023), who reported that students with higher self-efficacy demonstrate greater engagement in academic activities. The present study extends these findings by providing evidence that the relationship is also evident among elementary school students in the Indonesian context.

The second finding substantiated a statistically significant positive association between school climate and student engagement ($r = 0.570$, $p < 0.05$). This suggests that students who perceive their school environment as supportive, safe, and conducive to learning tend to demonstrate higher levels of engagement. A positive school climate may strengthen students' sense of belonging, emotional security, and connection to the school community, thereby encouraging active participation in learning activities. This outcome corroborates prior empirical research underscoring the substantive role of school climate in cultivating and advancing student engagement. (Lailiyah et al., 2022) found that school climate significantly contributes to engagement, while (Grazia, 2022) reported that positive perceptions of school climate predict higher levels of engagement over time. Similarly, (Harbatkin et al., 2024) emphasized that supportive interpersonal relationships, effective instructional practices, and positive learning environments are critical components of a school climate that fosters student engagement.

The multiple regression analysis further revealed that self-efficacy and school climate collectively accounted for 43.8% of the total variance observed in student engagement ($R^2 = 0.438$, $p < 0.05$). This finding indicates that both variables make substantial contributions to understanding students' engagement levels. However, more than half of the variance remained unexplained, this implies that student engagement constitutes a multidimensional construct susceptible to the influence of a broader array of factors extending beyond the variables investigated in the present study. Constructs such as parental involvement, peer relationships, academic motivation, instructional effectiveness, and socio-emotional competencies may likewise exert considerable influence in shaping the nature and degree of students' engagement in the learning process.

Additional evidence was provided by the partial correlation analyses. After controlling for school climate, self-efficacy remained significantly associated with student engagement ($r = 0.409$, $p = 0.007$). Likewise, school climate continued to demonstrate a significant relationship with student engagement after controlling for self-efficacy ($r = 0.332$, $p = 0.032$). These findings indicate that each variable contributes uniquely to student engagement rather than merely reflecting the influence of the other. Nevertheless, the

stronger partial correlation coefficient observed for self-efficacy suggests that students' internal beliefs regarding their academic capabilities may exert a somewhat greater influence on engagement than environmental factors within the context of this study.

The combined influence of self-efficacy and school climate supports ecological and social-cognitive perspectives, which propose that student behavior emerges through interactions between personal characteristics and environmental conditions. The findings align with those of (Muhibbin et al., 2025), who highlighted the importance of school environmental factors in fostering engagement, and (Zhou et al., 2023), who identified self-efficacy as a key mechanism underlying active participation in learning. Together, these findings reinforce the view that student engagement is shaped by both individual and contextual influences.

From a theoretical perspective, this study contributes to the growing literature on student engagement by integrating Bandura's Social Cognitive Theory with the School Climate Model. The findings demonstrate that engagement cannot be fully explained by either personal or environmental factors in isolation. Instead, student engagement appears to develop through the interaction between students' confidence in their abilities and the quality of the learning environment in which they are situated.

Practically, the findings suggest that efforts to enhance student engagement should address both individual and contextual dimensions of learning. Educators may foster and reinforce students' self-efficacy through the provision of constructive and formative feedback, the facilitation of mastery-oriented learning experiences, the establishment of attainable academic objectives, and the cultivation of adaptive and positive responses toward academic challenges. At the same time, educational institutions ought to nurture conducive learning environments distinguished by constructive and affirming teacher–student interpersonal relationships, safe and inclusive classroom climates, fair disciplinary practices, and meaningful opportunities for student participation. For school leaders and policymakers, these findings underscore the value of comprehensive interventions that simultaneously promote students' confidence and improve school climate, as such approaches may produce greater gains in engagement than strategies focused on only one dimension.

Notwithstanding the aforementioned contributions, several methodological limitations warrant careful consideration when interpreting the present findings. Primarily, the study was confined to a relatively modest sample of 43 students drawn from a single

elementary school, a constraint that may restrict the extent to which the results can be generalized to broader and more diverse educational contexts. Subsequent research endeavors are therefore encouraged to incorporate substantially larger and more heterogeneous samples sourced from multiple educational institutions across varied geographical regions. Second, the cross-sectional correlational design precludes causal inferences. Notwithstanding the significant associations identified, the present findings do not permit the establishment of causal directionality among the examined variables. Consequently, longitudinal and experimental research designs are strongly advocated to more rigorously interrogate the underlying causal mechanisms governing these relationships. Furthermore, given that all data were obtained exclusively through self-report questionnaire instruments, the findings may be susceptible to social desirability bias and inherently subjective perceptual influences. To mitigate such limitations, prospective investigations are encouraged to triangulate data collection by incorporating multiple sources of evidence, encompassing teacher evaluations, systematic classroom observations, and in-depth qualitative interviews. Lastly, considering that the proposed model accounted for merely 43.8% of the total variance in student engagement, future scholarly inquiries are urged to explore a more expansive constellation of predictive variables including parental support, peer influence, academic motivation, instructional quality, and socio-emotional competencies with the overarching aim of constructing a more holistic and comprehensive theoretical understanding of student engagement within the elementary educational context.

CONCLUSION

The present study examined the interrelationships among self-efficacy, school climate, and student engagement within a population of elementary school studentsThe empirical findings demonstrated that both self-efficacy and school climate constituted statistically significant positive predictors of student engagement. Students who reported greater confidence in their academic abilities and more positive perceptions of their school environment tended to demonstrate higher levels of behavioral, emotional, and cognitive engagement in learning activities. Furthermore, the results showed that self-efficacy and school climate jointly contributed substantially to explaining variations in student engagement, highlighting the importance of both individual and environmental factors in promoting active participation in learning.

The partial correlation analyses further indicated that self-efficacy and school climate each maintained a significant independent association with student engagement, suggesting that both variables contribute uniquely to students' engagement. However, self-efficacy emerged as a relatively stronger predictor, underscoring the important role of students' beliefs in their academic capabilities in fostering engagement.

These findings contribute to the literature by supporting the integration of social-cognitive and ecological perspectives on student engagement. Practically, the results suggest that efforts to enhance engagement should focus not only on strengthening students' self-efficacy but also on creating supportive and positive school environments.

Several methodological limitations warrant acknowledgment in the interpretation of the present findings. The study was confined to a comparatively modest sample recruited exclusively from a single elementary school, a constraint that may impede the broader generalizability of the obtained results to alternative educational contexts. Moreover, the cross-sectional correlational research design inherently precludes the establishment of causal inferences, while the exclusive reliance on self-report measures introduces the possibility of systematic response bias. To address these limitations, prospective research endeavors are strongly encouraged to employ substantially larger and more heterogeneous samples, adopt longitudinal or experimental research frameworks, and investigate a more expansive range of contributory variables encompassing parental involvement, teacher support, academic motivation, peer relationships, and socio-emotional competencies with the ultimate objective of advancing a more holistic and comprehensive theoretical understanding of student engagement within the elementary educational context.

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