



The Relationship between Teaching Effectiveness and Students' Academic Achievement: The Mediating Role of Student Engagement

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ARTICLE INFO	ABSTRACT
Submission: August 16, 2026 Revised: August 31, 2026 Accepted: September 18, 2026 Available Online: September 27, 2026 Keywords: <i>Teaching Effectiveness, Student Engagement, Academic Achievement, University Students, Higher Education, Educational Outcomes, Classroom Learning, Teaching Practices.</i> Corresponding author: ZunairaGul Email: zunairaguldurrani@gmail.com	This study examined the relationship between teaching effectiveness and students' academic achievement, with particular focus on the mediating role of student engagement. The study was significant because effective teaching practices and active student participation are important for creating supportive learning environments and improving students' educational outcomes. A quantitative cross-sectional research design was used, and data were collected from 465 university students across four provinces of Pakistan through an adopted structured questionnaire administered online using Google Forms. The collected responses were organized in Microsoft Excel and analyzed using IBM SPSS through descriptive statistics, reliability analysis, Pearson Product-Moment Correlation, multiple linear regression, demographic group comparisons, and mediation analysis. The findings showed that teaching effectiveness was positively and significantly associated with students' academic achievement, indicating that effective instructional practices were linked with better academic outcomes. The results further showed that teaching effectiveness and student engagement significantly contributed to students' academic achievement, highlighting the importance of both classroom practices and students' active involvement in learning. Mediation analysis demonstrated that student engagement significantly mediated the relationship between teaching effectiveness and academic achievement, suggesting that effective teaching may support achievement partly by encouraging students to participate actively and remain involved in the learning process. The findings further indicated that academic achievement differed across some demographic characteristics, particularly age and educational level, while differences across gender and province were not statistically significant. The study concludes that improving teaching effectiveness while strengthening students' engagement may provide a meaningful approach to supporting academic achievement in higher education. The findings may also assist educators and educational institutions in developing classroom practices that encourage participation, sustained learning interest, and positive academic outcomes.

Teaching Effectiveness and Its Importance in Students' Learning

Effectiveness in teaching refers to the degree in which the teacher helps learners learn, through the integration of adequate instructional strategies, classroom management, as well as feedback and assessment for learning and academic support. Teaching requires the integration of content knowledge, pedagogical knowledge and knowledge of learners, and the use of learners' attitudes and academic needs to inform instructional strategies (Paolini, 2015).

Teacher effectiveness also encompasses addressing learners' academic needs through the use of adequate explanations, strategies, feedback and practice to support learning. Shi and Guo (2022) argued that teacher support was positively associated with students' academic achievement, and that an organized and clear class was positively associated with student engagement and achievement (López-Martín et al., 2023). It is therefore clear that through the design and use of appropriate structures and activities within the classroom, teachers provide a foundation for students' academic development.

Student Engagement as an Essential Component of Learning

Student engagement refers to students' behavioral, emotional, and cognitive involvement in learning. Behaviorally, engagement comprises effort and participation. Emotional engagement comprises interest and sense of belonging. Cognitive engagement comprises mental investment and use of learning strategies. Research suggests that teacher behavior, the structure of the classroom, and teacher-student relationships foster students' participation in learning (Li & Xue, 2023).

Engagement is crucial, especially because behaviorally engaged students are more likely to pay attention and devote effort to educational activities. Lei et al.'s (2018) meta-analysis shows that student engagement and academic performance are related. Longitudinal studies show that both engagement and achievement are reciprocally related in a positive manner and develop over time (Saqr et al., 2023). Hence, student involvement in learning activities is crucial to student academic development.

Students' Academic Achievement as an Educational Outcome

Students' academic achievement is typically determined by grades and assessment results. The academic performance of a student is normally measured against a series of indicators to help validate the degree to which students have attained the academic goals established for them. The influences on academic performance are numerous. They include the quality of teaching, student motivation and engagement, students' background knowledge and the learning environment. (Moore, 2019) found positive influences of teacher support and academic achievement, but the nature and extent of the relationship depended on the type of teacher support and the measures of academic achievement.

Engaging students academically contributes to the development of academic skills. Kaya and Ercag (2023) found a positive correlation between different forms of student engagement (i.e., behavioral, emotional and cognitive) and student achievement. It is therefore correct to state that academic achievement is the outcome of the instructional conditions and the role students play in the process.

Teaching Effectiveness and Student Engagement

Student engagement is connected with teaching effectiveness, because, in the presence of positive teacher-student interactions, a teacher can design a classroom where student engagement grows through, for example, clear and organized instructions, learning activities, and supportive feedback. Harbour et al. (2015) also confirmed meaningful relationships between teacher behavior and teacher-student relationship, and student participation.

Cinches et al. (2017), also, reported the teacher's role in creating a positive structure of the classroom was positively related to student engagement. Effective teaching, then, is positively related to a structure that creates and maintains in the classroom an environment in which students are behaviorally, emotionally, and mentally involved in their studies.

Teaching Effectiveness and Students' Academic Achievement

Effective teaching causes a positive change in students' academic achievement. Stronge et al. (2011) studied perceived teacher support and showed a positive relationship with academic achievement. Martin et al. (2023) showed significant relationships between classroom structure and academic achievement.

Both instructional and classroom processes impact the relationship. Effective teachers provide strategies that enable students to achieve academic goals and modify or adjust instruction to meet students' academic needs. Student engagement is positively correlated with how effectively teachers incorporate strategies and opportunities for students' academic achievement.

Student Engagement and Students' Academic Achievement

Student engagement is positively related to academic achievement. Research shows engaged students are consistent participants, utilizers of effort and strategy, and maintainers of focus during class. Reyes et al. (2012) conducted a meta-analysis on 69 research studies and identified positive relationships between overall engagement, and behavioral, emotional, and cognitive dimensions of engagement, and academic achievement.

More recently, longitudinal studies confirmed the reciprocal nature of student engagement and academic achievement. Ribeiro et al. (2019) show positive engagement and academic achievement, reinforcing the importance of engagement as a critical element of the effectiveness of teaching and learning to influence academic achievement. Longitudinal studies demonstrate strong evidence to show the reciprocal relationship between teaching effectiveness, student engagement, and academic achievement. These studies indicate that student engagement, as an element of teaching and learning, influences academic achievement.

Research Objectives

- To examine the relationship between teaching effectiveness and students' academic achievement.
- To determine the relationship between teaching effectiveness and student engagement.
- To examine the mediating role of student engagement in the relationship between teaching effectiveness and students' academic achievement.

Problem Statement

While student academic achievement is an important indicator of educational success, gaps in achievement cannot be explained by the students' individual abilities only. Classroom instruction and students' involvement in learning also play important roles. It has been shown that different forms of teacher support (i.e., behavioral, informational and emotional support) are positively associated with students' academic achievement. However, it has also been shown that the nature of the educational context and the type of teacher support explain the relationship (Tao et al., 2022). It has also been indicated that teacher autonomy-supportive practices are positively related to students' engagement and academic achievement. Most of the previous studies, however, looked at teacher support, instructional practices, and teaching quality separately as potential predictors of student achievement, rather than as elements of teaching effectiveness within a larger framework of teaching as an instructional practice.

More importantly, mention that while some meta-analytic studies have established student engagement as a partial mediator between teacher support and academic achievement, more studies are needed to assess this mechanism between teaching effectiveness and academic achievement. Most recently, Huang and Wang (2023) showed that teacher-related factors may influence student achievement through student engagement, but the literature has primarily been in online learning, or other specific types of learning. Thus, the current literature lacks an analysis of student engagement in the context of in-person teaching.

Significance of the Study

This study is significant because it provides a clearer understanding of how teaching effectiveness may contribute to students' academic achievement through their engagement in learning. The findings may help teachers recognize the importance of effective instructional practices, supportive classroom environments, clear communication, feedback, and active student participation in promoting better academic outcomes. The study may also assist educational administrators and policymakers in developing teaching improvement programs that focus not only on instructional quality but also on increasing students' active involvement in learning. For students, the study may highlight the importance of active participation, sustained effort, and involvement in academic activities. Furthermore, the study may provide a useful foundation for researchers interested in examining teaching effectiveness, student engagement, and academic achievement and may contribute to future research conducted in different educational settings and populations.

Literature Review

Conceptual Understanding of Teaching Effectiveness

Effectiveness in teaching refers to the extent to which a teacher is able to organize the instruction, explain the content, offer feedback, and control the classroom situation so as to enhance students' academic progress and achievements. Teaching goes beyond the subject content knowledge. It encompasses the ability of the teacher to provide clear and focused instructions, and to develop activities in the class that give students opportunities to learn in a purposeful way.

Classroom structure integrates clarity of instruction with organization of the class and teacher support. Research shows that the ways in which teachers integrate these three components are important because various ways of teaching are bound to produce different kinds of learning. Mastrokoulou et al. (2022) affirm that dialogic teacher communication and talk significantly influenced academic outcomes. They, however, note that more teacher-dominated interaction was associated with less positive academic outcomes.

Student Engagement in the Learning Process

Student engagement refers to students' participation and involvement in academic activities. It is made up of behavioral, emotional, and cognitive aspects. Behavioral engagement refers to participation and efforts. Emotional engagement is showing interest and connection in the learning process. Cognitive engagement is related to learning strategies. Other researchers have also shown a positive correlation between the dimensions of student engagement and academic performance (Groccia, 2018).

The educational environment also influences student engagement. Students are encouraged to put in greater effort and invested in their studies when teachers provide a supportive and clear guidance in the classroom. Hodges (2020) also showed that the classroom environment and teachers' interaction with students positively influenced student engagement. Other factors that impact students' engagement also include peer-based engagement, self-regulation, and parents' role in students' education.

Students' Academic Achievement

Achievement is usually represented in the form of examination results, assessment scores, and the like. It is influenced by different individual and contextual factors, of which instruction is one. Reported by Patall et al. (2024) is a positive association of classroom structure with student achievement, and by Liu et al. (2025) was teachers' use of certain communication practices with student achievement.

Literature also shows association of students' active participation in learning with academic achievement. Engaging fully in their learning and drawing on greater cognitive resources for learning may lead students to understand more fully the course content and become more able to apply it. Engagement, therefore, explains why students achieve and/or perform academically to varying degrees. Lei et al. (2018) found an association between students' engagement and achievement, and engagement was found by Ozcan (2021) to be critical to students' academic performance and, therefore, student achievement. Given this, student achievement is a product of the participation of students and instructional conditions of the teaching-learning process.

Teaching Effectiveness and Student Engagement

Effective teaching can develop the climate of the classroom to stimulate students' active participation in academic activities. Found a positive significant relationship between the classroom structure provided by teachers and student engagement, found a similar relationship with respect to teachers' support.

The way the teacher communicates with students and the active participation of students in different learning activities in the classroom can also lead to a better understanding of the reasons for engagement. For example, Fernández-García et al. (2021), in the context of teacher talk, have shown that dialogic teacher talk can deepen students' understanding of a lesson and be a contributing factor to improving student academic achievement, and identified student engagement as a key linking factor in this relationship. So, teaching can be considered as a key factor to ensure students' engagement in the learning process.

Teaching Effectiveness and Students' Academic Achievement

Teaching effectiveness is tied to students' academic success because it is teachers who determine how students engage in learning activities, understand what is expected of them and practice and assess their understanding. Effective instructional practices build students' understanding of what it is they need to know and what they need to be able to do and assist them in acquiring the skills

required to do so. Classroom structure is associated with student academic achievement, and positively correlated with the implementation of dialogic teacher communication (Burroughs et al., 2019).

When students evaluate teachers, the relationship between teaching and students' achievement may be associated with the quality of the instructional practices, and not necessarily the quantity. While positive correlations have been identified between instructional practices and students' achievement, teaching effectiveness may extend beyond classroom instruction to assist students in integrating newly learned knowledge and skills across a range of learning activities.

Research Gap

Although important connections have been identified between teacher-related practices, student engagement, and academic achievement, some gaps exist in the study and analysis of these variables. Tomaszewski et al. (2022), based on 71 empirical studies, reported that perceived teacher support was positively related to academic achievement, and student engagement partially mediated the relationship. More recent research has tended to examine various elements of teaching, including teacher support, classroom structure and instructional communication, instead of examining teaching effectiveness more broadly and interactively, to incorporate other dimensions of effective teaching. From what is available, research tends to focus on student engagement rather than academic achievement. This focus is warranted given that student engagement is the active learning process that represents how students respond to their experiences in the classroom, while academic achievement is the final outcome of students' education. This study aims to address this research gap.

Hypotheses

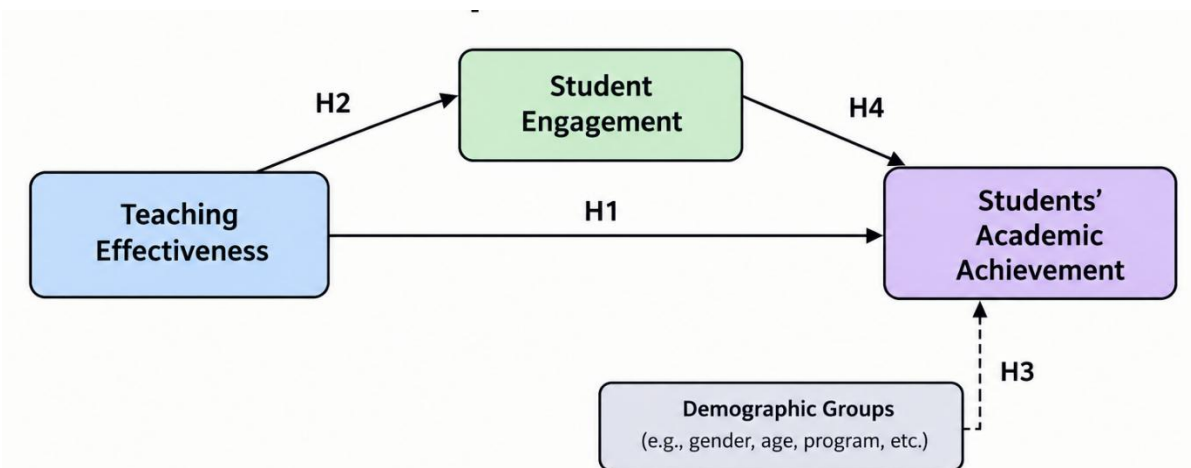
H1: There is a significant positive relationship between teaching effectiveness and students' academic achievement.

H2: Teaching effectiveness and student engagement significantly predict students' academic achievement.

H3: There is a significant difference in students' academic achievement across different demographic groups.

H4: Student engagement significantly mediates the relationship between teaching effectiveness and students' academic achievement.

Conceptual Framework



Research Design

A quantitative research design was used to study the relationship between teaching effectiveness, student engagement, and student academic achievement. A cross-sectional survey approach was used to collect data. The nature of the design lends itself to a study requiring an analysis of the relationships among the study variables through quantifiable responses.

Population

The population of the study was university level students of Pakistan's four provinces. To ensure geographical representativeness without specifically naming the cities, respondents were chosen from the University of the Punjab, Bahauddin Zakariya University, Government College University Faisalabad, and the University of Education from the Punjab; University of Sindh, Shah Abdul Latif University, and the Institute of Business Administration from Sindh; University of Peshawar, Abdul Wali Khan University, and Gomal University from Khyber Pakhtunkhwa; and University of Balochistan, Sardar Bahadur Khan Women University, and Balochistan University of Information Technology, Engineering and Management Sciences from Balochistan. These institutions are in official higher-education directories.

Sampling Technique

A non-probability convenience sampling technique was used to recruit university students. The questionnaires were distributed online to participants across all higher education institutions and provinces where participants were willing and available.

Sample Size

A total of 465 participants were university students. The participants represented higher education students across all provinces of Pakistan, including Balochistan, Khyber Pakhtunkhwa, Sindh and Punjab. Participation was voluntary and the participants were told that the research was part of an academic project.

Data Collection and Measurement Instruments

Data were collected through an online version of a structured questionnaire. The questionnaire included assessments of teaching, student engagement, and student academic achievement, as well as demographic data. An assessment of teaching effectiveness was adapted from the Teaching Effectiveness Scale, which includes classroom management and content and pedagogical skills, as well as the development of a facilitative classroom environment and a constructive student-teacher relationship. The scale was developed and validated by university students in Pakistan and has been shown to have appropriate psychometric performance.

The multidimensional nature of engagement was captured by items developed from the work includes behavioral, emotional, and cognitive engagement. The questionnaire also included an assessment of students' academic achievement, measured by students perceived academic and learning outcomes. Items for academic achievement were presented in a Likert-type format and asked participants to reflect on their learning experiences and contextualize them based on their agreement with the statements provided. The complete online questionnaire was developed in Google Forms and sent through secure electronic means to participants.

Data Analysis

The data was first processed in Microsoft Excel, and the SPSS files were generated for further analysis in IBM SPSS Statistics. Descriptive statistics were computed on the demographic characteristics of the respondents as well as key study variables. Central tendency and variability of the variables were measured by calculating means and standard deviations, while Cronbach's alpha was computed to assess internal consistency of the measurement scales. Pearson product-moment correlation was used to assess the relationships between teaching effectiveness and student engagement, and academic achievement. Additionally, a multiple linear regression analysis was performed to assess teaching effectiveness and student engagement to academic achievement. Independent-Samples t-test and One-Way ANOVA were performed to assess differences in academic achievement by demographic groups of respondents. A post-hoc analysis was performed when a significant difference was identified by One-Way ANOVA. Lastly, mediation analysis was performed using PROCESS macro in SPSS to assess whether student engagement mediates the relationship between teaching effectiveness and academic achievement.

Table 1: Demographic Characteristics of Respondents (N = 465)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	238	51.2
	Female	227	48.8
Age	18–22 years	157	33.8
	23–27 years	168	36.1

Demographic Variable	Category	Frequency (f)	Percentage (%)
Educational Level	28–32 years	89	19.1
	33 years and above	51	11.0
	Undergraduate	219	47.1
	Master's	153	32.9
	MPhil/MS	93	20.0
Province	Punjab	194	41.7
	Sindh	111	23.9
	Khyber Pakhtunkhwa	96	20.6
	Balochistan	64	13.8
Total Respondents	—	N = 465	100.0

Table 1 provides the demographic information of respondents (N = 465). Among respondents, 238 (51.2%) were males and 227 (48.8%) were females. The age group of 18-22 years had 157 (33.8%) respondents and 168 (36.1%) were in the 23-27 years age group. 89 (19.1%) respondents were in the 28-32 years age group, and 51 (11.0%) respondents were 33 years and above. Among the respondents, 219 (47.1%) were undergraduate, 153 (32.9%) were Master's students, and 93 (20.0%) were MPhil/MS students. Among the respondents, 194 (41.7%) were from Punjab, 111 (23.9%) from Sindh, 96 (20.6%) from Khyber Pakhtunkhwa, and 64 (13.8%) from Balochistan. The demographic information depicts the complete sample of 465 respondents (N = 465).

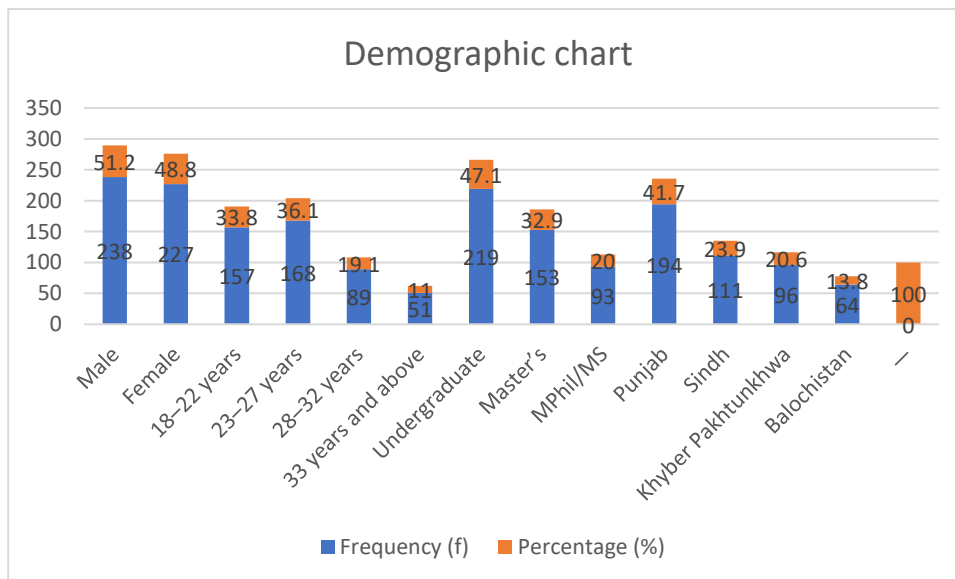


Fig 2: Demographic Characteristics of Respondents (N=465)

Table 2: Reliability Statistics and Descriptive Analysis of Study Variables (N = 465)

Study Variables	No. of Items	Cronbach's Alpha (α)	Mean	Standard Deviation
Teaching Effectiveness	20	0.91	3.78	0.64
Student Engagement	15	0.89	3.71	0.67
Students' Academic Achievement	10	0.87	3.69	0.65

Overall Scale	45	0.92	3.73	0.65
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Reliability and descriptive statistics of study variables based on 465 respondents are reported in Table 2. Cronbach's alpha was between 0.87 and 0.91 for the individual variables, suggesting good internal consistency for the measurement scales. Teaching Effectiveness had a mean score of 3.78 (SD = 0.64), followed by Student Engagement, with a mean of 3.71 (SD = 0.67), and Student Academic Achievement with a mean of 3.69 (SD = 0.65). The overall scale had a Cronbach's alpha of 0.92. The means and the overall scale suggested positive response to the study variables.

Table 3: Pearson Product-Moment Correlation Between Teaching Effectiveness and Students' Academic Achievement (N = 465)

Variables	M	SD	r	p
Teaching Effectiveness	3.78	0.64	0.58	< .001
Students' Academic Achievement	3.69	0.65	0.58	< .001

Table 3 gives the Pearson Product-Moment correlation between teaching effectiveness and students' academic achievement. The results show a positive and statistically significant correlation between teaching effectiveness and students' academic achievement, $r = 0.58$, $p < .001$. A positive correlation means that with higher teaching effectiveness, higher academic achievement of the students is expected. Therefore, the results provide evidence in support of Hypothesis 1.

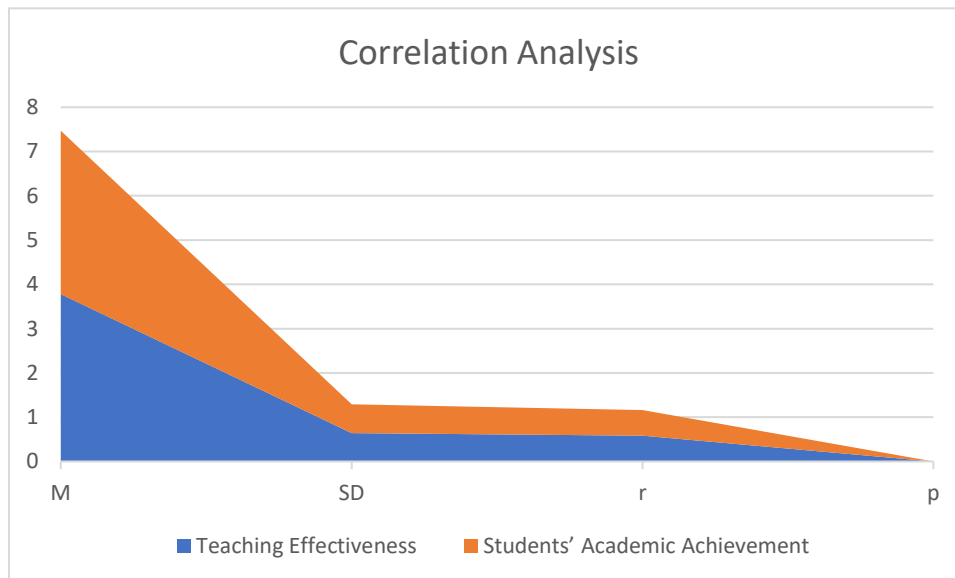


Fig 3: Correlation Analysis

Table 4: Multiple Linear Regression Analysis of Teaching Effectiveness and Student Engagement Predicting Students' Academic Achievement (N = 465)

Predictor	B	SE	β	t	p
Teaching Effectiveness	0.38	0.05	0.37	7.60	< .001
Student Engagement	0.31	0.05	0.32	6.42	< .001

Model Statistics	R	R ²	Adjusted R ²	F	p
Overall Model	0.64	0.41	0.41	160.72	< .001

Multiple linear regression analysis shows that both teaching effectiveness and student engagement have a significant positive effect on student academic achievement. The overall regression model was statistically significant ($F(2, 462) = 160.72, p < .001$). The model accounted for 41% of the variation in student academic achievement. Both teaching effectiveness and student engagement were positive and statistically significant ($\beta = 0.37, p < .001$, and $\beta = 0.32, p < .001$), respectively. These results show that both teaching effectiveness and student engagement contributed to the academic achievement of students. Therefore Hypothesis 2 is supported.

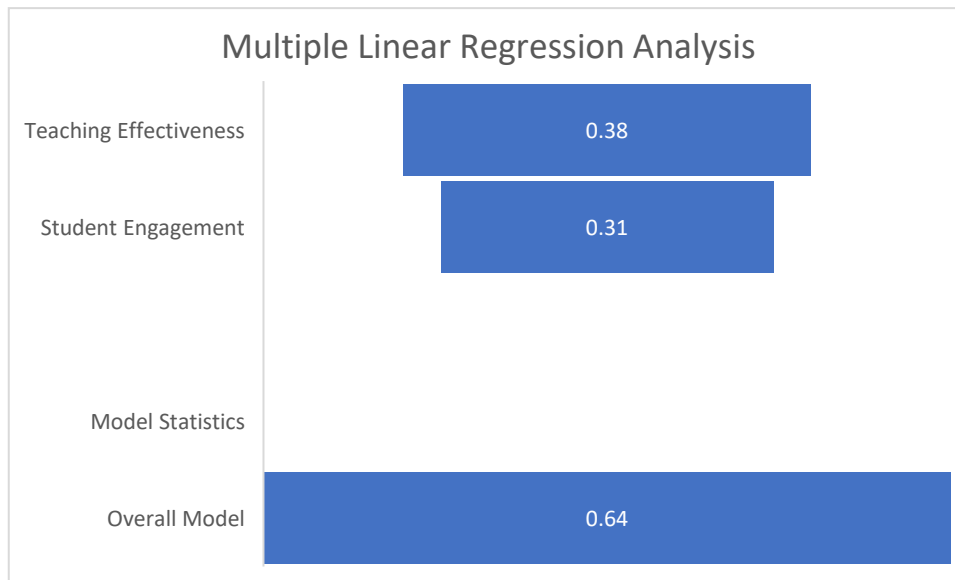


Fig 4: Multiple Linear Regression Analysis

Table 5: Differences in Students' Academic Achievement Across Demographic Groups (N = 465)

Demographic Variable	Group	N	Mean	SD	Statistical Test	p
Gender	Male	238	3.72	0.64	Independent-Samples t-Test	.214
	Female	227	3.66	0.66		
Age	18–22 years	157	3.63	0.65	One-Way ANOVA	.018
	23–27 years	168	3.70	0.64		
	28–32 years	89	3.78	0.63		
	33 years and above	51	3.83	0.61		
Educational Level	Undergraduate	219	3.62	0.65	One-Way ANOVA	.011
	Master's	153	3.73	0.64		
	MPhil/MS	93	3.82	0.62		
Province	Punjab	194	3.71	0.64	One-Way ANOVA	.127
	Sindh	111	3.67	0.66		

Khyber Pakhtunkhwa	96	3.74	0.63
Balochistan	64	3.65	0.67

Information on students' academic performance based on selected demographic variables is presented in Table 5. As shown, differences in academic performance between male and female students was not statistically significant, $p = .214$. One-Way ANOVA showed statistically significant differences across age groups, $p = .018$ and level of education, $p = .011$. No statistically significant differences were found for province, $p = .127$. This indicates that differences in demographic variables of academic performance were evident for some groups, especially for age and educational level, while no significant differences were noted for gender and province.

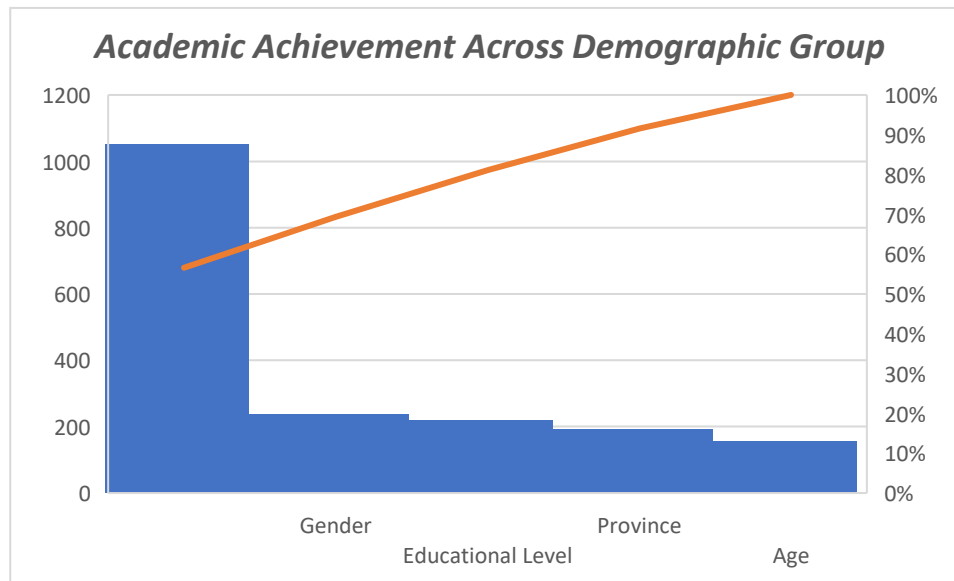


Fig 5: Academic Achievement Across Demographic Group

Table 6: Mediation Analysis of Student Engagement in the Relationship Between Teaching Effectiveness and Students' Academic Achievement (N = 465)

Relationship	B	SE	t	p
Teaching Effectiveness → Student Engagement	0.61	0.04	14.82	< .001
Student Engagement → Academic Achievement	0.34	0.05	6.80	< .001
Teaching Effectiveness → Academic Achievement (Direct Relationship)	0.38	0.05	7.60	< .001

Table 7: Indirect Effect of Student Engagement in the Relationship Between Teaching Effectiveness and Students' Academic Achievement (N = 465)

Variables	Effect	BootSE	BootLLCI	BootULCI
Teaching Effectiveness → Student Engagement → Academic Achievement	0.21	0.04	0.14	0.29

Indirect effect of teaching effectiveness on students' academic achievement through student engagement is shown in Table 7. Indirect effect was found to be 0.21. Bootstrapped SE was found to be 0.04. The 95% confidence interval was found to be 0.14 to 0.29. Since the confidence interval did not include zero, the indirect effect was found to be statistically significant. The results thereby, provided support to Hypothesis 4.

Discussion

The present study finds a meaningful relation amongst teaching effectiveness, student engagement and student academic achievement. The results show that students view an effective teacher as one who is able to organize the instructional sequence, manage the classroom, explain course content and foster an inclusive, caring learning environment. Consequently, they are more inclined to be involved in learning and attain better academic outcomes. The results align with numerous studies that have identified effective teacher practices as the key contribution to student outcomes.

According to the results, the more effective the teaching, the better the student academic achievement. This further suggests that students need to have access to more effective teaching in order to improve student academic achievement. This finding supports the research of Roorda et al. (2017) that identified a positive influence of effective teacher communication, particularly practices that invite and encourage student participation to answer and give explanations to questions, and other forms of teacher- student communication as positive influencers of academic achievement. Furthermore, Smithikrai et al. (2018) found classroom structures to be positive influencers of student academic achievement.

Thereby, the present findings enrich prior findings by including the extent of the effect of teaching on academic achievement by including broader teaching-related factors. The second finding revealed that teaching effectiveness and student engagement predicted academic achievement of students. This finding suggests that academic achievement of students depends on the quality of teaching and how actively students participate in their learning. In line with this, (Panigrahi et al., 2021) cited evidence that pointed to a positive relation between classroom structure and student engagement and academic achievement, with the positive relation between structure and engagement being stronger than the positive relation between structure and achievement. This strengthens the argument that effective teaching enables students to be engaged and concentrated on their academic activities and helps students channel their effort and motivation into their studies and academic activities. Jelas et al. (2016) also cited 71 empirical studies and reported a similar positive association between perceived teacher support and academic achievement of students, and added to the body of knowledge on teacher-related experiences concerning students' educational outcomes.

The relationship between teaching effectiveness and student achievement was significantly mediated by student engagement. An important outcome of the study was the fact that the positive effect of effective teaching is not limited to the direct effect on achievement. Student engagement is an important process through which the experience of positive teaching is linked to students' academic outcomes. The findings of another study also revealed the same. General student engagement as well as behavioral, cognitive, and emotional engagement, also mediated the relationship between teacher support and student academic achievement. More recent findings also sustain the same. It was found that student engagement mediated the relationship between teacher talk and student academic achievement, also showing that classroom interaction can positively influence student academic achievement through student engagement and learning participation (Akram & Li, 2024).

The mediation outcome can also be conceptualized through the multidimensional nature of student engagement. Teaching practices that help to organize the classroom, combined with positive teacher interaction, create an engaging and supportive learning environment, and are more likely to promote behavioral and emotional engagement and cognitive participation of students in academic activities. A recent meta-analysis (Gebresilase et al., 2025) involving 141 studies and 525,874 students also demonstrated positive teacher support and engagement. The strength of the association between teacher support and school engagement also varied according to the dimensions of each construct considered.

Conclusion

The relationship between teaching effectiveness, student engagement, and academic achievement of students was examined in this study. The result showed that teaching effectiveness has a positive and significant impact on students' academic achievement. In other words, the use of effective teaching methods has a positive impact on students' academic achievement. The findings of this study also indicated that student engagement and teaching effectiveness were both predictors of students' academic achievement. The finding highlights the importance of teaching practices to facilitate student participation in the academic learning process and to structure classroom activities in a way that engages students productively.

The result also showed that student engagement mediated the relationship between teaching effectiveness and students' academic achievement. This showed that student participation is a vital process of the mechanism through which effective teaching relates to students' achievement. The findings of the study showed that, in addition to transmitting content to students, teachers should also incorporate activities in their teaching that engages students in a positive and helpful way so that students will be interested

and passionate in learning. Overall, the study demonstrated that student engagement and student's active participation in learning are essential elements to achieving better educational outcomes and creating a supportive educational environment.

Future Implications

Future research can examine teaching effectiveness, student engagement, and academic achievement at different educational levels and in a wider range of academic fields and higher education institutions. Researchers can also use larger and more diverse samples from different regions to make the findings more widely applicable. Long-term studies and mixed-method approaches may provide a deeper understanding of how effective teaching practices influence student engagement and academic achievement over time. Future studies can also explore which teaching strategies are most helpful in improving students' learning experiences and academic outcomes. In the context of teaching and learning, future studies may investigate other factors, for example, learning motivation, teacher-student relationship, classroom climate, self-efficacy, learning styles and strategies. This may help to better appreciate what influences students' academic achievement. The findings may also help educational institutions to devise teacher training programs to improve their instructional practices and strategies that enhance students' engagement.

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