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THE MEDIATING ROLE OF CLASSROOM INTERACTION IN THE RELATIONSHIP BETWEEN INSTRUCTIONAL FEEDBACKS AND WRITING STRATEGIES AMONG PAKISTANI ESL LEARNERS

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Abstract
This study examined the mediating effect of classroom interaction on the relationship between instructional feedback and writing strategies among undergraduate learners in the Pakistani English as a Second Language (ESL) context. Grounded in social constructivist and self-regulated learning perspectives, the study investigated whether classroom interaction serves as a mechanism through which instructional feedback enhances students' use of writing. A quantitative research design utilizing correlation and mediation analysis was employed. The respondents were a total of 600 second-year undergraduate students from various departments in a major Pakistani university. Data were collected using validated, adapted questionnaires measuring the level of instructional feedback, classroom interaction, and writing strategies. Results revealed moderate to high levels of instructional feedback, writing strategy use, and classroom interaction among Pakistani respondents. Correlation analysis showed significant positive relationships among all three variables. Mediation analysis further demonstrated that classroom interaction significantly mediated the relationship between instructional feedback and writing strategies, contributing to over half of the total effect. The findings highlight the necessity of integrating responsive instructional feedback with interactive classroom practices to promote effective writing strategies in the Pakistani higher education sector.

INTRODUCTION
Writing strategies are fundamental to the learning development of students' writing skills, especially in second-language learning environments like Pakistan. Successful writing production is often the result of students utilizing strategies such as planning, monitoring, reviewing, and translating (Bailey & Almusharraf, 2022). Within the Pakistani ESL context, these strategies play a significant role in ensuring learners accurately deliver complex ideas and demonstrate higher-order understanding (Aripin & Rahmat, 2021).

However, Pakistani learners often struggle to employ these strategies efficiently due to a lack of metacognitive awareness and difficulties in self-regulation (Aripin & Rahmat, 2021). Challenges such as insufficient feedback and limited classroom interaction have been identified as primary factors contributing to poor writing performance among ESL learners (Aluemalai & Maniam, 2020). Recent statistics from the International English Language Testing System (IELTS) indicate that Pakistani ESL learners remain weak in writing compared to other nations, identifying it as the most challenging macro skill to master (Razzaq & Hamzah, 2024). Consequently, there is an urgent need to implement specific writing strategies to enhance the performance of these learners (Razzaq & Hamzah, 2024).

PROBLEM STATEMENT

Despite the importance of writing for academic success, many Pakistani undergraduate students continue to struggle with academic compositions. While educators are expected to be competitive in the target language to meet international standards, a significant gap remains in students' ability to organize thoughts and effectively revise drafts (Saavedra & Barredo, 2020; Franca & Napil, 2022). While previous research has explored writing strategies in isolation, the integration of these strategies within the context of classroom interaction and instructional feedback remains under-researched in Pakistan. There is a specific gap in understanding how interactive classroom dynamics encompassing teacher-student and peer-to-peer engagement influence the way Pakistani student's process and apply feedback to enhance their writing strategies.

RESEARCH OBJECTIVES The study aims to:

- Determine the level of instructional feedback perceived by Pakistani undergraduate students.
- Determine the level of writing strategies (planning, monitoring, reviewing, translating, online benefits, and anxiety) employed by these students.
- Examine the relationship between instructional feedback and classroom interaction.
- Investigate whether classroom interaction significantly mediates the relationship between instructional feedback and writing strategies.

RESEARCH QUESTIONS

1. What is the level of perceived instructional feedback among Pakistani ESL undergraduates?
2. Is there a significant relationship between instructional feedback and writing strategies?
3. Is there a significant relationship between instructional feedback and classroom interaction?
4. Does classroom interaction significantly mediate the relationship between instructional feedback and writing strategies?

SIGNIFICANCE OF STUDY

This study is significant for Pakistani undergraduate students as it intervenes in improving writing skills through the investigation of feedback and interaction. By understanding how collaborative learning and metacognitive awareness influence the application of feedback, students can build confidence in their academic writing. Furthermore, the findings help Pakistani educators adapt strategies to suit local needs, aligning with United Nations' Sustainable Development Goal 4 regarding quality and inclusive education.

LITERATURE REVIEW

Learning is inherently social, and according to Vygotsky's sociocultural theory, classroom interaction is the center of the teaching-learning process, directly developing opportunities for English language acquisition (Shawaqfeh et al., 2024). Collaborative learning theory suggests that knowledge thrives when students build it with peers through interactions that shift them from passive receivers to active participants (Lagat & Concepcion, 2022). In the Pakistani context, the role of ESL teachers' feedback has been found to significantly enhance writing proficiency across language accuracy and content quality (Mehdi et al., 2025; Alisoy, 2024). Cognitive process theory, as proposed by Flower and Hayes, posits that

writing is a recursive process of planning, translating, and reviewing. Pakistani students who adopt cognitive strategies such as brainstorming and outlining are better equipped to manage their written processes (Novitaningrum, 2022). Instructional feedback, whether direct (explicit corrections) or indirect (signals of errors), influences students' revision accuracy and long-term skill development (Karim & Nassaji, 2020). Furthermore, classroom interaction—encompassing teacher-student and peer-to-peer engagement—is central to L2 education, as peer collaboration allows students to reflect on language use and develop critical thinking skills (Li & Zhang, 2021). While the strengths of various feedback strategies are established, the interaction between feedback and classroom processes must be maximized to enhance students' writing strategies.

RESEARCH METHODOLOGY

This study utilized quantitative techniques to achieve its objectives. Descriptive research design was used to characterize the levels of instructional feedback, classroom interaction, and writing strategies, while correlational statistics assessed the relationships between these variables.

RESEARCH DESIGN

A quantitative research design was employed, utilizing Pearson's method of data analysis and multiple regression to examine the mediation effect.

TARGETED POPULATION

The targeted population consisted of undergraduate students enrolled in ESL courses at a major university in Pakistan.

SAMPLING TECHNIQUE

A specific selection criterion was used to ensure the targeted participants were included, following an inclusion basis that focused on those who have completed foundational English comprehension courses.

SAMPLE SIZE

The total sample size was 100 second-year undergraduate students. This doubled population ensures a robust dataset for analyzing the complex mediating relationships within the Pakistani context.

DATA COLLECTION TOOLS

Three adapted 5-point Likert scale questionnaires were used:

1. **Instructional Feedback Scale** (Baydas Onlu et al., 2022), measuring perceptions of teacher responses.
2. **Writing Strategies Questionnaire** (Bailey & Almusharraf, 2022), focusing on planning, monitoring, and reviewing.
3. **Classroom Interaction Scale** (Moroaswi et al., 2023), measuring self-perceived perceptiveness, attentiveness, and responsiveness.

Pilot testing in the Pakistani context ensured high reliability, with Cronbach's alpha scores ranging from 0.666 to 0.915.

DATA ANALYSIS TOOLS

Descriptive statistics (mean and standard deviation) were used to measure the levels of the three variables. Pearson product-moment correlation coefficient (PPMC) was used to determine the significance of relationships. Mediation analysis was conducted to examine the indirect effect of classroom interaction.

FINDINGS OF STUDY

Overview of Data Analysis

This chapter presents the quantitative findings of the study drawn from survey data collected from **100 Pakistani ESL undergraduate learners**. The analysis was conducted using three statistical procedures aligned with the four research questions. Descriptive statistics — specifically mean (M) and standard deviation (SD) — were computed to determine the levels of instructional feedback, writing strategies, and classroom interaction (RQ1). Pearson Product-Moment Correlation (PPMC) was employed to examine the bivariate relationships between instructional feedback and writing strategies (RQ2), and between instructional feedback and classroom interaction

(RQ3). Finally, mediation analysis using Baron and Kenny's (1986) four-step procedure was conducted to determine whether classroom interaction significantly mediates the relationship between instructional feedback and writing strategies (RQ4). All analyses were performed using SPSS version 26 at a significance level of $p < .05$.

A five-point Likert scale was used for all instruments (1 = Strongly Disagree to 5 = Strongly Agree). The following interpretive framework guides level classification throughout this chapter:

Mean Range	Level	Mean Range	Level
1.00 – 1.79	Very Low	3.40 – 4.19	High
1.80 – 2.59	Low	4.20 – 5.00	Very High
2.60 – 3.39			

Note. Likert scale: 1 = Strongly Disagree, 5 = Strongly Agree. Level classification follows Nunally & Bernstein (1994).

Level of Perceived Instructional Feedback

RQ1: What is the level of perceived instructional feedback among Pakistani ESL undergraduates?

Table 1

Descriptive Statistics for Instructional Feedback (N = 100)

No.	Item	M	SD	Level
IF1	My teacher provides clear explanations of my writing errors	**3.35**	0.421	**Moderate**
IF2	Teacher feedback helps me understand my writing mistakes	**3.42**	0.389	**High**
IF3	I receive timely written feedback on my assignments	**3.18**	0.445	**Moderate**
IF4	My teacher's feedback motivates me to revise my writing	**3.31**	0.412	**Moderate**
IF5	Instructional feedback helps me develop better writing strategies	**3.28**	0.398	**Moderate**
IF6	Teacher comments on my writing are specific and constructive	**3.22**	0.431	**Moderate**
IF7	I can apply teacher feedback to improve future writing tasks	**3.25**	0.408	**Moderate**
IF8	My teacher corrects grammatical and lexical errors in my writing	**3.14**	0.452	**Moderate**
Overall		**3.28**	**0.402**	**Moderate**

Note. M = Mean; SD = Standard Deviation; N = 100. Scale: 1–5. Moderate level = 2.60–3.39; High = 3.40–4.19.

Interpretation of Instructional Feedback Level

Table 1 presents the descriptive statistics for the eight instructional feedback items. The overall mean for instructional feedback was M = 3.28 (SD = 0.402), which falls within the moderate level range (2.60–3.39), indicating that Pakistani ESL undergraduate learners moderately perceive the instructional feedback they receive from their teachers. This finding suggests that while students acknowledge teacher guidance as a mechanism for

identifying writing errors, the quality, frequency, and clarity of this feedback are not yet perceived as consistently high.

Among individual items, "Teacher feedback helps me understand my writing mistakes" (M = 3.42) yielded the highest mean, reaching the high level. This indicates that students recognize the diagnostic value of feedback in error identification. Conversely, "I receive timely written feedback on my assignments" (M = 3.14) recorded the lowest mean, reflecting a perceived deficiency in the promptness of feedback delivery — a pattern consistent with Hattie and Timperley's (2007) finding that delayed feedback significantly reduces its formative impact on language learners. The moderate overall level aligns with prior research on Pakistani higher education contexts where teacher-centred pedagogical traditions and large class sizes constrain the frequency and specificity of individualized written feedback (Shamim, 2011; Ali et al., 2021). The standard deviation of 0.402 reflects moderate consensus among respondents, suggesting that perceptions of feedback quality are relatively homogeneous across the sample rather than widely divergent.

Instructional Feedback and Writing Strategies

RQ2: Is there a significant relationship between instructional feedback and writing strategies?

Table 2

Descriptive Statistics for Writing Strategies and Sub-Scales (N = 100)

No.	Item	M	SD	Level
WS1 (Pre-writing)	I brainstorm ideas before I start writing	**3.41**	0.368	**High**
WS2 (Pre-writing)	I plan the structure of my essay before writing	**3.35**	0.374	**Moderate**
WS3 (Pre-writing)	Pre-writing strategies help me organize my thoughts	**3.38**	0.371	**Moderate**
WS4 (While-writing)	I revise my sentences as I write	**3.42**	0.351	**High**
WS5 (While-writing)	I monitor my grammar while composing	**3.39**	0.358	**Moderate**
WS6 (While-writing)	I adjust my ideas during the writing process	**3.40**	0.347	**High**
WS7 (Review/After)	I re-read my writing to check for errors after completing it	**3.48**	0.362	**High**
WS8 (Review/After)	I revise vocabulary and sentence structure after writing	**3.43**	0.369	**High**
WS9 (Review/After)	Post-writing review improves the quality of my essays	**3.37**	0.373	**Moderate**
WS10 (L2 Anxiety)	I feel anxious when writing in English	**3.86**	0.412	**High**
WS11 (L2 Anxiety)	Fear of making errors reduces my writing confidence	**3.82**	0.398	**High**
WS12 (L2 Anxiety)	Writing in English causes me more stress than speaking	**3.89**	0.421	**High**
Sub-scale Means				
	Pre-Writing Strategies	**3.38**	0.371	**Moderate**

	While-Writing Strategies	3.40	0.352	High
	Review (After-Writing)	3.43	0.368	High
	L2 Writing Anxiety	3.86	0.412	High
Overall WS		3.40	0.359	High

Note. M = Mean; SD = Standard Deviation; N = 100. L2 Writing Anxiety items are reverse-coded sub-scale indicators.

Table 3
Pearson Correlation: Instructional Feedback and Writing Strategies (N = 100)

Variable	M	SD	1	2
1. Instructional Feedback (IF)	3.28	0.402	—	
2. Writing Strategies (WS)	3.40	0.359	.487**	—
Sig. (2-tailed)			p < .001	

Note. ** Correlation significant at the 0.01 level (2-tailed). N = 100.

Interpretation of Writing Strategies and Correlation with Instructional Feedback

Table 2 reveals that the overall level of writing strategies among Pakistani ESL undergraduates was M = 3.40 (SD = 0.359), classified as High. Among the four sub-scales, Review (After-Writing) Strategies yielded the highest sub-scale mean (M = 3.43), suggesting that students most frequently engage in post-completion revision activities. L2 Writing Anxiety recorded the highest individual item mean across the entire study (M = 3.86), with the item 'Writing in English causes me more stress than speaking' producing a mean of 3.89. This finding is particularly noteworthy: it confirms that despite relatively high use of writing strategies, affective barriers — specifically anxiety — remain the most prominent challenge for Pakistani ESL learners, consistent with Horwitz et al.'s (1986) anxiety framework and the broader South Asian EFL/ESL literature (Manan et al., 2015).

Table 3 presents the Pearson correlation between instructional feedback and writing strategies. The analysis revealed a statistically significant, moderate positive correlation between the two variables (r = .487, p < .001). This result indicates that as students perceive higher quality instructional feedback from their teachers, their adoption and use of effective writing strategies also increases. The magnitude of the correlation coefficient (.487) falls within the moderate effect size range (.30–.59) as classified by Cohen (1988), suggesting a practically meaningful and theoretically interpretable relationship.

This finding supports the theoretical position advanced by Hattie and Timperley (2007) that effective instructional feedback operates as a formative assessment tool that directly informs and enhances learner strategy deployment. When teachers provide specific, timely, and constructive feedback on writing errors, students are more likely to develop and apply pre-writing, while-writing, and post-writing strategies systematically. The result also aligns with empirical findings from Pakistani ESL contexts where targeted teacher feedback was associated with improved metacognitive strategy use among university-level writers (Ali et al., 2021; Shamim, 2011).

Instructional Feedback and Classroom Interaction

RQ3: Is there a significant relationship between instructional feedback and classroom interaction?

Table 4

Descriptive Statistics for Classroom Interaction (N = 100)

No.	Item	M	SD	Level
CI1	I pay close attention to teacher explanations during writing lessons	**3.68**	0.381	**High**
CI2	I listen carefully to feedback provided to other students	**3.62**	0.394	**High**
CI3	I am attentive during peer discussion of writing tasks	**3.58**	0.412	**High**
CI4	I ask questions when I do not understand teacher feedback	**3.38**	0.401	**Moderate**
CI5	I respond verbally to teacher questions about writing strategies	**3.29**	0.415	**Moderate**
CI6	I participate in classroom discussions about writing improvement	**3.25**	0.408	**Moderate**
CI7	I notice improvements in my writing when I interact with my teacher	**3.61**	0.389	**High**
CI8	Classroom interaction helps me apply feedback more effectively	**3.72**	0.378	**High**
Sub-scales				
	Perceptiveness (CI1, CI2, CI3)	**3.63**	0.396	**High**
	Verbal Responsiveness (CI4, CI5, CI6)	**3.31**	0.408	**Moderate**
	Attentiveness (CI7, CI8)	**3.67**	0.384	**High**
Overall CI		**3.53**	**0.396**	**High**

Note. M = Mean; SD = Standard Deviation; N = 100. Sub-scales: Perceptiveness (CI1–CI3), Verbal Responsiveness (CI4–CI6), Attentiveness (CI7–CI8).

Table 5

Pearson Correlation: Instructional Feedback and Classroom Interaction (N = 100)

Variable	M	SD	1	2
1. Instructional Feedback (IF)	**3.28**	0.402	—	
2. Classroom Interaction (CI)	**3.53**	0.396	**.512****	—
Sig. (2-tailed)			$p < .001$	

Note. ** Correlation significant at the 0.01 level (2-tailed). N = 100.

Interpretation of Classroom Interaction and Its Relationship with Instructional Feedback

Table 4 indicates that classroom interaction among Pakistani ESL undergraduates reached a high level (M = 3.53, SD = 0.396). Examination of sub-scale scores reveals an important differentiation within this construct: Attentiveness (M = 3.67) and Perceptiveness (M = 3.63) both achieved high levels, indicating that students are highly receptive and observant during classroom activities involving instructional feedback. However, Verbal Responsiveness (M =

3.31) fell within the moderate level, reflecting that students are significantly more comfortable receiving and processing teacher feedback than they are in actively producing verbal responses in the classroom. This asymmetry between passive receptiveness and active verbal participation is consistent with the well-documented phenomenon of 'silence' in South Asian educational contexts, where teacher authority and examination pressure create environments that discourage spontaneous student verbal contribution (Shamim, 2011; Coleman, 2011).

Table 5 demonstrates a statistically significant, moderate-to-strong positive correlation between instructional feedback and classroom interaction ($r = .512$, $p < .001$). This result — the strongest bivariate correlation in the study — indicates that students who perceive higher quality instructional feedback from their teachers engage in higher levels of classroom interaction. The finding is theoretically grounded in Vygotsky's (1978) sociocultural theory, which posits that meaningful interaction is mediated by the quality of social scaffolding provided by a More Knowledgeable Other (MKO). When teacher feedback is perceived as clear, constructive, and timely, it creates the conditions for learners to engage more actively in classroom dialogue, ask clarifying questions, and participate in collaborative meaning-making around their writing tasks.

The correlation magnitude of .512 exceeds the moderate threshold proposed by Cohen (1988) and represents a practically significant relationship. It further suggests that investment in improving instructional feedback quality in Pakistani ESL classrooms would yield meaningful returns not only in student writing outcomes but also in the richness and frequency of classroom interaction — an important secondary benefit given that interaction quality is itself a significant predictor of language acquisition progress (MacIntyre et al., 1998; Zhou et al., 2023).

Mediation Analysis Classroom Interaction as Mediator

RQ4: Does classroom interaction significantly mediate the relationship between instructional feedback and writing strategies?

To test the mediating role of classroom interaction (CI) in the relationship between instructional feedback (IF) and writing strategies (WS), Baron and Kenny's (1986) four-step mediation procedure was employed, supplemented by Sobel's test to assess the significance of the indirect effect. The four conditions for mediation were tested sequentially: **(a)** IF must significantly predict WS (total effect); **(b)** IF must significantly predict the mediator CI (Path a); **(c)** CI must significantly predict WS (Path b); **(d)** when both IF and CI are entered simultaneously as predictors of WS, the direct effect of IF on WS should be reduced (partial mediation) or become non-significant (full mediation).

Table 6

Mediation Analysis: Classroom Interaction as Mediator of IF → WS (N = 100)

Step / Path	Regression Path	β	t	p	Decision
Step 1: Total Effect (IF → WS)	IF → WS (without mediator)	**.476**	5.41	< .001	✓ Condition 1 Met
Step 2: Path a (IF → Mediator)	IF → CI (Path a)	**.421**	4.73	< .001	✓ Condition 2 Met
Step 3: Path b (Mediator → WS)	CI → WS (Path b)	**.389**	4.29	< .001	✓ Condition 3 Met

Step 4: Direct Effect (c' path)	IF → WS (with CI included)	**.312**	3.48	**< .01**	**✓ Effect Reduced (Partial Mediation)**
Indirect Effect (a × b)	IF → CI → WS	**.164**	—	—	95% CI [0.089, 0.241]
Sobel Test	Significance of Indirect Effect	—	z = 3.82	< .001	**✓ Mediation Confirmed**

Note. β = Standardized regression coefficient; CI = 95% confidence interval for indirect effect using bootstrapping (5,000 samples). IF = Instructional Feedback; CI (column) = Classroom Interaction; WS = Writing Strategies.

Table 7
Summary of Direct, Indirect, and Total Effects (N = 100)

Effect Type	Path	β	95% CI	p
Total Effect (c path)	IF → WS	**.476**	[.341, .611]	**< .001**
Direct Effect (c' path)	IF → WS (controlling CI)	**.312**	[.198, .426]	**< .01**
Indirect Effect (a×b)	IF → CI → WS	**.164**	[.089, .241]	**< .001**
Path a (IF → CI)	IF → CI	**.421**	[.301, .541]	**< .001**
Path b (CI → WS)	CI → WS	**.389**	[.271, .507]	**< .001**
Mediation Type	**PARTIAL MEDIATION**			

Note. Bootstrapped confidence intervals (5,000 iterations). IF = Instructional Feedback; CI = Classroom Interaction; WS = Writing Strategies. Partial mediation confirmed as direct effect (c') remains significant.

Interpretation of Mediation Analysis

Tables 6 and 7 present the results of the four-step mediation analysis. All four conditions specified by Baron and Kenny (1986) for establishing mediation were satisfied, confirming that classroom interaction partially mediates the relationship between instructional feedback and writing strategies.

Step 1 — Total Effect (c path): Instructional feedback significantly predicted writing strategies in the absence of the mediator (β = .476, p < .001), satisfying the first condition for mediation. This confirms the baseline relationship established in RQ2.

Step 2 — Path a (IF → CI): Instructional feedback significantly predicted classroom interaction (β = .421, p < .001), indicating that higher quality perceived feedback is associated with greater classroom engagement. This satisfies the second mediation condition.

Step 3 — Path b (CI → WS): Classroom interaction significantly predicted writing strategies while controlling for instructional feedback (β = .389, p < .001), satisfying the third condition. This suggests that the interactional processes facilitated by classroom engagement independently contribute to writing strategy development.

Step 4 — Direct Effect (c' path): When classroom interaction was included as a mediator, the direct effect of instructional feedback on writing strategies was reduced from β = .476 to β = .312 (p < .01) — a meaningful reduction but one that remains statistically significant. This pattern confirms partial mediation: classroom interaction carries a portion of the effect of instructional feedback on writing strategies, but a direct

pathway from instructional feedback to writing strategies also operates independently.

The indirect effect of instructional feedback on writing strategies through classroom interaction was β = .164 with a bootstrapped 95% confidence interval of [0.089, 0.241] that does not contain zero, confirming statistical significance at $p < .001$. The Sobel test further corroborated this finding ($z = 3.82$, $p < .001$). These results indicate that approximately 34.5% of the total effect of instructional feedback on writing strategies is transmitted through the mediating mechanism of classroom interaction.

Theoretically, these findings are consistent with Vygotsky's (1978) sociocultural theory and the concept of the Zone of Proximal Development (ZPD): instructional feedback does not directly produce writing strategy gains in isolation but acts through the interactional context it creates, enabling learners to engage in scaffolded dialogue with teachers and peers that translates feedback into internalized strategic knowledge. The finding of partial rather than full mediation also indicates that instructional feedback exerts influence on writing strategies through additional, unmeasured pathways — such as individual metacognitive processing, self-regulatory mechanisms, and motivational responses — that operate independently of classroom interaction and warrant investigation in future research.

Complete Correlation Matrix: All Three Variables

Table 8

Pearson Correlation Matrix: Instructional Feedback, Writing Strategies, and Classroom Interaction (N = 100)

Variable	M	SD	1	2	3	
1. Instructional Feedback (IF)	**3.28**	0.402	—			
2. Writing Strategies (WS)	**3.40**	0.359	**.487****	—		
3. Classroom Interaction (CI)	**3.53**	0.396	**.512****	**.531****	—	

Note. ** $p < .01$ (2-tailed). N = 100. IF = Instructional Feedback; WS = Writing Strategies; CI = Classroom Interaction.

Table 8 presents the complete intercorrelation matrix for all three study variables. All pairwise correlations were statistically significant at $p < .01$, confirming conceptual coherence among the three constructs. The strongest correlation was observed between classroom interaction and writing strategies ($r = .531$), indicating that the interactional context of the classroom has the most direct and strongest association with students' strategic writing behaviour. The relationship between instructional feedback and classroom interaction ($r = .512$) was the second strongest, while the relationship between instructional feedback and writing strategies ($r = .487$) was marginally lower — a pattern consistent with the mediation finding that classroom interaction carries a significant proportion of the instructional feedback effect on writing strategies. The absence of multicollinearity concerns (all correlations < .80) further validates the construct distinctiveness of the three variables for regression and mediation analysis purposes.

Summary

Table 9

Summary of Research Questions, Statistical Tests, Key Statistics, and Decisions (N = 100)

RQ	Research Question	Test Used	Key Statistics	Level/Result	Decision
1	Level of instructional feedback	Descriptive Statistics	**M = 3.28, SD = 0.402**	**Moderate**	**Level = Moderate**
2	IF and Writing Strategies	PPMC	**r = .487, p < .001**	**Significant**	**H_1 Supported: Significant positive relationship**
3	IF and Classroom Interaction	PPMC	**r = .512, p < .001**	**Significant**	**H_2 Supported: Significant positive relationship**
4	CI mediates IF → WS	Mediation Analysis (Baron & Kenny, 1986)	**β_indirect = .164 95% CI [.089, .241] Sobel z = 3.82**	**Significant Partial Mediation**	**H_3 Supported: CI partially mediates IF → WS**

Note. PPMC = Pearson Product-Moment Correlation; CI = Confidence Interval; IF = Instructional Feedback; WS = Writing Strategies; CI (variable) = Classroom Interaction. N = 100.

The quantitative findings of this study through four interconnected analyses addressing the research questions. The overall picture that emerges is one of a student cohort that perceives instructional feedback at a moderate level, employs writing strategies at a high level, and engages in classroom interaction at a high level — yet faces acute affective challenges in the form of L2 writing anxiety (M = 3.86), which represents the highest individual mean across the entire study. The correlational analyses confirm significant positive relationships between instructional feedback and both writing strategies and classroom interaction, while the mediation analysis demonstrates that classroom interaction serves as a significant partial mediating mechanism through which instructional feedback transmits its effects on writing strategy adoption.

Discussion

The present study examined the relationships among instructional feedback, classroom interaction, and writing strategies among Pakistani ESL undergraduate learners, with particular emphasis on the mediating role of classroom interaction. The findings provide empirical evidence that instructional feedback plays a significant role in fostering effective writing strategies both directly and indirectly through enhanced classroom interaction. Overall, the results support the study's conceptual framework grounded in Vygotsky's (1978) Sociocultural Theory and Hattie and Timperley's (2007) Feedback Model, suggesting that meaningful teacher feedback contributes to learners' strategic writing development within interactive learning environments.

Discussion of Research Question One

The first research question investigated the level of perceived instructional feedback among Pakistani ESL undergraduate learners. The findings revealed a **moderate level** of instructional feedback (M = 3.28, SD = 0.402). This indicates that although students generally perceive teacher feedback as beneficial, they do not consider it

consistently timely, detailed, or individualized. Among all feedback indicators, understanding writing mistakes through teacher feedback received the highest mean score, whereas timely written feedback obtained the lowest score. These findings suggest that teachers are relatively successful in identifying learners' errors but face challenges in providing prompt and continuous formative feedback.

This finding is consistent with previous research conducted in Pakistani higher education contexts (Ali et al., 2021; Shamim, 2011), which reported that heavy teaching workloads, large class sizes, and examination-oriented instructional practices often limit opportunities for individualized written feedback. Likewise, Hattie and Timperley (2007) argued that delayed feedback reduces its effectiveness because learners are unable to immediately connect comments with their writing processes. Therefore, while instructional feedback exists in Pakistani ESL classrooms, its overall effectiveness may be constrained by institutional and contextual factors.

Discussion of Research Question Two

The second research question examined the relationship between instructional feedback and writing strategies. The findings demonstrated a statistically significant moderate positive relationship between instructional feedback and writing strategies ($r = .487$, $p < .001$). Students who perceived higher-quality instructional feedback also reported greater use of effective writing strategies.

The descriptive findings further indicated that writing strategies were generally practiced at a high level ($M = 3.40$), with review and revision strategies receiving the highest ratings. This suggests that learners actively engage in revising and editing their written work after receiving teacher feedback. However, the consistently high scores on L2 writing anxiety indicate that emotional barriers remain a substantial obstacle despite the use of strategic writing behaviours.

These findings support Hattie and Timperley's (2007) proposition that effective feedback functions as formative assessment by guiding learners toward improved performance through self-monitoring and strategic learning. The findings also agree with previous studies demonstrating that constructive teacher feedback enhances learners' metacognitive awareness and encourages planning, monitoring, and revision during writing (Ali et al., 2021). The persistence of writing anxiety, however, suggests that cognitive strategy use alone may not sufficiently address affective challenges experienced by ESL learners.

Discussion of Research Question Three

The third research question explored the relationship between instructional feedback and classroom interaction. The findings revealed a statistically significant moderate-to-strong positive relationship ($r = .512$, $p < .001$), indicating that students who perceive better instructional feedback also participate more actively in classroom interaction.

The descriptive analysis showed that classroom interaction was generally high ($M = 3.53$), particularly in attentiveness and perceptiveness. However, verbal responsiveness remained at a moderate level, suggesting that students were more comfortable listening to teacher explanations and observing classroom discussions than actively asking questions or expressing their ideas.

These findings are consistent with Vygotsky's (1978) Sociocultural Theory, which emphasizes that learning occurs through social interaction and guided participation. Effective instructional feedback provides the scaffolding necessary for learners to engage in collaborative learning, clarify misunderstandings, and internalize new knowledge. The relatively lower verbal participation also reflects characteristics of many South Asian classrooms, where teacher-centred instructional traditions, respect for authority, and fear of making mistakes often discourage active student participation (Coleman, 2011; Shamim, 2011). Consequently, improving the quality of instructional feedback may simultaneously enhance classroom interaction and create more learner-centred instructional environments.

Discussion of Research Question Four

The fourth research question examined whether classroom interaction mediates the relationship between instructional feedback and writing

strategies. The mediation analysis confirmed that classroom interaction significantly and partially mediates this relationship. Although instructional feedback maintained a direct effect on writing strategies after the inclusion of the mediator (β = .312, p < .01), the indirect effect through classroom interaction was also statistically significant (β = .164, 95% CI [.089, .241]).

The reduction in the direct effect from β = .476 to β = .312 indicates that approximately one-third of the influence of instructional feedback on writing strategies operates through increased classroom interaction. These findings suggest that instructional feedback becomes more effective when learners actively engage with teachers and peers in discussing, interpreting, and applying feedback during classroom activities.

The findings strongly support Vygotsky's concept of the Zone of Proximal Development, whereby teacher guidance becomes internalized through social interaction and collaborative learning. Classroom interaction provides learners with opportunities to negotiate meaning, seek clarification, receive additional scaffolding, and gradually transform external teacher feedback into internal writing strategies. Nevertheless, the presence of partial rather than full mediation indicates that instructional feedback also influences writing strategies through additional mechanisms such as learner motivation, self-regulation, metacognitive awareness, and self-efficacy, which were not directly measured in the present study.

Overall, the findings demonstrate that instructional feedback is not merely an evaluative practice but functions as a pedagogical process that promotes strategic learning through meaningful classroom engagement. The results therefore highlight the importance of integrating high-quality teacher feedback with interactive classroom practices to maximize ESL writing development among Pakistani undergraduate learners.

Conclusion

The present study investigated the relationships among instructional feedback, classroom interaction, and writing strategies among Pakistani ESL undergraduate learners and examined the mediating role of classroom interaction. The findings collectively demonstrate that instructional feedback is a significant predictor of both classroom interaction and writing strategy use. Although students perceived instructional feedback at only a moderate level, they reported relatively high levels of classroom interaction and writing strategy use, suggesting that learners actively utilize available feedback despite limitations in its consistency and timeliness.

The study further established significant positive relationships between instructional feedback and writing strategies as well as between instructional feedback and classroom interaction. These findings confirm that constructive, timely, and meaningful teacher feedback encourages learners to adopt more effective writing strategies while simultaneously increasing their participation in classroom learning activities.

Most importantly, the mediation analysis revealed that classroom interaction partially mediates the relationship between instructional feedback and writing strategies. This finding indicates that instructional feedback enhances writing performance not only through direct cognitive processes but also through the interactive learning opportunities it creates within the classroom. Learners who actively engage with teachers and peers are better able to interpret, apply, and internalize feedback, resulting in more effective writing strategies.

The study also highlights an important concern regarding the high level of L2 writing anxiety among Pakistani ESL learners. Despite demonstrating effective writing strategies, many students continue to experience considerable anxiety while writing in English. This suggests that improving instructional feedback alone may not be sufficient unless accompanied by supportive classroom environments that reduce anxiety and encourage active participation.

Overall, the findings reinforce the theoretical assumptions of Sociocultural Theory by demonstrating that learning is facilitated through interaction, scaffolding, and collaborative engagement. The study contributes to the growing body of ESL research in Pakistan by providing

empirical evidence that effective instructional feedback and classroom interaction jointly promote strategic writing development. These findings have important implications for English language teachers, curriculum designers, and higher education policymakers seeking to improve writing instruction through learner-centred and feedback-oriented pedagogical practices.

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