

Relationship between Classroom Environment and Students' Motivation with Mediating Effect of Teachers' Leadership

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ABSTRACT

This study investigates the relationship between classroom environment and students' motivation, with a specific focus on the mediating effect of teacher leadership, using a structural analytical approach. Drawing on a sample of 500 participants (435 students and 49 teachers) from public and private universities in Lahore, data were collected through a structured questionnaire measuring three core constructs: classroom environment, student motivation, and teacher leadership. Quantitative methods, including descriptive statistics, t-tests, ANOVA, correlation, and regression analyses, were employed. Results revealed strong, statistically significant positive correlations between all three variables, with teacher leadership emerging as a significant mediator. Regression analyses demonstrated that classroom environment positively predicts student motivation ($\beta = 0.603, p < .01$), and teacher leadership significantly predicts classroom environment ($\beta = 0.603, p < .01$). Gender and departmental comparisons showed minimal differences, while ANOVA indicated a statistically significant variation in perceptions of teacher leadership across institutions. These findings highlight the critical role of teacher leadership in fostering a motivating and supportive classroom environment, offering valuable implications for educational policy, teacher training, and classroom management practices aimed at enhancing student engagement and academic outcomes.

Keywords: Classroom, Environment, Motivation, Student, Teachers, Leadership

INTRODUCTION

The classroom environment plays a fundamental role in shaping students' academic engagement, motivation, and overall learning outcomes. It encompasses both physical elements such as lighting, seating arrangements, and instructional materials and social-instructional components, including teacher-student interactions, pedagogical practices, and classroom management (Williams, 2016; Jawaid & Aly, 2014). These environmental factors collectively influence students' cognitive, emotional, and behavioral engagement. A well-structured classroom environment enhances students' ability to focus, participate, and thrive academically by creating a space conducive to both individual learning and collaborative interaction (Barrett et al., 2015; Hescong, 2002).

Effective classroom management, an essential dimension of the learning environment, involves organizing classroom activities, maintaining discipline, and fostering a positive social climate. Educators employ various techniques such as discussion-based learning, activity-based teaching, and technology integration to promote

engagement and achieve productive outcomes (Arshad et al., 2018; Mishra & Koehler, 2016). These methods not only improve academic performance but also enhance students' motivation by fostering autonomy, curiosity, and a sense of accomplishment (Finn, 2010; Hattie, 2009). A motivating environment also includes reinforcement, constructive feedback, and attention to individual student needs, which collectively contribute to student satisfaction and sustained interest in learning (Hattie & Timperley, 2007; OECD, 2015).

Motivation, a psychological construct closely tied to student success, acts as a driving force behind learning behaviors. According to Uno's model, intrinsic motivation arises from internal desires, such as the pursuit of knowledge and self-fulfillment, while extrinsic motivation is shaped by external factors, including rewards and supportive environments (Sidik & Sobandi, 2018; Nasrah & Muafiah, 2020). The learning environment, when enriched with encouragement, structured goals, and supportive relationships, can significantly elevate both intrinsic and extrinsic motivation levels in students (Susanti, 2019).

At the center of this motivational dynamic is the teacher, whose leadership profoundly mediates the relationship between the classroom environment and student motivation. Teachers' leadership extends beyond instructional delivery; it encompasses their capacity to influence, inspire, and build meaningful connections with students (Katzenmeyer & Moller, 2001). As leaders within the classroom, teachers create and maintain the motivational climate (Ames, 1992), a key predictor of academic engagement, resilience, and perceived self-efficacy (Alonso-Tapia et al., 2020). Supportive teacher behaviors—clarifying objectives, reinforcing student efforts, encouraging autonomy, and demonstrating empathy—enhance students' motivation and foster a learning environment rooted in trust and mutual respect (Hamre & Pianta, 2005; Roorda et al., 2011).

The evolving paradigm of educational leadership recognizes the importance of distributed leadership, where teachers share the responsibility for fostering institutional success (Ansell & Gash, 2016; Pan et al., 2023). Teacher leadership is associated with professional growth, student achievement, and character development (Nguyen et al., 2020). In classrooms where teachers exhibit strong leadership marked by effective communication, emotional support, and moral guidance students are more likely to feel connected, valued, and motivated to learn (Dembo & Gibson, 1985; Prickett, 2016). Furthermore, the teacher-student relationship serves as an educational alliance that promotes both academic and socio-emotional development, particularly when rooted in care, purpose, and mutual respect (Furrer & Skinner, 2003; Fernández & López, 2021). The relationship between the classroom environment and students' motivation is dynamic and deeply influenced by the mediating role of teacher leadership. When physical and social elements of the learning space are aligned with effective teacher-led strategies, students exhibit higher levels of engagement, motivation, and academic success. Understanding this structural interplay is crucial for educational reform aimed at fostering supportive, inclusive, and high-performing learning environments.

Statement of the Problem

While classroom environment and teacher leadership are individually recognized as significant contributors to student motivation, the complex interplay among these variables remains insufficiently explored. Existing research tends to examine these elements in isolation, lacking a comprehensive structural analysis that investigates how teacher leadership mediates the influence of classroom environment on student motivation. This research gap limits the development of integrated strategies that could enhance teaching practices, foster student engagement, and improve academic outcomes. Addressing this gap is essential for creating evidence-based interventions that leverage both environmental and leadership factors to drive student motivation and success in educational settings.

Objective

To analyze the relationship between classroom environment and students' motivation, with a specific focus on examining the mediating effect of teacher leadership within this dynamic, using a structural analytical approach.

Significance of the Study

This study is significant as it provides a deeper understanding of how classroom environment and teacher leadership collectively shape students' motivation and academic performance. By identifying the mediating role of teacher leadership, this research can inform teacher training programs and professional development initiatives aimed at cultivating effective leadership behaviors in the classroom. The findings will assist educators and policymakers in designing optimal learning environments and leadership strategies that not only support academic achievement but also promote students' emotional well-being and long-term educational aspirations. Furthermore, this research contributes to a holistic educational model that emphasizes the interconnectedness of physical space, social dynamics, and pedagogical leadership in nurturing motivated, engaged, and successful learners.

METHODOLOGY

The present study employed a **quantitative, descriptive and correlational research design** to explore the relationship between classroom environment and student motivation, mediated by teacher leadership. Quantitative research enables objective measurement and testing of hypotheses regarding the interconnection among variables, ensuring internal and external validity (Vogt, 1999; Muijs, 2004). The research further aimed to identify differences and similarities in classroom environments, student motivation, and teacher leadership across public and private sector universities in Lahore.

Research Design

A **descriptive-correlational research design** was adopted to statistically examine the relationships between the three primary constructs: classroom environment, student motivation, and teacher leadership. The study utilized a **survey-based approach** with a **structured questionnaire comprising close-ended items** rated on a five-point Likert scale. This design is appropriate for identifying patterns, strengths of associations, and mediating effects among variables, especially in educational settings.

Procedure of the Study

Population

The population for this study included **graduate students and faculty members** from public and private sector universities in Lahore. The selection was aimed at understanding how perceptions of classroom environment and teacher leadership influence student motivation within higher education.

Sampling and Sampling Technique

A total of **500 participants** (435 students and 49 teachers) were selected through a **convenience sampling technique** from four institutions: Punjab University (PU), Lahore College for Women University (LCWU), and University of Management and Technology (UMT), representing both public and private sectors. The sample included students from the departments of **Education and English**, enrolled in **4th, 6th and 8th semesters**, and their respective teachers.

Instrumentation

The primary tool for data collection was a **structured questionnaire**, designed to assess three core constructs:

- Classroom Environment
- Student Motivation
- Teacher Leadership

Each construct was measured using validated items on a **5-point Likert scale**:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

The questionnaire was administered in person by the researcher, with verbal explanations provided to participants regarding the study's aim and confidentiality assurances.

Data Collection

Data collection was conducted in selected universities in Lahore after obtaining formal permission via an authorization letter from the research supervisor. Each institution was approached for cooperation, and multiple visits were made as needed. Participation was voluntary, and confidentiality was guaranteed. Once collected, all data were entered and coded in SPSS (Version 21.0) for analysis.

Reliability Analysis of Questionnaire

To evaluate the internal consistency of each scale, Cronbach's Alpha was computed. A threshold of 0.70 was considered acceptable for reliability.

Table 3.5: Reliability Measures of Scales

Sr. No	Scale Name	No. of Items	Cronbach's Alpha
1	Classroom Environment	10	0.78

2	Student Motivation	12	0.74
3	Teacher Leadership	20	0.83

These values confirm that all scales used in the questionnaire have acceptable to strong reliability, supporting their use in further statistical analysis.

Data Analysis

After data entry, **descriptive and inferential statistics** were used for analysis. Descriptive statistics such as **mean and standard deviation** were calculated to summarize responses across variables. To test the relationships among classroom environment, student motivation, and teacher leadership, **correlational analysis** and **Analysis of Variance (ANOVA)** were employed. ANOVA was used to assess the significance of mean differences across demographic groups. For examining the **mediating role of teacher leadership**, **structural equation modeling (SEM)** was recommended for further analysis, enabling a more accurate understanding of the indirect effects and inter-variable relationships within the theoretical framework.

RESULTS

This study examined gender-based differences among participants to understand their perceptions of the relationship between classroom environment and student motivation, with teacher leadership as a mediating factor (table 3.1). The significance (p -2-tailed) values of the differences, which are below the threshold of .05 (Pallant, 2007, p. 235), indicate a statistically significant difference in the mean scores of the scales listed below (see Table 4.4). In the Classroom Management scale, male participants reported a slightly higher mean score ($M=4.36$, $SD=0.91$) than females ($M=4.14$, $SD=0.70$), though the difference was not statistically significant ($p=0.113$, $p>.05$). For the Student Motivation scale, males ($M=4.23$, $SD=0.75$) also scored slightly higher than females ($M=4.21$, $SD=0.75$), and while the difference was statistically significant ($p=0.03$, $p<.05$), the effect size was small (Cohen's $d=0.35$), indicating only a minor difference in perception. On the Teacher Leadership scale, males again reported higher scores ($M=3.85$, $SD=0.72$) than females ($M=3.73$, $SD=0.65$), but this difference was not statistically significant ($p=0.730$, $p>.05$). Overall, gender-based differences were minimal across all three scales.

Table 1 Mean Values and Differences Based on the Gender of the Sample (t-test Analysis)

Scales	Male		Female.		Df	Sig.	Effect size Eta ²
	Mean	SD	Mean	SD			
Classroom Management	4.36	.91	4.14	.70	398	.11	---
Student Motivation	4.23	.75	4.21	.75	301	.03	.35
Teacher Leadership	3.85	.72	3.73	.65	398	.73	

In the Classroom Management scale, English discipline participants reported a higher mean score ($M=4.29$, $SD=0.61$) compared to those from Education ($M=4.17$, $SD=0.60$); however, the difference was not statistically significant ($p=0.20$, $p>.05$), though the effect size was moderate (Cohen's $d=0.62$). On the Student Motivation scale, English participants again scored slightly higher ($M=4.16$, $SD=0.57$) than Education participants ($M=4.15$, $SD=0.54$), and the difference was statistically significant ($p=0.004$, $p<.05$) with a large effect size (Cohen's $d=0.85$). For the Teacher Leadership scale, English participants had a mean score of ($M=3.85$, $SD=0.52$), compared to Education participants ($M=3.73$, $SD=0.51$), but this difference was not statistically significant ($p=0.510$, $p>.05$). Overall, while English discipline participants tended to score higher across all three scales, only the difference in Student Motivation was both statistically significant and had a high effect size (table 3.2).

Table 2 Mean Values and Differences Based on the Department of the Sample (t-test Analysis)

Scales	English		Education		Df	Sig.	Effect size Eta ²
	Mean	SD	Mean	SD			
Classroom Management	4.29	.61	4.17	.60	398	.02	.62

Student Motivation	4.16	.57	4.15	.54	398	.004	.85
Teacher Leadership	3.85	.52	3.73	.51	398	.510	

ANOVA results showed no significant differences across universities for Classroom Management (LCWU: M=3.08, PU: M=3.28, UMT: M=3.66; $p=0.510$) and Student Motivation (LCW: M=3.35, PU: M=3.32, UMT: M=3.00; $p=0.870$). However, a significant difference was found in the Teacher Leadership scale ($p=0.008$), where UMT participants (M=4.10) rated leadership more positively than LCWU (M=3.79) and PU (M=3.75). The effect size was small ($\eta^2=0.43$), indicating modest impact despite statistical significance (table 3.3).

Table 3 Analysis of Variance (ANOVA) Based on University

Scales	Sample	Mean	SD	F	P	Sequence of difference	Effect size
Classroom Management	LCW	3.08	.76	3.69	.055		
	PU	3.28	.79				
	UMT	3.66	1.41				
Students Motivation	LCW	3.35	.78	.233	.087		
	PU	3.32	.81				
	UMT	3.00	.74				
Teacher Leadership	LCW	3.79	.63	.312	.008	3>2,1	.43
	PU	3.75	.74				
	UMT	4.10	1.27				

The correlation analysis is used to find the relationship between classroom environment, student motivation, and teacher leadership. Table 3.4 reports the relationship between the following variables; Classroom Environment, Student Motivation, and Teachers' Leadership. Pearson's correlation coefficient is used to quantify the strength and direction of the linear relationships between these variables, with significance tested at the 0.01 level (2-tailed). The Classroom Environment and Student Motivation scales showed a strong positive correlation ($r = 0.603$), statistically significant at the .01 level, indicating a meaningful relationship. Similarly, the Classroom Environment and Teacher Leadership also shared a strong positive correlation ($r = 0.603$), significant at the .01 level. A perfect correlation was found between Student Motivation and Teacher Leadership ($r = 1.000$), suggesting identical movement of these variables in the sample. All correlations were significant at the .01 level, confirming strong interrelationships among the variables.

Table 4 Correlation Analysis of Classroom Environment, Student Motivation, and Teacher Leadership Scale

		Classroom Environment	Student Motivation	Teacher Leadership
Classroom Environment	Pearson Correlation	1	.603**	.603**
	Sig. (2-tailed)		.000	.000
	N	500	500	500
Student Motivation	Pearson Correlation	.603**	1	1.000**
	Sig. (2-tailed)	.000		.000
	N	500	500	500
Teacher Leadership	Pearson Correlation	.603**	1.000**	1
	Sig. (2-tailed)	.000	.000	
	N	500	500	500

** Correlation is significant at the 0.01 level (2-tailed).

The regression analysis shows that the constant for student motivation is 1.033 (SE = 0.078), with a significant t-value of 13.304 ($p = .000$), indicating its meaningful contribution. The classroom environment has an unstandardized coefficient of 0.506 (SE = 0.034), meaning each unit increase leads to a 0.506 rise in student motivation. The standardized Beta is 0.603, showing a strong positive effect of classroom environment on motivation. This relationship is statistically significant ($p = .000$) with a high t-value of 15.081, confirming its reliability as a predictor (table 3.5).

Table 5 Linear regression analysis of student Motivation, and Classroom Environment

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.033	.078		13.304	.000
	classroom environment	.506	.034	.603	15.081	.000

a: Dependent Variable; Student Motivation

The results of a linear regression analysis where Classroom Environment is the dependent variable, and Teacher Leadership is the independent variable (table 3.6). The analysis reveals key insights into the relationship between these two variables. The model's constant is 0.676 (SE = 0.106), with a t-value of 6.389 and a p-value of .000, indicating it significantly contributes to predicting classroom environment. The unstandardized coefficient for teacher leadership is 0.718 (SE = 0.048), meaning each unit increase in leadership raises classroom environment by 0.718 units. The standardized Beta is 0.603, showing a strong positive effect of teacher leadership on classroom environment. This relationship is statistically significant ($p = .000$) with a high t-value of 15.081, confirming teacher leadership as a strong predictor.

Table 6 Regression analysis of Classroom environment and Teacher leadership

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.676	.106		6.389	.000
	teacher leadership	.718	.048	.603	15.081	.000

a. Dependent Variable: classroom environment

DISCUSSION**Discussion**

The findings of this study offer meaningful insights into how classroom environment, teacher leadership, and student motivation are interrelated in the context of higher education in Lahore. The strong positive correlations and statistically significant regression analyses among these variables highlight a robust interconnected model, reinforcing the importance of a holistic approach to educational quality enhancement. Correlation analysis revealed a strong positive relationship between classroom environment and student motivation ($r = .603$, $p < .01$), as well as between classroom environment and teacher leadership ($r = .603$, $p < .01$). These findings align with prior research suggesting that a supportive, structured, and engaging classroom environment enhances student engagement and intrinsic motivation (Fraser, 2012; Deci & Ryan, 2000). Moreover, the perfect correlation ($r = 1.000$) between teacher leadership and student motivation suggests that, within this dataset, these constructs move identically—possibly due to perceived leadership being a key determinant of how students evaluate and respond to their learning experience.

The regression analysis further emphasizes these relationships. Teacher leadership significantly predicted classroom environment ($B = 0.718$, $\beta = 0.603$, $p < .01$), indicating that strong instructional leadership contributes positively to how students perceive their classroom setting. This supports earlier findings by Leithwood and Jantzi (2006), who emphasized that leadership practices—such as providing feedback, setting clear expectations, and creating a safe learning space—are essential for cultivating a positive academic climate.

Similarly, classroom environment significantly predicted student motivation ($B = 0.506$, $\beta = 0.603$, $p < .01$), reinforcing the notion that a conducive physical and emotional setting is a prerequisite for student engagement and performance (Patrick et al., 2001). The strength of this predictive relationship underlines the need for institutions to prioritize classroom management strategies, teacher preparedness, and student-teacher interactions.

T-test analysis revealed minimal but statistically significant gender-based differences in student motivation ($p = 0.03$), with males reporting slightly higher levels. However, the effect size (Cohen's $d = 0.35$) was small, suggesting that while gender differences exist, they may not be practically significant. These results are consistent with past studies that reported negligible gender differences in academic motivation in higher education settings (Vallerand et al., 1992).

Similarly, comparisons based on academic discipline showed that English department students scored slightly higher on classroom environment and student motivation than their Education counterparts, with the difference

in motivation being statistically significant ($p = 0.004$) and the effect size relatively large ($d = 0.85$). This disparity might be attributed to discipline-specific pedagogical styles, faculty engagement, or course content delivery. Research has noted that disciplines with more discussion-based and literature-rich curricula, such as English, may foster higher interaction and cognitive stimulation, thereby enhancing motivation (Biglan, 1973).

The ANOVA findings indicated no significant differences across institutions in classroom management and student motivation. However, a significant difference emerged in the teacher leadership scale ($p = 0.008$), where students from the private university (UMT) rated leadership more positively. Although the effect size was small ($\eta^2 = 0.43$), it suggests institutional variability in how leadership is perceived, potentially due to differences in faculty training, resources, or administrative policies. This echoes research emphasizing the variability in leadership practices across educational institutions and their impact on learning environments (Day et al., 2009).

These findings reinforce the critical role of teacher leadership in shaping classroom environments and, by extension, influencing student motivation. The results call for institutional initiatives focused on leadership development, especially among teaching faculty. Regular workshops, mentorship programs, and performance feedback could enhance leadership qualities and create more responsive learning environments. Additionally, the strong relationship between classroom setting and motivation advocates for ongoing investments in classroom infrastructure, pedagogical innovation, and student engagement strategies. Given the sample's concentration in Lahore-based institutions, the findings may have regional relevance but warrant replication in broader settings to confirm generalizability. Nonetheless, the statistical strength and theoretical alignment of these findings underscore the importance of integrated educational strategies that empower educators and engage students simultaneously.

CONCLUSION

This study investigated the relationship between classroom environment and students' motivation, with a specific focus on the mediating role of teacher leadership in higher education institutions in Lahore. The findings revealed strong positive correlations among all three variables: classroom environment, teacher leadership, and student motivation. Specifically, regression analyses confirmed that both classroom environment and teacher leadership significantly predict student motivation, with teacher leadership also strongly predicting classroom environment. These results underscore that an engaging and well-managed classroom, coupled with strong teacher leadership, significantly enhances student motivation. Additionally, gender- and department-based comparisons showed minimal but statistically notable differences, particularly in student motivation, with males and English discipline students reporting slightly higher motivation. ANOVA results indicated significant differences in perceptions of teacher leadership across institutions, with private university participants rating it more positively. Overall, the study highlights the crucial, interconnected roles of physical and social classroom conditions and teacher leadership in fostering motivated and engaged learners. It advocates for a structural approach to educational improvement that simultaneously enhances the classroom environment and develops leadership qualities in educators to create a more effective and supportive learning ecosystem.

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