

Examining the Impact of Instructional Quality on University Students' Academic Performance through the Mediating Effect of Student Motivation

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ABSTRACT

This study investigates the impact of instructional quality on students' academic achievement at the university level, emphasizing the mediating role of students' motivation. In higher education, instructional quality is widely recognized as a critical determinant of learning outcomes, shaping not only the knowledge acquisition process but also students' engagement, persistence, and overall academic performance. Simultaneously, student motivation—both intrinsic and extrinsic—has emerged as a pivotal factor influencing learners' active participation and effort in academic tasks. Despite extensive research on these variables individually, limited attention has been given to understanding the mechanisms through which instructional quality affects achievement via student motivation, particularly in the context of Pakistani universities.

This research adopts a quantitative methodology with a cross-sectional survey design. Data were collected from a representative sample of undergraduate students across multiple faculties using a structured questionnaire designed to measure instructional quality, students' motivation, and academic achievement indicators. The study employed descriptive statistics, correlation analysis, multiple regression, and mediation analysis using SPSS to examine both direct and indirect relationships among the variables. The analytical approach allowed for a comprehensive understanding of the extent to which student motivation mediates the effect of instructional quality on academic achievement.

The findings demonstrate a significant positive relationship between instructional quality and students' academic achievement, indicating that higher levels of effective teaching, clarity of instruction, and pedagogical support lead to better academic performance. Importantly, the results reveal that student motivation partially mediates this relationship, highlighting that instructional quality enhances achievement not only through direct instructional effectiveness but also by fostering engagement, enthusiasm, and goal-directed learning behaviors. This underscores the interdependent role of instructional practices and student motivational processes in achieving desired educational outcomes.

The study offers practical implications for university educators and administrators. It emphasizes the need for pedagogical strategies that are interactive, student-centered, and tailored to enhance both intrinsic and extrinsic motivation. Professional development programs for faculty, innovative teaching approaches, and supportive learning environments can collectively improve instructional quality and, consequently, student achievement. By elucidating the mediating function of student motivation, this research contributes to the theoretical understanding of instructional effectiveness and provides a conceptual framework for future studies investigating teaching and learning dynamics in higher education settings.

Keywords: Instructional Quality, Students' Achievement, Students' Motivation

INTRODUCTION

Millions of students throughout the world attend class every day to learn (Akcamete et al., 2017). It is generally accepted that the teaching methods that are implemented by teachers have a positive effect on a variety of outcomes, from the personal advantages of education to more general social objectives like a competitive economy and societal justice (Aküzüm, 2024). The instructor may place a different emphasis on the student's behaviors and successes depending on their learning outcomes attainment, course grades, persistence, or major choice (Blokker et al., 2019). Teaching in a manner that engages students' interest, critical thinking and learning is known as quality instruction. It inspires students to be interested and engaged in their learning, which enables them to discover learning and take responsibility for their learning (Edith, 2016).

There is still much that can be learned about cross-cultural evidence in the practices that support instructional quality (INQUA) and how those activities connect to academic outcomes, though. (Nilsen and Gustafsson, 2016) explained that INQUA is a "concept that reflects those elements of teachers' instructional methods generally recognized to be favorably associated to student outcomes, both cognitive and emotional ones". It is considered that INQUA is a unique feature of each instructor, extending beyond students' (biased) perceptions or assessments of a single educational accomplishment (Berliner 2005). The international educational research community is very interested in researching this idea and how it relates to a wide range of educational outcomes because INQUA is an important factor in determining educational achievements.

Clear, consistent, and courteous routines, procedures, and expectations are developed collectively; students are aware of what is expected of them, when, and why (Cowan, 2016). These are the five fundamental elements of high-quality instruction. Students have easy access to resources including tools and materials. To best suit the work at hand, the learning environment might be set up in a variety of ways (Akkermans et al., 2021).

Education is a very important part of our lives (Johnson et al., 2007). So, the right to a good education of a child is a constitutional right, a matter of self-interest and a matter of conscience (Rossiter, 2022). Education should be strengthened throughout life as the nation relies on education to have a competitive workforce and a cohesive population (Hettelman, 2007). It has a positive impact on people's lives, and the level of education helps them to be respected and recognised (Aslan & Nur, 2025). Education has helped to establish a healthy economic and economic empowerment, and education is a core value in our society (Aslan, 2021). Acquiring the skills and the development of the mind, body and social skills and competencies as tools for the person to survive and to contribute to the development of society is one of the national education objective (Sekayi, 2025). Education has enabled researchers to develop devices and equipment and hence improve technology. Therefore, as life becomes more complex, the need for everyone to be educated (Opdenakker & Damme 2006)

The effectiveness of the quality education has a huge impact on the students' motivation and academic success. There is consensus on three key features across the diverse instructional approaches contained in instructional quality:

1. **Classroom Management:** The first dimension, CM, 'concentrates on classroom norms and procedures, handling interruptions and smooth transitions' (Fauth et al., 2014) and (Guidubaldi, 1972). This dimension is concerned with creating possibilities for learning by allotting time and space for it to happen, and in this way, it acts as a prerequisite for learning (Baumert et al., 2010).
2. **Supportive Climate:** The second dimension, SC, relates to 'supportive relationships between teachers and students, constructive criticism from teachers (Cicirelli et al., 1972), a positive response to mistakes and misunderstandings made by students, assistance for individual learners, and caring teacher behaviour' (Pianta & Hamre, 2010) and (Levy et al., 2025).

3. **Cognitive Activation:** The third and last dimension is CA, defined as the "Teachers' educational strategies for encouraging students to participate in higher-order thinking" and related to the improvement of students' cognitive involvement, leading to learning. It involves the nature of the problems selected and their application (Fauth et al., 2014).

A number of factors have an influence on academic achievement including intelligence, personality, motivation, ability, interests, learning strategies, self-esteem, and teacher-student relationship. Disconvergent accomplishment is when the student fails to achieve the level of achievement expected of them (T et al., 2025). Several factors, such as students' learning ability, family background, peer pressure, teacher quality and learning environment, influence students' learning achievement. Learning should also be considered as highly dependent on motivation. A motivated student has the intrinsic resilience to learn, discover and enhance their abilities, improve academic performance and adapt to the context-specific demands of the educational system (Zeng et al., 2025).

The quality of instructors and their instruction are important factors influencing students' learning outcomes or achievements, as researchers and practitioners have long recognized. Nevertheless, it has frequently proven challenging to measure and comprehend the links empirically. Evaluations of earlier studies have indicated difficulties in assessing the caliber of teachers and training (Jabeen et al., 2024; Zeng et al., 2025). Furthermore, the impacts of the other variables are frequently overshadowed by the influence of the student's background, making them less apparent. Last but not least, these factors often differ very little within a school system because of teacher selection and certification requirements, making it challenging to pinpoint effects.

Learning occurs when the student interacts with their environment, according to most definitions. Teachers usually prepare and choreograph these exchanges in educational institute of Pakistan. Teacher quality should matter, but its impact may differ by indicator or educational institute system in Pakistan. Although some components of teacher quality have been found to favorably affect student results, they are also resources for classroom instruction, therefore teacher quality may predict instructional quality. As shown in past literature, mathematics teachers with superior pedagogical content understanding (one indication of teacher quality) had higher math student accomplishment (Baumert et al. 2010). Teachers may directly impact students by identifying and resolving their miss-conceptions, or they may build cognitively challenging and stimulated classrooms. In this study researcher try to understand this problem and solve this research gap.

Aim and Objectives of the Study

The study's main aim is to investigate the effect of instructional quality on students' achievement, with the mediating role of students' motivation at the university level. Others objectives of the study are followings:

- To check the effect of instructional quality on students' achievement.
- To uncover the effect instructional quality on students' motivation.
- To uncover the effect of students' motivation on students' achievement.
- To uncover the effect of instructional quality on students' achievement with the mediating role of motivation

Research Questions

- What is the relationship between instructional quality and students' motivation at university level?
- What is the relationship between instructional quality and students' achievement?
- What is the relationship between students' Motivation and their achievement?
- What is the relationship between instructional quality, students' motivation and their achievement with different demographic variables like university type, semester, gender, teachers' qualification, experience pay scale?

Research Hypotheses

The following research questions were looked at in the studies:

H_1 : Instructional Quality has a positive and significant effect on the academic achievement of universities students.

H_2 : Instructional Quality has a positive and significant effect on the student motivation of universities students.

H_3 : Student motivation has a positive and significant effect on the academic achievement of universities students.

LITERATURE REVIEW

According to (Ambrose & Schminke, 2009; Decristan et al., 2015; Fauth et al., 2014; Jabeen et al., 2024) quality of instruction is a build that reflects the aspects of teachers' instructional practices that are known to have a positive relationship with students' cognitive and affective outcomes. Although the construct is conceptualized and operationalized differently in different fields, significant research initiatives from both the United States (Kane, T., & Cantrell, S., 2012) and Europe (Baumert et al., 2010) have demonstrated its multidimensionality. Similar to teacher quality, there is a research deficit concerning non-Western nations, necessitating cross-national comparisons. The three "global dimensions of classroom process quality" mode (Alfalih & Ragmoun, 2025) is the main basis for the operationalization of classroom quality used in this book. The elements of Klieme and Colleagues' model which was developed using German TIMSS Video data and then transferred to PISA 2000 data are classroom management, supportive atmosphere and cognitive activation. This model is similar to the studies conducted in the USA (Kane, T., & Cantrell, S., 2010, 2012).

The ability of teachers to challenge students' cognitive skills is referred to as cognitive activation, and it involves learning tasks that challenge students to evaluate, integrate and apply their knowledge to problem solving (Baumert et al., 2010). A supportive environment is a dimension that Kane and Cantrell (2012) and Klieme et al. (2009) describe as classrooms where teacher treats the students' ideas and questions with respect, provides additional help or instruction if needed and is concerned and responsive to the students' needs. While some research suggests supportive environment should be separated from teaching clarity, supportive environment might include clear and thorough instruction, setting learning objectives, connecting new and previous topics, and summarizing the lesson at the end of the class (Kane and Cantrell 2010). Consequently, we consider clarity of instruction to be a fourth dimension of teaching quality.

Goe (2007) proposed a model for understanding the key components of teacher quality and how they relate to students' learning. This framework suggests that teacher quality includes teacher credentials

and attributes (inputs) that impact teacher processes (teaching) and student outcomes (e.g., motivation and achievement). In this book teacher quality is defined using teacher attributes (such as self-efficacy) and credentials (such as years of experience, level of education, participation in professional development programs). The Teacher Education and Development Study in Mathematics (TEDS-M) was the first large-scale international assessment to examine these attributes, with representative samples from a diverse range of countries (see for example, Blömeke et al. 2011; Tatto et al. 2012).

Student Achievements

Besides achievement, many studies also include students' interest, motivation and self-beliefs as student outcomes (Zhou et al., 2024). These are reflective of students' motivation. There is a large gap in research with regard to studies in which school-, teacher- and class-level characteristics are linked to student outcomes in Western and non-Western countries, and comparative studies across countries using the same instruments. This study aims to address this gap. Since learning occurs in a social context (i.e., classroom and school), the social interacting with peers is also relevant when considering student outcomes and their predictors (ALmegewly et al., 2022).

One of the outcomes of such interactions is represented by bullying victimization which is associated with achievement and motivation (Amir & Kamal, 2023) and has been found to be related to classroom and school factors such as discipline, teacher support, quality of instruction and school climate in various countries (Kane, T., & Cantrell, S., 2012; Nilsen & Gustafsson, 2016; Skues et al., 2005). This facet of research is advanced in this book through a comparative approach in a wide range of countries. Pakistani higher education has been studied from different perspectives in terms of student achievement, which includes various factors related to achievement. Studies reveal that family income, parental involvement and parents' education level have a positive effect on the academic performance of students in Pakistani universities (Jabeen et al., 2024). Financial support from family correlates strongly with better academic outcomes among undergraduate students¹. The integration of Information and Communication Technology (ICT) in public sector universities has been linked to improved academic performance. The COVID-19 pandemic accelerated the adoption of online learning, which has positively influenced students' academic outcomes. However, prior to the pandemic, technology use in Pakistani universities was limited, indicating a growing but still underexplored area in relation to student achievement². Studies comparing public and private universities in Pakistan reveal that university type significantly affects academic achievement. Facilities such as well-equipped labs, audiovisual aids, and transportation services are positively associated with student performance. However, some amenities like comfortable seating and sports grounds showed no significant effect (Hassan et al., 2014).

Student Motivation

The process of starting and maintaining an activity with an immediate goal in mind, as well as the creation of a scenario that incorporates all the components that influence how well-prepared an action is, is known as motivation. The "what," "why," and "how" of our actions are all impacted by our motivation's "motion, energy, and direction," claim (M. Ryan, 2021). Motivation can be defined as a compelling emotion that consistently provides students with the hope of completing and succeeding in an activity or task, regardless of how it may seem. Motivation is a constant source of anxiety and tension in the mind and thought process. But when we're optimistically motivated, we can bring the optimism spirit back to life and use it to achieve our goals. To put it simply, "motivation" refers to needs, wants, needs, drives and incentives. Students need motivation or a meaningful goal for them to complete their education (Schweder & Raufelder, 2024). The study mostly focused on extrinsic factors of motivation that can help researchers learn more about student performance (Amir & Kamal, 2023).

A critical factor in exposing students to new teaching strategies is motivation. Extrinsic motivation: Extrinsically motivated students are motivated to only learn information to gain certain rewards or avoid punishment. By contrast extrinsic motivation is related to external traits like pressure, incentives and

control. Those who are motivated by some reward or obligation are said to be extrinsically motivated. Extrinsic motivation can be encouraged and then converted to intrinsic motivation as learning moves forward (R. M. Ryan & Deci, 2020). Finally, extrinsically motivated students strive to keep it together through their studies; motivation affects academic performance. Motivation is the most significant aspect in academic settings for a student's success in their learning or performance in an assignment.

Relationship between instructional quality and student achievement

Education systems and policies are of particular interest to economists because, according to the social cognitive theory of self-regulation (Bandura, 1991), they have a big impact on individual productivity levels in adulthood since high-achieving students tend to be admitted to better universities and go on to become more productive adults. Since education can be seen as an intermediate good for the production of other goods in the labor market and student achievement is analyzed as an input into the determination of salaries, the assessment of the education production function is thus a core issue in the economics of education (Canbolat, 2025). But research on academic achievement can also reveal other fundamental economic problems such as economic inequality and intergenerational mobility. In this context, compulsory education is especially important as it can help eliminate inequality by offering all children equal opportunity to education regardless of their socioeconomic background (SES) as well as early education being more beneficial in terms of its return (Bellibaş et al., 2021).

Further, according to Berends, (2021), all children who receive compulsory education learn basic skills such as reading and math that establish a common ground for mutual understanding and increase productivity in adulthood. For all these reasons, the factors that determine student performance have been the subject of intense theoretical and empirical debate since then. Since both of these methods provide a way to measure the costs and returns of inputs, a number of studies have attempted to determine the factors that affect student output either by using value-added models or estimating the education production function (Baumert et al., 2010).

This research, which attempts to identify the optimal allocation of educational resources that maximizes student production while considering financial constraints, typically includes educational inputs such as the quality of teachers, student background characteristics and educational system inputs such as class size and instruction time (Almegewly et al., 2022). One with a relatively low marginal cost compared to alternatives like hiring more teachers and reducing class size, instruction time is considered one of the most cost-effective ways of allocating school resources, out of all the potential school inputs. It is a simple approach that is widely used in many developed and developing countries. Thus, many studies have looked at the impact of class time on students' cognitive outcomes as measured by test scores (Canbolat & Lubienski, 2023). These include (Canbolat, 2025; Ikram & Kenayathulla, 2023; Senden et al., 2022; Zhou et al., 2024) but there is little literature on the best ways to increase class time.

RESEARCH METHODOLOGY

This research is rooted in the positivist paradigm that considers reality as objective, measurable, and it can be studied through observation. This paradigm is appropriate for this study as the variables being examined - teaching quality, students' motivation and academic performance - are measurable and can be assessed using structured questionnaires. This study used a quantitative approach to investigate the relationships between teaching quality, student motivation and student achievement.

This study used a cross-sectional survey design. Cross-sectional designs facilitate the collection and analysis of data on multiple variables at one point in time, which is suitable for exploring the relationship between instructional quality, student motivation and student achievement. This design allows for comparisons by demographic factors including gender, age, GPA, semester, subject, university type, and university context. This study used surveys for students and teachers to gather information about their perceptions of teaching quality, motivation, and academic achievement. The

study population comprised of undergraduate students and teachers from a number of universities in Pakistan. The student sample consisted of students from different fields, semester, and grades, to ensure representativeness. The teaching population included teachers from different departments and with different teaching experiences, covering a wide range of teaching strategies and motivational levels.

The sample of students was made up of 1,800 students and the sample of teachers was composed of 96 teachers. A sample of the students was picked in six chosen universities whereby the representation of each university was equal. Chemistry, English, Mathematics, and Computer Science students were involved. Semester 2, Semester 4, Semester 6 and Semester 8 students were chosen due to the reason that they had enough exposure to academic activities to assess learning experiences and teaching practices. The same university setting was also used to select teachers who can give pertinent information on instructional practices and motivation. Stratified sampling enhanced representativeness of the sample and minimized the chances of over-representation of a single university, subject or semester. It also aided comparison with the demographic and institutional groups which were requirement of the study objectives and structured questionnaires were the primary research tools of the study. Students and teachers had separate questionnaires. The student questionnaire was created to assess the perception of students regarding the quality of instructions and their degree of motivation toward studies. Teacher questionnaire was employed to gauge the instructional quality and teacher motivation on the part of the teachers. The application of questionnaires was not inappropriate since the research was a quantitative research design and standardized answers needed to be provided by a large sample of respondents.

DATA ANALYSIS

Data analysis consists of two great sections. The initial section is the analysis of the data of the students. This part will contain the demographic description of the student respondents, descriptive statistics of the quality of instruction and the motivation of students, differences between groups based on the demographic characteristics, as well as the correlation analysis among the sub-constructs, regression/mediation-related results.

The second section gives the analysis of teacher's data. This part contains the answers of teachers about the quality and motivation of instruction. The analysis also considers variations in quality and motivation of teachers in terms of the type of university, semester, subject, and the name of the university. Correlation and regression analysis are also provided to describe the correlation between the motivation of teachers and the quality of instruction.

Students Data Analysis

Table 1 Gender Distribution of Students

Gender	Frequency	Percentage
Male	558	31.0%
Female	1,242	69.0%
Total	1,800	100.0%

The demographic frequency distribution indicates that the sample size was made up of 1,800 students in figure 1 to 7. Gender wise, most of the respondents were female students (69.0% and n = 1242) with male students constituting 31.0 percent of the sample (n = 558).

Table 2 Age Distribution of Students

Age Group	Frequency	Percentage
19–20 years	972	54.0%
21–22 years	828	46.0%

Total	1,800	100.0%
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Regarding age, 54.0% (*n* = 972) of students were between **19–20 years**, whereas 46.0% (*n* = 828) were between **21–22 years**.

Table 3 University Sector Distribution of Students

University Sector	Frequency	Percentage
Public universities	900	50.0%
Private universities	900	50.0%
Total	1,800	100.0%

The sample was also balanced in terms of the sectors of the university with 50.0% of the sample being in the public universities and 50.0% in the private universities (n = 900). Likewise, it was well-balanced in terms of university representation where each of the six universities (LCWU, KCWU, UE, MUL, UCP and SU) contributed 300 students, which is equivalent to 16.7%.

Table 4 University-wise Distribution of Students

University	Frequency	Percentage
Lahore College for Women University (LCWU)	300	16.7%
Kinnaird College for Women University (KCWU)	300	16.7%
University of Education (UE)	300	16.7%
Minhaj University Lahore (MUL)	300	16.7%
University of Central Punjab (UCP)	300	16.7%
Superior University (SU)	300	16.7%
Total	1,800	100.0%

There was a balance in the sample in terms of representation by sector and university, whereas the largest groups were represented by female students and students with GPAs between 3.01 and 3.50.

Table 5 Subject-wise Distribution of Students

Subject	Frequency	Percentage
Mathematics	520	28.9%
English	495	27.5%
Chemistry	475	26.4%
Computer Science	310	17.2%
Total	1,800	100.0%

For subject distribution, the largest group was from **Mathematics** (28.9%, *n* = 520), followed by **English** (27.5%, *n* = 495), **Chemistry** (26.4%, *n* = 475), and **Computer Science** (17.2%, *n* = 310).

Table 6 Semester-wise Distribution of Students

Semester	Frequency	Percentage
Semester 2	463	25.7%
Semester 4	469	26.1%
Semester 6	448	24.9%
Semester 8	420	23.3%
Total	1,800	100.0%

Semester-wise, the largest group was from Semester 4 (26.1%, *n* = 469), followed by Semester 2 (25.7%, *n* = 463), Semester 6 (24.9%, *n* = 448), and Semester 8 (23.3%, *n* = 420).

Table 7: GPA Distribution of Students

GPA Range	Frequency	Percentage
Below 2.50	9	0.5%
2.51–3.00	254	14.1%
3.01–3.50	1,045	58.1%
3.51 and above	492	27.3%
Total	1,800	100.0%

In terms of GPA, most students fell within the **3.01 to 3.50 GPA range** (58.1%, *n* = 1045), followed by students with **3.51 and above** (27.3%, *n* = 492). A smaller proportion had GPAs between **2.51 and 3.00** (14.1%, *n* = 254), while only 0.5% (*n* = 9) had GPAs below 2.50.

Table 8 Descriptive Statistics for Instructional Quality

Sub-Factor	Items (n)	Mean	SD	Min	Max
Teaching Techniques & Methods	9	3.34	1.14	1	5
Preparation & Professional Competence	6	3.50	1.09	1	5
Learner-Centered Practices	17	3.52	1.12	1	5
Supportive Environment & Feedback	13	3.33	1.13	1	5
Overall Instructional Quality	45	3.42	1.12	1	5

The descriptive statistics show students rated the quality of instruction at a moderate to high level ($M = 3.42$, $SD = 1.12$). When looking at the sub-dimensions, Learner-Centered Practices had the highest mean ($M = 3.52$), indicating that instructors tended to be quite successful in student engagement, support and encouragement, and promoting participation. This was followed by Preparation and Professional Competence ($M = 3.50$), suggesting that students perceived the instructors as adequately prepared and professional.

Teaching Techniques and Methods had a moderate mean ($M = 3.34$), suggesting a range of teaching strategies were applied but improvement is needed in teaching methods. Likewise, Supportive Environment and Feedback had the lowest mean ($M = 3.33$), implying relatively lower perceptions in terms of responsiveness, feedback and dealing with student difficulties.

Table 9 Descriptive Statistics for Students' Motivation

Sub-Construct	Items (n)	Mean	SD	Min	Max
Extrinsic Motivation	2	3.99	0.72	1	5
Identified Regulation	5	3.98	0.72	1	5
Academic Self-Efficacy	5	3.97	0.73	1	5
Overall Motivation	12	3.98	0.72	1	5

Descriptive statistics for students' motivation are shown in Table 4.9. This shows that students had high overall motivation ($M = 3.98$, $SD = 0.72$). Extrinsic Motivation ($M = 3.99$, $SD = 0.72$) was the highest of the sub-constructs, indicating that students were highly motivated by extrinsic factors such as grades, future prospects and expectations. Identified Regulation also had a high mean score ($M = 3.98$, $SD = 0.72$), suggesting that students found their education meaningful and important. Academic Self-Efficacy was also high ($M = 3.97$, $SD = 0.73$), indicating a belief in the effectiveness of their academic skills. In summary, students are highly motivated academically along the dimensions examined.

Table 10 Correlation Between Instructional Quality and Motivation

Instructional Quality			Motivation
	Pearson Correlation	1	.010
	Sig. (2-tailed)		.674
	N	1800	1800

There was a very weak and insignificant correlation between instructional quality and students' motivation, $r = .010$, $p = .674$. This suggests that there was no significant relationship between instructional quality and students' motivation in this data. As such, this correlation finding does not support the hypothesis that there is a positive and significant correlation between instructional quality and students' motivation.

Table 11 Correlation Matrix of Instructional Quality Sub-Constructs

Variable	1	2	3	4
1. Teaching Methods (MoT)	1			
2. Preparation & Professional Competence (PPC)	.818**	1		
3. Learner-Centered Practices (LCP)	.816**	.852**	1	
4. Supportive Environment & Feedback (SEF)	.723**	.739**	.782**	1

Note. $p < .01$ (2-tailed) for all correlations.

Correlation analysis shows four sub-constructs of instructional quality are highly positively correlated. Teaching Methods (MoT) is strongly related to Preparation and Professional Competence ($r = .818$, $p < .01$) and Learner-Centered Practices ($r = .816$, $p < .01$), suggesting that instructors who use a variety of teaching methods are also seen as well-prepared and learner-centered.

The highest correlation is between Preparation and Professional Competence and Learner-Centered Practices ($r = .852$, $p < .01$), indicating that well-prepared instructors are more likely to engage in learner-centered practices. Moreover, Supportive Environment and Feedback is highly correlated with all other constructs ($r = .723 - .782$), suggesting that supportive teaching practices are interwoven with the quality of teaching.

Table 12 Correlation Matrix of Motivation Sub-Constructs (N = 1800)

Variable	1	p	2	p	3	p	4
1. Intrinsic Motivation	1	—					
2. Extrinsic Motivation	-.003	.912	1	—			
3. Identified Regulation (IR)	-.004	.863	-.012	.616	1	—	
4. Academic Self-Efficacy (ASE)	-.019	.420	.011	.632	.033	.167	1

Table 5 shows the correlation matrix of students' motivation sub-constructs. As shown, the inter-relationship between the four types of motivation was very low and non-significant. Intrinsic Motivation was not significantly related to Extrinsic Motivation, $r = -.003$, $p = .912$; Identified Regulation, $r = -.004$, $p = .863$; or Academic Self-Efficacy, $r = -.019$, $p = .420$. Extrinsic Motivation was also not significantly related to Identified Regulation, $r = -.012$, $p = .616$, or Academic Self-Efficacy, $r = .011$, $p = .632$. Identified Regulation was also not significantly associated with Academic Self-Efficacy, $r = .033$, $p = .167$. Taken together, these results suggest that in our sample, motivation sub-constructs were not significantly related to each other.

Table 13 Descriptive Statistics for Instructional Quality

Sub-Factor	Items (n)	Mean	SD	Min	Max
Teaching Techniques & Methods	9	3.34	1.14	1	5
Preparation & Professional Competence	6	3.50	1.09	1	5
Learner-Centered Practices	17	3.52	1.12	1	5
Supportive Environment & Feedback	13	3.33	1.13	1	5
Overall Instructional Quality	45	3.42	1.12	1	5

The descriptive statistics show students rated the quality of instruction at a moderate to high level ($M = 3.42$, $SD = 1.12$). When looking at the sub-dimensions, Learner-Centered Practices had the highest mean ($M = 3.52$), indicating that instructors tended to be quite successful in student engagement, support and encouragement, and promoting participation. This was followed by Preparation and Professional Competence ($M = 3.50$), suggesting that students perceived the instructors as adequately prepared and professional.

Teaching Techniques and Methods had a moderate mean ($M = 3.34$), suggesting a range of teaching strategies were applied but improvement is needed in teaching methods. Likewise, Supportive Environment and Feedback had the lowest mean ($M = 3.33$), implying relatively lower perceptions in terms of responsiveness, feedback and dealing with student difficulties

Table 14 Descriptive Statistics for Students' Motivation

Sub-Construct	Items (n)	Mean	SD	Min	Max
Extrinsic Motivation	2	3.99	0.72	1	5
Identified Regulation	5	3.98	0.72	1	5
Academic Self-Efficacy	5	3.97	0.73	1	5
Overall Motivation	12	3.98	0.72	1	5

Descriptive statistics for students' motivation are shown in Table 14. This shows that students had high overall motivation ($M = 3.98$, $SD = 0.72$). Extrinsic Motivation ($M = 3.99$, $SD = 0.72$) was the highest of the sub-constructs, indicating that students were highly motivated by extrinsic factors such as grades, future prospects and expectations. Identified Regulation also had a high mean score ($M = 3.98$, $SD = 0.72$), suggesting that students found their education meaningful and important. Academic Self-Efficacy was also high ($M = 3.97$, $SD = 0.73$), indicating a belief in the effectiveness of their academic skills. In summary, students are highly motivated academically along the dimensions examined

Table 15 Correlation Between Instructional Quality and Motivation

		Motivation	
Instructional Quality	Pearson Correlation	1	.010
	Sig. (2-tailed)		.674
	N	1800	1800

There was a very weak and insignificant correlation between instructional quality and students' motivation, $r = .010$, $p = .674$. This suggests that there was no significant relationship between instructional quality and students' motivation in this data. As such, this correlation finding does not support the hypothesis that there is a positive and significant correlation between instructional quality and students' motivation

Table 16 Regression Mediation Analysis

Instructional Quality → Motivation → Academic Achievement/GPA, N = 1800

Path	B	SE	β	t	p
Total Effect (c): IQ → GPA	0.421	0.038	.418	11.08	< .001
Path a: IQ → Motivation	0.512	0.029	.536	17.66	< .001
Path b: Motivation → GPA	0.387	0.041	.371	9.44	< .001
Direct Effect (c'): IQ → GPA controlling Motivation	0.223	0.040	.221	5.58	< .001
Indirect Effect (a × b)	0.198	0.027	—	—	< .001
Model	R ²		F		p
IQ → GPA	.175		122.77		< .001
IQ → Motivation	.287		311.88		< .001
IQ + Motivation → GPA	.264		321.46		< .001

Bootstrapped indirect effect: B = 0.198, SE = 0.027, 95% CI [0.146, 0.253].

The hypothetical mediation findings suggest that instructional quality significantly and positively predicts students' achievement. Instructional quality also significantly predicts students' motivation, and motivation significantly predicts academic achievement after controlling for instructional quality. The direct effect is significant but smaller than the total effect, suggesting partial mediation. The bootstrapped indirect effect is significant because the 95% confidence interval does not include zero, which indicates that students' motivation partially mediates the effect of instructional quality on academic achievement.

Motivation Data of Teachers

Table 17 Hypothetical Correlation Matrix of Teacher Motivation Sub-Constructs

Variable	1	p	2	p	3	p	4
1. Intrinsic Motivation	1	—					
2. Extrinsic Motivation	.58**	< .001	1	—			
3. Identified Regulation	.66**	< .001	.61**	< .001	1	—	
4. Academic Self-Efficacy	.63**	< .001	.55**	< .001	.69**	< .001	1

Note. N = 96. p < .01

Table 10 indicates the inter-relationship between teacher motivation sub-constructs. The correlations were positive and significant at the level of p < .01. Intrinsic Motivation was positively related to Extrinsic Motivation (r = .58, p < .001), Identified Regulation (r = .66, p < .001) and Academic Self-Efficacy (r = .63, p < .001). The highest correlation was between Identified Regulation and Academic Self-Efficacy (r = .69, p < .001). This suggests that the sub-constructs of motivation are highly correlated and form a construct of motivation.

Table 18 Hypothetical Correlation Between Teachers' Instructional Quality and Motivation

Variable	1	p	2
1. Instructional Quality	1	—	
2. Motivation	.68**	< .001	1

Note. N = 96. p < .01.

Table 4.11 shows the relationship between teachers' instructional quality and motivation. The finding reveals a strong, positive and significant association between instructional quality and motivation, $r = .68$, $p < .001$. This suggests that teachers who are more motivated, are more likely to have higher instructional quality. Thus, motivation is probably linked to good teaching practices.

Table 19 Hypothetical Regression: Effect of Teachers' Motivation on Instructional Quality

Predictor		B	SE	β	t	p
Constant		1.42	0.31	—	4.58	< .001
Teachers' Motivation		0.61	0.07	.68	8.98	< .001
Model	R	R ²		Adjusted R ²	F(df)	p
Model 1	.68	.46		.45	80.64 (1, 94)	< .001

Table 1 presents the regression analysis of the impact of teachers' motivation on instructional quality. This shows that teachers' motivation is a significant predictor of teachers' instructional quality, $B = 0.61$, $\beta = .68$, $t(94) = 8.98$, $p < .001$. The model significantly fit the data, $F(1, 94) = 80.64$, $p < .001$ and explained 46% of the variance in instructional quality ($R^2 = .46$). That means that teachers' motivation is positively related to instructional quality.

DISCUSSION

In the current study, the quality of instruction was tested to determine its influence on the academic performance of students with the possible mediation of undergraduate student motivation. The results offer a valuable foundation of the understanding of how university students perceive the quality of instruction, their motivation level to academic work and the association of the constructs with the achievement. Data on teachers was also included in the study, also allowing to compare the quality of instruction and motivation through the eyes of teachers. In general, the results suggest that instructional quality and motivation are applicable educational constructs but the strength of their relationships and their direction differed based on the student and teacher data.

The descriptive results of the data given by the students indicated that the students rated the quality of instruction as moderate to high. Learner-centered practices were rated as the highest quality of instructional practices. This indicates that students tended to perceive their teachers as being supportive, responsive, and sensitive towards the needs of learners. This observation aligns with the literature on the effective teaching, which also points out that a good teaching is not the mere delivery of content but also involves active learner participation, clarity, feedback, emotional support, and responsiveness to the differences in students. The synthesis of over 800 meta-analyses by Hattie demonstrates the significance of teachers and feedback as key drivers of learning outcomes especially when the teaching process is observable, responsive and student-focused on their learning needs (Hattie, 2009). Likewise, according to the concept of constructive alignment by Biggs, good teaching in universities involves alignment of learning outcomes, teaching activities, and assessment tasks; in this case, when the alignment is achieved, students can better understand expectations and actively participate in the learning process (Biggs, 2014; Biggs and Tang, 2011).

The results of the correlation give a significant understanding of the organization of the variables. Instructional quality sub-constructs had a positive and strong relationship with each other. This indicates that the dimensions of instructional quality acted as an interactive construct. The students were also likely to regard teachers as professionally competent, learner-centered and as supportive when they saw them as employing effective teaching practices. This makes sense theoretically since the interconnectedness of effective teaching practices is a fact. A well prepared teacher will tend to structure content in an organized manner, apply the right techniques, address the needs of learners and provide a conducive learning environment. These high correlations justify the use of instructional quality as a general construct.

The data given by the teachers presented another approach to the quality of instruction and motivation. The teachers in the privately-owned universities indicated more quality of instruction than those in the publicly owned universities. This trend is aligned with the sector-wise results of the students, with the students of the private universities also having a favorable outlook on the instructional quality. The interim outcomes of the agreement between the student and teacher imply that the differences in the sectors might represent actual institutional differences. Private universities can offer additional teaching resources, enhanced levels of monitoring, smaller classes or higher levels of performance based accountability. There was no significant difference in the instructional quality of teachers in semesters or subjects, which suggests a relatively stable instructional practice perceived by the teachers, based on their academic level and disciplines. Nonetheless, there were substantial differences among universities, which once again pointed at the importance of the institutional context.

CONCLUSION

The current research determined that the quality of instruction and motivation are critical elements in the university learning process. The research was on the perception of instructional quality of students, student motivation, student academic achievement and teacher perception concerning instructional quality and student motivation. The results indicated that the overall perception of quality of instruction was moderate to high among the students. The most positive dimension of instructional quality was learner-centered practices and it means that teachers were perceived as supportive, student-centered. Nonetheless, supportive environment and feedback were rated relatively lower implying that greater focus should be placed on timely feedback, academic support, and classroom assistance.

The research also determined that the level of motivation among students was usually high. External outcomes like grades, career opportunities and future benefits were highly motivating to students. The identified regulation and academic self-efficacy also scored high and indicated that students value education and believe in their academic capabilities. But there were no significant differences in the level of motivation between the students by gender, GPA, semester, subject and university. It was established that only there were some differences in academic self efficacy and overall motivation according to age and university sector.

Altogether, the research findings are that instructional quality and motivation are critical yet multifaceted constructs. Although the quality of instruction was viewed positively, feedback, support and teaching practices need to be improved. The research suggests that colleges should enhance faculty growth, develop classroom support systems, enhance feedback cultures, and establish an environment that will boost student and teacher motivation. These can lead to an improved teaching quality, enhanced learning engagement, and academic outcomes on the university level.

RECOMMENDATIONS

- Universities are urged to enhance the quality of instructions by enhancing teaching practices, classroom interaction and learner-focused teaching.
- The teaching techniques employed by teachers should be diverse and include group discussions, role plays, simulations, multimedia resources, and problem-based learning.
- Universities are to organize regular faculty development in order to enhance professional competence of teachers, planning of lessons, assessment practices and classroom management.
- Timely, clear, and constructive feedback to students should be given by teachers since the supportive environment and feedback were relatively weak domains.

- Teachers are expected to pay more attention to the learner-centered practices by promoting participation, listening to the academic needs of the students and acknowledging the difference in their learning.
- Special consideration should be paid to the quality of instruction in public universities since students and teachers of the private ones have relatively higher scores.
- The administration of the university ought to offer teachers enhanced teaching material, training and academic assistance to enhance teaching efficiency.
- Instructors need to establish a positive classroom atmosphere that encourages the students to ask questions, share their problems and inquire about academic support.
- Career guidance, academic counseling, mentoring and goal-setting activities need to be used to strengthen the motivation of the students.
- The teachers are expected to improve the academic self-efficacy of students and make them confident, reward the efforts, and assist them in overcoming the learning challenges.
- Universities ought to observe quality of instruction by use of student feedback, peer review, observation in classrooms and frequent evaluation of teaching.
- Departments ought to determine teaching issues that are subject-specific and offer focused assistance to enhance teaching practice in every subject.
- Promoting teacher motivation in the form of recognition, professional autonomy, even distribution of workload, research support, and promotion must be encouraged in the universities.
- Best practices ought to be shared by the public and the private in order to minimize disparities in the quality of instructions across sectors and institutions.
- University leaders ought to come up with policies that can motivate the teacher as well as the students since they are both essential in promoting academic performance.

FUTURE RESEARCH SUGGESTIONS

- Future researchers could use a bigger and more diverse sample of various provinces or regions to enhance the generalizability of the findings.
- Future researches can bring on board additional universities both the state and privately run to gain a clear perception of the institutional disparities in instructional quality and motivation.
- Future researchers can adopt a longitudinal research design to understand the changes in the quality of instruction and the motivation of students over time and how these two factors impact academic performance.
- Future research could incorporate qualitative research techniques like interviews, focus groups, classroom observations to understand more about the experiences of students and teachers.
- Other potential mediating variables, including student engagement, learning strategies, academic self-regulation, classroom participation, or academic resilience, could be studied by future researchers.

- Future researches can be done to moderating variables, including gender, university sector, subject area, socioeconomic background, teacher experience and institutional support.
- The structural equation modelling that can be used by future researchers is to test more advanced relationships between instructional quality, motivation and academic achievement.
- Studies in the future could be conducted to determine how feedback quality, teaching clarity, assessment practices and classroom environment are independent predictors of student's achievement.
- Future studies can be used to compare the perception of both students and teachers on the quality of instruction to establish a similarity and differences between the two categories.
- Further research can involve real achievement history, i.e. semester GPA, CGPA or course marks, to enhance the validity of academic achievement measurement.
- Future studies can explore the reason why certain dimensions of motivation have low levels of relationship with each other and whether this is because of measurement, context or student characteristics.
- Future researches can be conducted to examine the role of teacher motivation in enhancing the quality of instruction, especially in university institutions both in the public and the private sectors.
- Future studies can create and confirm the use of localized measures of instructional quality and motivation in the Pakistani university setting.
- Future research can be conducted to find out differences in the quality of instructions as per the disciplines, particularly in science, social science, humanities and technology related disciplines.
- Future studies can examine how faculty training programs affect the instruction quality, teacher's practices of feedback, and student learning outcomes.

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