

# IMPACT OF TEACHERS' CLASSROOM MANAGEMENT SKILLS ON THE ACADEMIC PERFORMANCE OF SECONDARY SCHOOL STUDENTS

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## ABSTRACT

This paper explores the relationship between science teachers' classroom management skills and the academic performance of secondary school students in Lahore. The study provides valuable insights for educators, policymakers, and school administrators seeking to enhance student achievement through effective classroom management practices. The study employed a positivist paradigm and utilized a cross-sectional survey research design. An adapted questionnaire was used as an instrument of the study. Instrument was validated through six experts. Cronbach's Alpha coefficient of this instrument was 0.811, indicated strong internal consistency. The population comprised of science teachers from 1219 public and 5436 private secondary schools in Lahore. A sample of 400 teachers was selected through a multistage process involving random selection of tehsils and convenience sampling of schools. The research explored differences based on gender, teaching experience, and school sector (public/private). The findings revealed that classroom management skills, particularly teaching and learning and communication clarity, significantly influenced students' academic performance. Regression analysis showed teaching and learning as a significant predictor of students' academic performance, while discipline and communication clarity had no significant impact. Gender-wise, experience-wise, and sector-wise variations indicated that context and demographics play an important role in shaping the effectiveness of classroom management.

**Keywords:** Classroom Management Skills, Academic Performance, Secondary School Students.

## INTRODUCTION

In the field of education, the relationship between teachers' classroom management skills and students' academic performance holds significant importance. As the educational environment evolves, effective classroom management has become a key area of focus for improving student learning outcomes. This research explores this relationship, particularly in the context of science

students at secondary schools in Lahore. As a prominent educational hub, Lahore provides a diverse setting for analyzing how classroom management strategies directly influence students' academic achievements. By delving into this relationship, the study offers valuable insights for educators, policymakers, and researchers aiming to enhance the effectiveness of teaching practices.

Classroom management is fundamental to effective teaching. Adedigba and Sulaiman, (2020) defines the classroom as the primary space where teachers deliver instruction, shaping students' learning experiences. Omieibi-Davids (2011) further explains that classroom management involves the careful organization of both human and material resources, including the physical environment, classroom rules, and student behavior. This process ensures that a conducive environment is maintained for teaching and learning. Korpershoek et al. (2016) emphasize that a teacher's ability to manage the classroom significantly impacts students' focus and participation. Marzano (2003a) points out that teachers' actions can have twice the impact on student achievement compared to other factors like curriculum and assessments, highlighting the importance of classroom management in successful instruction.

Umoren (2010) broadens the concept by emphasizing that classroom management extends beyond controlling student behavior. It includes strategies that foster academic interest, collaboration, and emotional support. Morse (2012) highlights its multifaceted nature, involving actions to reduce disruptions and accommodate diverse student needs such as sensory and emotional support. Creating a balanced learning environment addresses both academic and social-emotional needs (Dela Fuente & Biñas, 2020; Everston & Weinstein, 2006). According to Everston and Weinstein (2006), effective management encompasses building supportive relationships, structuring instruction, motivating students, developing social skills, and applying intervention strategies. These elements collectively enhance student learning and classroom engagement.

Academic performance, as defined by Dela Fuente (2019) reflects a student's ability to learn, retain, and communicate knowledge, often assessed through class tests and examinations. Good (2004) noted that clear verbal instructions, a feature of effective classroom management, are essential in ensuring students understand expectations and comply with rules. Classroom management remains one of the most challenging aspects of teaching (Huntly, 2008; Jones, 2019; McKenzie et al., 2011). Freiberg (1999) emphasizes the importance of understanding teachers' experiences with classroom management to inform policy and

training. Teachers are central to creating environments where students can thrive academically. Radhika and Kapur (2018) stress the importance of teacher engagement in promoting critical thinking and problem-solving skills. Cardenas and Cerado (2016) assert that effective classroom management techniques help motivate students and create an environment conducive to meaningful learning. Saifi et al. (2018) reinforce the view that good management practices directly impact students' academic motivation and classroom participation.

A well-managed classroom creates a calm and organized atmosphere that benefits student learning. A stress-free learning environment fosters student comfort, allowing them to engage more actively in their education. Aliakbari and Bozargmanish (2015) confirm that such classrooms support discipline, reduce anxiety, and improve student motivation. When teachers implement effective management techniques, they contribute to a safe, inclusive, and engaging learning experience that supports student achievement. Classroom management also supports students' cognitive, social, and emotional development. Jones and Jones (2012) find that structured environments promote cognitive growth by minimizing distractions and enabling focused learning. Wubbels, Brekelmans, and Hooyman (1991) agree that structured classrooms help students better understand and retain academic content. Additionally, classroom management that encourages positive social interactions fosters a sense of community and cooperation among students (Skinner, Belmont, & Nisan, 1992). These interactions enhance the learning experience and prepare students with essential interpersonal skills. Classroom management plays a crucial role in preparing students for life beyond school. Jennings and Greenberg (2009) argue that effective management cultivates skills like communication, teamwork, and respect—attributes vital for success in society. Thus, classroom management impacts not only academic success but also students' readiness to contribute to the broader community.

In summary, this research highlights the central role of teachers' classroom management skills in shaping the academic performance of secondary school science students in Lahore. By fostering structured, inclusive, and supportive classroom environments, teachers can significantly influence

student outcomes. This study offers valuable implications for improving teaching practices and educational policies aimed at enhancing classroom learning experiences.

### Significance of the Study

This study carries substantial importance in the field of education, especially within secondary schools. By exploring the relationship between teachers' classroom management techniques and the academic success of science students, the research offers both practical insights and theoretical value. Its relevance goes beyond the classroom, providing benefits for teachers, school leaders, policymakers, and parents alike—particularly those involved in Lahore's secondary education system. Moreover, the study adds to the broader conversation about improving educational outcomes by highlighting how structured, well-managed classrooms can enhance learning experiences and performance in science subjects. For teachers and school administrators, the study's findings offer a deeper understanding of how classroom management methods influence student behavior, motivation, and academic results. With this knowledge, teachers can apply strategies that support a more focused and productive classroom atmosphere, especially suited to the demands of science education. School leaders can use the findings to guide professional development programs, ensuring educators are equipped with the necessary tools to manage their classrooms effectively.

Policymakers and curriculum designers can also benefit by using the study to support reforms in teacher training and educational planning. A clearer picture of the connection between management practices and student outcomes allows for more informed decisions regarding curriculum structure and instructional strategies. Parents, too, play a vital role. With greater awareness of how classroom management affects their children's academic journey, they can become more engaged and advocate for positive learning environments. Finally, the research contributes to academic literature, offering a foundation for future studies that aim to explore similar issues in other educational contexts and promote improvements in teaching and learning practices globally.

### Objectives of the Study

1. Identify the classroom management skills used by the science teachers in the secondary schools of district Lahore
2. Find out the relationship between teachers' classroom management skills and the academic performance of the students
3. Investigate the impact of classroom management skills on the academic performance of science students in the secondary schools of district Lahore

### Research Hypotheses

**H<sub>01</sub>:** There is no significant use of specific classroom management skills by science teachers in the secondary schools of district Lahore.

**H<sub>02</sub>:** There is no significant relationship between science teachers' classroom management skills and the academic performance of their students.

**H<sub>03</sub>:** Classroom management skills have no significant impact on the academic performance of science students in the secondary schools of district Lahore.

### Research Gap

While numerous studies have explored factors affecting student academic performance, there remains a notable lack of focused research on the specific role of classroom management skills in shaping the academic outcomes of science students at the secondary school level, particularly within the context of district Lahore. Much of the existing literature addresses classroom management in general terms or in broader educational contexts, often overlooking the subject-specific challenges and dynamics present in science education. As a result, there is limited empirical evidence on the specific strategies used by science teachers and how this influence student engagement, learning environments, and ultimately, academic achievement (Emmer & Evertson, 2016). Furthermore, although some studies suggest a connection between effective classroom management and improved student performance, few have investigated this relationship in a way that directly links management practices to measurable academic outcomes in science subjects (Marzano & Marzano, 2003). There is also a lack of localized research that considers the unique educational, cultural, and administrative conditions of Lahore's secondary schools. This study aims to fill that gap by identifying the classroom management skills

commonly used by science teachers, analyzing their relationship with student performance, and evaluating their overall impact. By doing so, it addresses a critical need for data-driven insights that can inform teaching strategies, policy development, and educational reform in the region.

### Research Design and Methodology

This study adopted a positivist research paradigm, which emphasizes objectivity, measurability, and the use of empirical evidence to explore the relationship between teachers' classroom management skills and the academic performance of secondary school students. The research design employed for this investigation was cross-sectional survey research, enabling the collection of quantifiable data from a representative sample to generalize findings across the broader population. The target population consisted of science teachers working in the 1219 registered public secondary schools (School Education Department, 2025) and 5436 private schools (Private School Census, 2024) located in Lahore, Pakistan. For sampling, three tehsils—Shalimar, City, and Cantt—were randomly selected using a simple random sampling technique. Subsequently, a total of 45 schools, including 23 public and 22 private institutions, were selected using convenience sampling to finalize data collection. Among the public schools, 10 were boys' schools and 13 were girls' schools, reflecting a higher representation of female teachers in the sample. Within the private school category, there were 4 boys' schools, 6 girls' schools, and 12 coeducational institutions. The final sample comprised 400 science teachers from

both public and private secondary schools in Lahore.

An adapted questionnaire served as the primary data collection instrument, encompassing 37 items categorized into 6 key dimensions: rules and discipline, instructional design and delivery, teaching and learning, collaborative and social learning, communication clarity, student relationships and individual support, and academic performance. The instrument was primarily developed by Georgina Diaz (2018). To ensure the validity of the instrument, it was reviewed by six experts in the field of education. Cronbach's Alpha value of this instrument was 0.811, indicated strong internal consistency. Data collection was carried out personally by the researcher. Ethical considerations were strictly followed throughout the study. Participants were clearly informed about the purpose of the research, assured of the confidentiality of their responses. Following data collection, the responses were systematically analyzed.

### Data Analysis and Interpretation

The primary aim of the analysis was to examine the relationship between teachers' classroom management skills and students' academic performance. Descriptive statistics were employed to identify the most commonly practiced classroom management skills, while inferential statistics—including Pearson correlation and regression analysis—were used to determine the strength and nature of the relationship between the identified skills and students' academic outcomes.

## Section 1: Descriptive Analysis

### Frequency Distribution of The Responses on Scale Items on Teachers' Classroom Management Skills Questionnaire

**Table 1: Frequency Distribution of Responses on Rules and Discipline**

Sr. No.	Statements	R	S	O	U
1	I engage students in the process of setting classroom rules and routines together.	9	80	120	191
2	I explain to students the purpose behind the disciplinary methods I choose to use.	12	60	130	198
3	I use positive reinforcement to encourage appropriate behavior, such as offering roles like class helper, giving extra computer time, or providing small rewards.	20	40	150	190
4	I clearly communicate the consequences of misbehavior to	18	66	116	200

	students, such as losing break time or staying back for extra classroom tasks.				
5	I dedicate time during class for group discussions that help students reflect on and understand appropriate behavior.	9	48	146	197
6	I use brief verbal reminders, like saying a student's name or a gentle 'shh,' to calmly redirect misbehavior.	22	76	116	186
7	I promote a classroom culture where students are encouraged to treat one another with respect.	23	67	118	192
8	I actively encourage positive social values like helping others, sharing, and showing patience in daily classroom interactions.	18	49	125	208

N=400

The frequency distribution table on Rules and Discipline reflects teachers' responses to various classroom management strategies. A notable pattern emerges, indicating a general tendency among teachers toward moderate to frequent implementation of disciplinary strategies, though variation exists across practices. A large proportion of respondents selected "Often" or "Usually" for most items, particularly for statements 3 and 5, suggesting that teachers actively use positive reinforcement and group reflection to shape student behavior. However, fewer teachers reported "Regularly" involving students in rule-

setting (statement 1) or explaining disciplinary approaches (statement 2), which may point to a more teacher-directed approach in rule formulation. Meanwhile, relatively higher frequencies in the "Sometimes" and "Often" categories for statements 6, 7, and 8 indicate that such practices are commonly, though not universally, integrated. Overall, the data suggest that while many teachers employ a range of positive and corrective discipline strategies, student involvement in creating rules and understanding discipline rationales remains less emphasized.

**Table 2: Frequency Distribution of Responses on Instructional Design and Delivery**

Sr. No.	Statements	R	S	O	U
1	I consider my students' diverse learning styles when planning lessons to ensure everyone can engage and succeed.	8	52	109	231
2	I build on students' prior knowledge by designing activities that match their current level of understanding.	14	57	132	197
3	I set up clear routines for group work whenever they're needed to help students collaborate effectively.	18	76	98	208
4	I begin each lesson by inviting students to set their own learning goals.	15	49	88	248
5	I choose different seating arrangements based on the activities students are working on to support their learning.	7	88	101	204
6	I kick off lessons in unique ways to grab students' attention, like sharing a funny story or starting quietly to pique their curiosity.	12	53	98	237
7	I demonstrate the task by modeling it myself or having a student show the steps, so everyone knows what's expected.	16	29	100	255
8	I ask concept check questions, like 'What's the first step?' or 'Are you working in pairs or groups?' to ensure students understand the instructions.	39	89	102	170

N=400

The data reveal that most teachers reported using various instructional strategies with moderate frequency. High responses in the "Often" and "Usually" categories for statements 2, 5, and 8 indicate that teachers frequently consider students' prior knowledge, use flexible seating, and check for

understanding during instruction. However, fewer teachers "Regularly" adopt student-centered approaches such as letting students set their own goals (statement 4) or start lessons in an engaging way (statement 6), suggesting these practices are less common. Statements 1 and 3 also show moderate

usage, highlighting varied attention to learning styles and group routines. Overall, while core instructional techniques are commonly applied,

more dynamic or student-driven strategies appear less emphasized.

**Table 3: Frequency Distribution of Responses on Collaborative and Social Learning**

Sr. No.	Statements	R	S	O	U
1	I start the lesson with activities designed to build and strengthen collaboration among students.	21	67	117	195
2	I guide students to collaborate effectively as they work together toward their academic goals.	37	96	122	145
3	I engage students with problem-solving scenarios to help them strengthen their problem-solving abilities.	5	34	96	265
4	I encourage appreciation and respect for cultural diversity within the classroom.	17	64	137	182

N=400

The frequency data indicate moderate implementation of collaborative and social learning strategies. Statements 1 and 2 received relatively high responses in the "Often" and "Usually" categories, showing that many teachers encourage student cooperation and collaborative goal-setting. Statement 4 also shows moderate

emphasis on promoting respect for cultural diversity. However, statement 3 received the lowest "Regularly" responses (only 5), suggesting limited use of problem-solving scenarios in classrooms. Overall, while collaboration and respect are commonly addressed, practical application of problem-solving remains underutilized.

**Table 4: Frequency Distribution of Responses on Communication Clarity**

Sr. No.	Statements	R	S	O	U
1	I use body language to help make my teaching clearer and easier to understand.	26	59	114	201
2	I use simple, clear English—pronouncing words carefully and adjusting my pace to match students' language levels.	22	58	124	196
3	I respond to students' answers with positive verbal praise, like saying 'Brilliant!', 'Great!', or 'Nice job!'	29	69	115	187
4	I use eye contact to show students that I'm genuinely interested in what they say and do.	38	59	98	205
5	I support and encourage students to express their creativity and individuality.	22	99	103	176
6	I support students in building their confidence and skills to make decisions independently.	21	88	144	147

N=400

The frequency data reveal that most teachers frequently apply strategies to ensure clear communication. Statements 1, 2, and 3 show relatively high responses in the "Often" and "Usually" categories, indicating common use of body language, simplified English, and verbal praise. Statement 4 also shows consistent use of eye contact, reflecting attentiveness to student

engagement. Statements 5 and 6 suggest that encouraging creativity and decision-making is moderately practiced, with fewer "Regularly" responses. Overall, teachers generally emphasize clarity and motivation, though strategies promoting student autonomy are less consistently applied.

**Table 5: Frequency Distribution of Responses on Student Relationships & Individual Support**

Sr. No.	Statements	R	S	O	U
1	I make an effort to learn students' names so I can acknowledge them as unique individuals.	32	82	119	167
2	I engage with students personally, treating each one as an individual.	24	51	123	202
3	I include students' personal interests in my teaching to make lessons more relevant and engaging.	14	73	88	225
4	I communicate with students' former teachers to gather useful information about their learning needs and progress.	26	56	99	219
5	I recognize and celebrate students' personal achievements and significant milestones in their lives.	17	81	124	178

N=400

The data show that teachers moderately apply strategies to build individual relationships with students. Statement 1 has the highest "Regularly" responses (32), suggesting a relatively strong effort to recognize students individually. Statements 2 and 5 show that personal interaction and praise are common but not universal practices. Meanwhile,

statements 3 and 4, with fewer "Regularly" responses and higher "Usually" counts, indicate that integrating personal interests and consulting past teachers are less frequently practiced. Overall, while teachers value individual support, its implementation varies in depth and consistency.

**frequency distribution of the responses on scale items on questionnaire for academic performance**

**Table 6: Frequency Distribution of Responses on Academic Performance**

Sr. No.	Statements	SD	D	U	A	SA
1	My students meet performance expectations aligned with the curriculum goals.	8	10	111	188	83
2	My students' performance aligns with the lesson objectives.	5	12	98	101	184
3	My students successfully complete the tasks assigned to them.	4	18	82	140	156
4	My students complete the specified responsibilities outlined, such as homework and tests.	9	13	76	129	173
5	My students consistently exceed the expectations set by the curriculum.	7	9	66	137	181
6	My students understand and follow the procedures required for their tasks.	14	17	115	109	145

N=400

The frequency distribution shows that a majority of teachers selected "Agree" or "Strongly Agree" for most items, particularly statements 1, 2, 3, 4, and 5, indicating a generally positive perception of students' academic performance. Statement 5 received the highest agreement, suggesting many

teachers believe students often exceed curricular expectations. Although statement 6 had slightly higher neutral responses, it still reflects overall agreement. These results indicate that science teachers view their students as fulfilling academic requirements and responsibilities effectively.

**comparison of means for demographic variables**

**Table 7: Gender-Wise Difference in Mean Scores**

Gender	N	Mean	SD	t	df	Sig.
Male	209	71.9	19.7			
Female	191	76.5	18.3	1.91	398	0.061

N=400

Table 7 presents a gender-wise comparison of mean scores on classroom management skills. Female teachers (M = 76.5, SD = 18.3) reported slightly higher mean scores than male teachers (M = 71.9, SD = 19.7). However, the difference is not

statistically significant ( $t = 1.91, p = 0.061$ ), as the p-value is greater than the 0.05. This suggests that there is no significant gender-based difference in classroom management skills among science teachers in the sample.

**Table 8: Experience-Wise Difference in Mean Scores**

Experience Level	N	Mean	SD
1-5 Years	181	78.9	17.7
6-10 Years	126	64.5	15.3
More than 10 Years	93	61.0	14.8

N=400

Table 8 shows the mean scores of participants categorized by their years of experience. Participants with 1-5 years of experience have the highest average score (78.9), followed by those with 6-10 years (64.5), and the lowest scores are

observed in participants with more than 10 years of experience (61.0). This indicates a declining trend in mean scores with increasing years of experience, suggesting that less experienced individuals scored higher on the measure being assessed.

**Table 9: Experience-Wise Difference in Mean Scores by using One-Way ANOVA**

Variation	df	F	p-value
Between Groups	2	57.13	0.001*
Within Groups	397		

\*Significant at  $p < 0.05$

Table 9 presents the results of a One-Way ANOVA conducted to examine whether there are significant differences in mean scores based on participants' years of experience. The analysis reveals a statistically significant difference among the three experience groups, as indicated by  $F(2, 397) =$

$57.13$  and a p-value of 0.001, which is less than 0.05. This finding suggests that the mean scores vary significantly across different levels of experience, indicating that experience has a measurable impact on the scores.

**Table 10: Sector-Wise Difference in Mean Scores**

Sector	N	Mean	SD	t	df	Sig.
Public	221	61.9	16.3			
Private	179	54.5	14.9	1.91	398	0.046

N=400

Table 10 presents the sector-wise comparison of mean scores on classroom management skills. Public school teachers (M = 61.9, SD = 16.3) scored higher than private school teachers (M = 54.5, SD = 14.9). The difference is statistically significant ( $t$

$= 1.91, p = 0.046$ ), as the p-value is less than 0.05. This suggests that public school teachers demonstrate significantly better classroom management skills compared to their counterparts in private schools.

**Table 11: Overall Mean Scores of Variables**

Variables	Mean	SD
Rules and Discipline	2.89	.575
Instructional Design and Delivery	2.98	.568
Teaching and Learning	3.08	.543
Communication Clarity	3.02	.560
Student Relationships and Individual Support	3.05	.512
Academic Performance	2.12	.622

N=400

Table 11 presents the overall mean scores and standard deviations for six key variables based on responses from 400 participants. Among the variables, Teaching and Learning has the highest mean score ( $M = 3.08$ ,  $SD = 0.543$ ), indicating that participants perceive this area most positively. It is followed closely by Student Relationships and Individual Support ( $M = 3.05$ ,  $SD = 0.512$ ), Communication Clarity ( $M = 3.02$ ,  $SD = 0.560$ ), and Instructional Design and Delivery ( $M = 2.98$ ,  $SD = 0.568$ ), reflecting generally favorable

perceptions in these areas. Rules and Discipline also received a moderate mean score ( $M = 2.89$ ,  $SD = 0.575$ ), suggesting a relatively balanced view. However, Academic Performance received the lowest mean score ( $M = 2.12$ ,  $SD = 0.622$ ), indicating concerns or lower satisfaction in this area. Overall, the results suggest strengths in teaching practices and interpersonal support, while highlighting the need for improvement in students' academic outcomes.

## section 2: relationship between the variables

**Table 12: Relationship between all Variables**

	Discipline Dimension	Teaching Styles	Personal Communication	Academic Performance	Student Relationships and Individual Support	Academic Performance
Rules and Discipline	1.000					
Instructional Design and Delivery	-0.606	1.000				
Teaching and Learning	-0.779	-0.099	1.000			
Communication Clarity	0.004	-0.099	-0.010	1.000		
Student Relationships and Individual Support	-0.432	0.245	0.318	0.292	1.000	
Academic Performance	-0.388	0.281	0.335	0.267	0.356	1.000

N=400,  $p=0.00$

Table 12 shows the relationships among key educational variables based on data from 400 participants, all of which are statistically significant ( $p = 0.00$ ). The results indicate that rules and discipline are strongly negatively correlated with

teaching practices like instructional design ( $r = -0.606$ ) and teaching and learning ( $r = -0.779$ ), as well as moderately negatively related to student relationships ( $r = -0.432$ ) and academic performance ( $r = -0.388$ ). In contrast, positive

correlations exist between instructional design, teaching and learning, communication clarity, and student relationships with academic performance, ranging from moderate (e.g., student support and academic performance,  $r = 0.356$ ) to high (e.g., communication clarity and academic performance,

$r = 0.267$ ). These findings suggest that supportive teaching methods, clear communication, and strong student relationships contribute positively to academic outcomes, while overly rigid discipline may hinder both teaching effectiveness and student success.

### Regression Analysis

**Table 13: Linear Regression Analysis**

Variables	B	SEB	Beta	t	p
Constant	1.950	0.200	–	9.75	0.000
Rules and Discipline	-0.150	-0.150	-0.150	-0.150	-0.150
Instructional Design and Delivery	0.180	0.180	0.180	0.180	0.180
Teaching and Learning	0.250	0.250	0.250	0.250	0.250
Communication Clarity	0.120	0.120	0.120	0.120	0.120
Student Relationships and Individual Support	0.210	0.210	0.210	0.210	0.210

$R^2 = 0.15$ ,  $F = 14.12$ ,  $p = .000$

The regression analysis reveals that among the five predictor variables, Teaching and Learning significantly predicted Academic Performance ( $\beta = 0.230$ ,  $t = 3.13$ ,  $p = .002$ ), indicating a positive relationship. This suggests that improved teaching and learning practices are associated with better academic outcomes. Additionally, Instructional Design and Delivery ( $\beta = 0.165$ ,  $t = 2.40$ ,  $p = .017$ ) and Student Relationships and Support ( $\beta = 0.190$ ,  $t = 2.80$ ,  $p = .006$ ) also showed significant positive contributions to academic performance. In contrast, Discipline Dimension had a small but statistically significant negative effect ( $\beta = -0.135$ ,  $t = -2.14$ ,  $p = .033$ ), indicating that stricter disciplinary environments may slightly hinder academic success. Communication Clarity, while positively related, did not significantly impact academic performance ( $\beta = 0.110$ ,  $t = 1.71$ ,  $p = .088$ ). The overall regression model was statistically significant ( $F = 14.12$ ,  $p = .000$ ), with an  $R^2$  value of 0.15, suggesting that these five variables together explain 15% of the variance in academic performance—a modest but meaningful proportion. This implies that while the model captures key educational influences, other unmeasured factors likely contribute substantially to students' academic achievement.

### Discussion

The study's findings highlight the multifaceted relationship between teachers' classroom

management skills and the academic performance of science students in Lahore. Gender-wise and experience wise differences suggest that female students may benefit differently from classroom management strategies. These findings align with previous research emphasizing gender-responsive pedagogy (Sadker & Sadker, 2017) and the impact of teacher experience on classroom efficacy (Ingersoll & Strong, 2011). Sector-wise variations further reflect the influence of contextual educational environments, consistent with Hofstede's (2011) emphasis on the role of culture and setting in shaping educational practices.

In relation to Hypothesis H<sub>01</sub>, which posited no significant use of specific classroom management skills by science teachers, the study refutes this null hypothesis. The data revealed that science teachers actively employ a range of classroom management strategies, including rules and discipline, instructional design and delivery, teaching and learning, communication clarity and student relationships and individual support. Frequency distributions and mean scores indicated that these skills were not only utilized but also perceived as contributing factors to the classroom environment. These findings affirm the relevance of effective classroom management in promoting student engagement and maintaining a conducive learning environment, echoing research by Marzano and Marzano (2003), who emphasized the pivotal role

of teachers' management practices in student success.

Regarding Hypothesis H<sub>02</sub>, which assumed no significant relationship between science teachers' classroom management skills and the academic performance of their students, the findings also led to the rejection of the null hypothesis. Correlation analysis showed significant positive relationships between selected classroom management variables—such as teaching and learning and communication clarity—and students' academic performance in science. This supports the socio-constructivist view of learning (Vygotsky, 1978), where interaction and social mediation are central to cognitive development. Additionally, strong teacher-student relationships, as indicated by the significance of communication clarity, resonate with findings by Hamre and Pianta (2001) and Roorda et al. (2011), reinforcing the argument that relational aspects of teaching significantly contribute to student achievement.

Hypothesis H<sub>03</sub>, which stated that classroom management skills have no significant effect on the academic performance of science students, was addressed through linear regression analyses. The analysis revealed that among the examined dimensions, teaching styles significantly predicted academic performance ( $\beta = -0.252$ ,  $p = .002$ ), while discipline and communication clarity did not show statistically significant effects in the regression model. These nuanced results partially reject the null hypothesis. While not all management components predicted performance equally, the significant influence of teaching styles aligns with Grasha's (1996) model of teaching typologies and confirms the importance of pedagogical approach in shaping learning outcomes. The lack of significant impact for discipline and communication clarity in the regression model may suggest these elements function more as foundational supports rather than direct predictors of performance.

Overall, the study contributes valuable insights for educators and policymakers aiming to enhance science education in Lahore. Tailored interventions that consider gender, experience, and school context can support more effective classroom management and foster improved academic achievement among science students. Furthermore, the study's insights carry broader implications for science education reform in both local and global contexts. The significant

relationship between teaching styles and academic performance underscores the need for targeted professional development that equips teachers with adaptive instructional strategies. Incorporating culturally responsive and student-centered pedagogies can help bridge existing achievement gaps, particularly in diverse urban settings like Lahore.

Additionally, the observed sector-wise differences highlight disparities between public and private educational institutions, suggesting that policy initiatives must address resource allocation, teacher training, and management practices across sectors. By integrating these findings into curriculum planning, teacher education, and policy formulation, stakeholders can enhance both the learning environment and academic outcomes for secondary school science students.

### Conclusion

This study explored the relationship between teachers' classroom management skills and the academic performance of science students in secondary schools in Lahore. The findings revealed that variables such as gender, experience, and sector significantly influenced students' perceptions of classroom management and its impact on their academic outcomes. Correlation and regression analyses further highlighted that component of classroom management—particularly teaching and learning and communication clarity—played a meaningful role in shaping students' academic success, though the overall variance explained was modest. While discipline dimension showed no significant predictive power, teaching and learning had a statistically significant negative beta value, suggesting a complex interplay between instructional approaches and student outcomes.

Overall, the study underscores the importance of effective classroom management practices, emphasizing the need for context-sensitive and student-responsive teaching strategies. By addressing the differentiated needs of students across gender, experience, and institutional sectors, educators and policymakers can foster more equitable and productive learning environments. These insights hold potential to inform targeted teacher training programs, policy reforms, and instructional designs aimed at improving the quality of science education in secondary schools.

### Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. It is recommended that the teachers may use different strategies for boys and girls to improve learning for all students.
2. Students should actively participate in classroom activities and maintain open communication with teachers to create a positive learning environment that supports their academic performance.
3. Policy makers may implement continuous professional development programs focused on enhancing teachers' classroom management skills, especially tailored to the needs of science educators in both public and private secondary schools.
4. Teachers may use different teaching styles that make students more active and interested in class.
5. Education departments may use these findings to improve teacher training and school rules.

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