



## THE ROLE OF INSTRUCTIONAL MATERIAL IN DEVELOPING COHESION AND COHERENCE IN ARGUMENTATIVE WRITING

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### **Abstract**

*Cohesion and coherence are essential components of effective argumentative writing, yet they remain persistent challenges for Pakistani ESL undergraduates due to exam-driven curricula and limited discourse-level instruction. This study investigated the impact of a systematically designed instructional intervention, developed using the ADDIE model and grounded in Task-Based Language Teaching (TBLT), on improving students' argumentative writing. A quasi-experimental design was employed with 80 third-semester undergraduates at the University of Agriculture, Faisalabad. Participants completed a pre-test and post-test argumentative essay, both assessed using the IELTS Writing Band Descriptors with emphasis on cohesion and coherence. The nine-week intervention consisted of structured modules, including handouts, worksheets, and task-based activities. Results revealed a statistically significant improvement in post-test scores ( $M = 5.22$ ,  $SD = 1.25$ ) compared to pre-test scores ( $M = 3.90$ ,  $SD = 1.21$ ),  $t(79) = 8.00$ ,  $p < .001$ , with an average gain of 1.32 points. No significant differences were found across gender or academic departments, indicating the intervention's broad applicability. The findings confirm that integrating ADDIE with TBLT provides an effective, context-sensitive framework for enhancing cohesion and coherence in ESL argumentative writing. These results carry important implications for teachers, curriculum designers, and policymakers seeking to improve academic writing pedagogy in Pakistani higher education.*

**Keywords:** cohesion, coherence, argumentative writing, ESL learners, ADDIE model, task-based language teaching (TBLT), Pakistani higher education.

### **1. Introduction**

#### **1.1 Background of the Study**

Writing is considered as one of the most difficult areas of second language learning (L2) acquisition since it involves more than grammatical correctness or vocabulary. In comparison to oral communication, where the communication can be clarified immediately, writing requires a higher level of cognition which include planning, organizing, drafting and revision (Hyland, 2004). Of all the various genres of academic writing, argumentative writing is by far the most challenging one in that it entails not only a linguistic competence but also the capacity to think in higher orders, create logic reasoning and provide evidence-based persuasion. The quality of the argumentative writing is established by two basic constructs, namely, cohesion and coherence. Cohesion is the explicit language connection, e.g. in the form of conjunctions, reference, substitution, ellipsis and lexical repetition which hold the sentences and clauses



together (Halliday and Hasan, 1976). Instead, coherence is associated with the notion of conceptual unity and logical flow of the ideas that allow readers to see a text as a coherent and relevant meaning (Connor, 1990; Crossley et al., 2016). Studies across the world have revealed that ESL/EFL students tend to either under employ cohesive devices, inappropriately use them or have difficulties in keeping rational sequence (Connor, 1984). These issues are especially sharp in Pakistan. Some works (Bilal, Mahmood, and Jabeen, 2013; Fareed, Ashraf, and Bilal, 2016; Haider and Mahmood, 2022) found that the thesis statements used by Pakistani undergraduates are often weak, sudden transitions, and inadequate paragraph unity. The prevalence of classical pedagogical practices, including Grammar-Translation Method (GTM), accompanied by exam-driven curricula, leads to the situation when the grammar and vocabulary are taught instead of discourse-level skills such as cohesion and coherence (Ahmed and Bidin, 2016).

The other difficulty is caused by interference in L1. Urdu, Punjabi, and other regional languages tend to have a rather different rhetorical structure as compared to English; hence, the students are inclined to bring the non-linear systems of organization into their text (Bilal et al., 2013). Accordingly, arguably, Pakistani ESL students tend to write argumentative papers that are rather unclear, do not follow logical flow, and do not use cohesive devices sufficiently (Khalid Mahmood, 2021). These are the weaknesses that have a direct impact on the performance at high stakes tests like IELTS, where cohesion and coherence is one of the scoring factors (British Council, 2018).

### **1.2 Problem Statement**

Regardless of the fact that the centrality of cohesion and coherence in writing is established, these elements are still underrepresented in the Pakistani ESL programs. The teaching and learning in instructional activities is usually focused on grammar drills, vocabulary, and memorizing which does not result in discourse level skills. Despite the existence of past literature (Fareed et al., 2016; Bilal et al., 2013) outlining cohesion and coherence mistakes in the writing of Pakistani ESL students, not many have gone further to propose solutions and test them empirically.

In addition to that, systematic error analysis is hardly informed by the current instructional materials in use in universities. On the contrary, they are generalized and they focus on general elements of writing without focusing on the real weaknesses of learners. Other structural difficulties teachers are exposed to include the large group of students, exam-driven pedagogy, and insufficient training in discourse-level writing (Ahmed and Bidin, 2016). In the meantime, Task-Based Language Teaching (TBLT), the method that promotes discourse level competence by using tasks that are authentic is not fully developed because of the situational constraints.

In this way, the major issue of the research is insufficient error-driven, contextually-focused instructional sources to combine systematic instructional design (ADDIE) and communicative pedagogy (TBLT) to enhance the integration of cohesion and coherence in the argumentative writing of Pakistani ESL students.

### **1.3 Objectives of the Study**

The objectives that guided the study were as follows:

- To determine the prevalence of the most frequent cohesion and coherence errors in the argumentative writing of Pakistani ESL students in the University of Agriculture, Faisalabad (UAF).



- To develop instructional resources-based on the error analysis during pre-tests-using the ADDIE instructional design model.
- To test how the created teaching aids affect the cohesion, coherence and general argumentative writing proficiency of students based on the IELTS rubric.

#### 1.4 Research Questions

The study was designed in such a way that it was to answer three broad questions:

1. To what extent does a TBLT-based instructional intervention, developed through the ADDIE model, improve cohesion and coherence in the argumentative writing of Pakistani ESL undergraduate students?
2. Are there significant differences in writing improvement between male and female students after participating in the instructional intervention?
3. Does the effectiveness of the instructional intervention on writing proficiency differ significantly across students from various academic departments?

#### 1.5 Significance of the Study

This work has theoretical and practical significance.

**Theoretical Significance:** It adds to the literature on the discourse-level writing pedagogy as it empirically tests the intervention that integrates ADDIE and TBLT. This combined method offers a model that can be replicated in the future in the area of ESL writing instruction.

**Practical Significance:** To the teacher, the research provides empirically validated instructional resources which directly address the issue of cohesion and coherence. To the curriculum developers, it exemplifies the usefulness of needs analysis and error-based resource design. In the case of students, it offers real-life strategies and scaffolded assignments that enhance their ability to write an argument and thus enhance their academic achievement and employability. The study is especially applicable to the Pakistani context since it directly fills the long-standing gap in pedagogy: the absence of emphasis on cohesions and coherence in ESL writing curriculum. Its results can guide the curriculum changes and practice of teaching so that writing can become more effective and context-sensitive.

## 2. Literature Review

### 2.1 English Language Teaching in Pakistani Higher Education

Pakistan English Language Teaching (ELT) has a long history connected with the colonial experience and the post-independence language planning. There was an administrative, legal and elite education system based on English, and a symbolic relationship was forged between English proficiency and socioeconomic mobility under British colonial rule (1848-1947) (Rahman, 2020). Urdu became the national language after independence in 1947, but English continued to dominate practically in government, higher education and professional spheres. Such a dual-language policy introduced one of the conflicts between the sense of national identity and the global competitiveness that still continues today.

Education policies that followed such as the Education Policy in 1979 suggested transition to Urdu-medium education, but it was not completely and fully realized. On the contrary, the globalization and market necessities enhanced the importance of knowledge of English. In the National Education Policy (2009) English gained prominence by being taught in Grade 1 and by enforcing the use of the language as the medium of instruction of science and mathematics in Grade 6 (Nickson and Nudrat, 2022). English thus came to play a gatekeeping role to higher education and the mobility.



At the tertiary level, Higher Education Commission (HEC) embarked on reforms in the English Language Teaching Reforms (ELTR) Project (2004-2012). This initiative aimed to update ELT through training teachers, revising the curriculum and introducing communicative methods (Ahmad and Arif, 2020). The reforms, however, had the best intentions but did not have a coherent national approach and therefore yielded disproportional results among institutions (Zaidi, 2019). Consequently, despite the structural changes, undergraduates in Pakistan have not been without enduring problems in advanced writing proficiency especially the areas of cohesion and coherence.

### **2.1.1 English as Medium of Instruction in Universities**

In the modern Pakistan, English is used as the dominant medium of instruction (EMI) in all higher education institutions, and lectures, exams, and official documents are delivered and written in English (Haider and Mahmood, 2022). The advocates believe that EMI leads to access to knowledge networks in the world and make students more employable. Nonetheless, there are serious equity-related issues that are found to be based on empirical evidence.

According to a study conducted by the British Council (2015), it was revealed that EMI is not necessarily a factor that enhances English performance; instead, their previous education in English and socio-economic status strongly influences the performance of a student. The students of English-medium elite schools can more easily adjust to EMI, whereas learners of rural and public-sector schools find it difficult to comprehend and write (Nickson and Nudrat, 2022; Zubeida, 2012). Teachers tend to bridge this gap through the act of code-switching to Urdu or regional languages to emphasize the disjuncture between the policy and the classroom reality (Siddiqui et al., 2021).

Therefore, in as much as EMI perpetuates the symbolic status of the English language and how it relates to global competitiveness, it has also created educational inequalities. Such imbalance is especially pronounced with regard to academic writing activities, as scholarly writing students who have poor initial orientation to the English language struggle to achieve discourse-level requirements, including argument, cohesion, and coherence (Asif et al., 2020).

### **2.1.2 Persistent Challenges in University-Level ELT**

Despite a policy level focus on the English language, classroom practice is largely traditional and teacher-centered. Grammar-Translation Method (GTM) has remained prevalent and its focus on grammatical correctness of the sentences and description of translation exercises, rather than communicative competence and higher-level writing abilities, (Ahmad and Arif, 2020).

The studies point to the fact that Pakistani ESL students frequently receive no actual training on features of discourse construction, including argument-organization, topic development, and application of cohesive devices. Fareed, Ashraf, and Bilal (2016) discovered that undergraduate essays were more often than not lacking in clear thesis, logical sequencing, and paragraph unity. Equally, Haider and Mahmood (2022) maintain that the fact that teacher training in the area of writing pedagogy is scarce and that contemporary, learner-oriented approaches are not provided only exacerbates these shortcomings.

This didactic disjunction highlights the importance of novel teaching intervention strategies-resources and processes that go beyond grammar exercises to genuine, discourse-based writing exercises. Models like ADDIE and pedagogical models like TBLT have potential solutions as they focus on the needs of the learners, reality of the context and the systematic design.



## **2.2 Coherence and Cohesion of the Academic Writing**

### **2.2.1 The notion of Cohesion and Coherence.**

Cohesion and coherence are the two opposite sides of text quality. Halliday and Hasan (1976) refer to cohesion as the overt linguistic connections, which include reference, substitution, ellipsis, conjunction, and the lexical repetition, that hold the sentences together into a single piece of writing. Their model is still considered as the basis to analyse the writing of ESL learners as it provides a tangible taxonomy of weak or missing links.

Coherence on the other hand is more abstract. According to Connor (1990) and Crossley et al. (2016), it can be defined as logical development and interpretability of ideas, and it is important to note that coherence is also partially reader-dependent. An incoherent text can be well organised (cohesive), or a coherent text can have very few cohesive means (logically sequenced arguments). This duality implies that good teaching should correspond to surface connectedness (cohesion) and global connectedness (coherence).

### **2.2.2 Theoretical Perspectives**

The model of Halliday and Hasan (1976), predicted the text-centred approach, in which texture is made by cohesive devices. Nevertheless, this method was criticized by the schema theory scholar, Carrell (1982) who suggested that the coherence was formed by the interaction of the signals present in the text and prior knowledge of the reader. Likewise, Hoey (1988) theorized cohesion as an epiphenomenon of coherence, in the sense that cohesive links do not entail intelligibility unless they have logical structure.

Subsequent theories, including thematic progression theory (Danes, 1974), pointed out the contribution of developing topics to the attainment of coherence. These attitudes all point to the idea that writing pedagogy must combine linguistic training (cohesive devices) and rhetorical training (argument flow, thematic progression)-a combination that is all too relevant to the current study problem of argumentative writing.

### **2.2.3 The ESL and Pakistani Contexts Evidence.**

Research studies among the international learners show that ESL learners do not make use of cohesive devices and they lack global organization. As Connor (1984) found, the use of cohesive ties in ESL texts was lower than in text written by native speakers which led to the low holistic ratings.

Bilal, Mahmood, and Jabeen (2013) reported the over-use of simple conjunctions like and and but, and without a great variety of cohesive devices in Pakistan. According to Fareed et al. (2016), Pakistani undergraduates commonly delivered a paper with disjointed arguments, sudden shifts, and disunity between paragraphs. Haider and Mahmood (2022) explain these flaws by the fact that systemic curricular neglect, the explicit teaching of cohesion and coherence is uncommon. Since an internationally recognized test such as IELTS evaluates writing ability in part based on Coherence and Cohesion (British Council, 2018), this is a significant educational deficiency in the Pakistani higher education.

## **2.3 Argumentative Writing: Nature and Challenges**

The fact that argumentative writing involves more than presenting ideas makes it a cognitively-challenging genre: in fact, this genre involves not only creating arguments but also taking them apart and putting them together, assisting his or her arguments with proofs (Hyland, 2004). Consistency is a key factor, as it is necessary to make sure that ideas are logical, whereas cohesion is utilized to connect sentences within a paragraph and also across paragraphs (Soleymanzadeh & Gholami, 2014).



Stapleton and Wu (2015) showed that the quality of writing is more correlated with coherence than with cohesion, i.e. the abundance of linking devices cannot offset the lack of coherence in the form of an argument. Haider and Mahmood (2022) demonstrated in the Pakistani context that students tend to be untrained in thesis formulation, logical sequencing and counterargumentation and that the resulting essay does not persuade or effectively communicate.

Therefore, interventions which would not only impart cohesive devices but provide scaffolding of higher-order skills in argument development and organization are badly needed.

## **2.4 ELT Instructional Materials.**

### **2.4.1 Significance of Teaching Resources.**

Teacher-learner interface is composed of instructional materials, which determine classroom practice and outcomes. Tomlinson (2011) states that materials are never peripheral but rather at the heart of deciding what to be taught and how it should be taught. Richards (2001) goes further to emphasize that the materials tend to serve as a de facto curriculum, especially in a situation such as in Pakistan whereby teachers use textbooks and worksheets extensively.

Nevertheless, Ahmed and Bidin (2016) indicate that in Pakistan, most instructional resources are grammar-centered, outdated, and exam-oriented and do not provide much scaffolding to discourse-level writing. This establishes a pedagogical gap especially in the development of skills in cohesion, coherence, and structuring of arguments.

### **2.4.2 Nation & Macalister's Curriculum Design Framework**

Nation and Macalister (2010) offer a curriculum design model that incorporates goal, sequencing, format, monitoring and assessment in the realities of the learning environment. Notably, they emphasize the fact that materials must be matched with real needs of learners, which can be found out during systematic needs analysis or error analysis.

This model implies that the instructional materials in the Pakistani setting should be student-centered and error-based instead of being generic since the students are always having problems with cohesion and coherence. The given principle makes the choice of the current research to rely on the analysis of pre-test essay errors directly.

Task-Based Language Teaching (TBLT) is a method of language teaching that involves students in three key activities: planning, making, and sharing (Elford, 2009). Task-Based Language Teaching (TBLT) Task-Based Language Teaching (TBLT) is a form of language teaching, which engages the student in 3 important activities: planning, making and sharing (Elford, 2009).

Task-Based Language Teaching (TBLT) is a learner-focused model that structures teaching on meaningful exercises that are reflective of real-life communication. Nunan (2004) and Ellis (2003) believe that use of task involves the learner in meaningful use of language, thus enhancing fluency and accuracy.

According to Bygate (2016), TBLT builds discourse competence, and it is particularly applicable in terms of cohesion and coherence. Willis and Willis (2007) offered the task cycle (pre-task, task performance, post-task feedback), emphasizing the reflection and the negotiation of meaning as the main points to enhance the depth of learning. These principles would be quite consistent with the instruction in argument writing where learners have to plan, write, revise, and reflect.

Nevertheless, in Pakistan, TBLT is under-exploited because of the high number of students in classes, educator-centered stereotypes, and training deficiencies (Ahmed and Bidin, 2016).



Implementing TBLT into instructional resources thus provides a potentially fruitful but little-researched pedagogical avenue.

## 2.6 The ADDIE Instructional Design Model

One of the most popular instructional design models is the ADDIE model- Analysis, Design, Development, Implementation, Evaluation (Molenda, 2003). It is systematic in the sense that it provides alignment between the needs of the learners and the instructional goals as well as the evaluation.

**Analysis:** Determines weaknesses of the learner (e.g. cohesion and coherence mistakes in pre-test essays).

**Design:** Includes description of instructional goals and assignment of tasks based on the needs.

**Development:** creates learning materials (handouts, worksheets, lecture scripts, presentations).

**Implementation:** Provides classroom-based materials using interactive pedagogy.

**Evaluation:** Measures the effectiveness through post-tests and student-feedback.

Combined with TBLT, ADDIE will allow instructional resources to be organized and designed correctly, as well as effective at the pedagogical level, and it will also be the most successful in providing ESL learners in Pakistani in solving discourse-based writing difficulties.

## 2.7 Identified Research Gap

Current research in Pakistan has reported the deficits of students in cohesion and coherence (Bilal et al., 2013; Fareed et al., 2016; Haider and Mahmood, 2022) but has remained mostly diagnostic in nature. Instructional resources remain generic, grammar-focused and disconnected to the real-world discourse-level requirements of learners.

In order to fill this gap, the current study:

- Improves the ADDIE model to create error-driven teaching resources.
- Employs TBLT pedagogy in order to achieve the authentic, learner-centered engagement.
- Targets the enhancement, specifically, regarding cohesion and coherence in argumentative writing among Pakistani ESL undergraduate students.

The study will address the current institutional requirement by placing the intervention within the University of Agriculture, Faisalabad (UAF), thus, and also serve the wider discourse of ESL pedagogy, by showing how systematic design and communicative teaching can work together to solve the long-standing discourse-level problems.

## 3. Methodology

This chapter outlines the methodological framework employed in this study. It begins by detailing the research design, followed by a description of the setting and participants. Subsequently, it describes the instruments developed for data collection, including the automated writing evaluation system and the learner corpus collection form. The chapter then explains the procedures for data collection and the instructional intervention. Finally, it presents the plan for data analysis, and addresses the ethical considerations, concluding with an acknowledgment of the study's limitations.

### 3.1 Research Design

This study employed a quasi-experimental, one-group pre-test/post-test research design to evaluate the effectiveness of a targeted instructional intervention (Campbell & Stanley, 1963). The design involved three key stages for all participants: a baseline assessment of argumentative essay writing (pre-test), participation in a semester-long instructional



intervention focused on cohesion and coherence, and a final assessment using an equivalent writing task (post-test).

The establishment of a true control group was not feasible, as the collaborating universities required that all enrolled student cohorts receive the instructional treatment as a condition of granting ethical approval. To mitigate potential threats to internal validity inherent in a single-group design, several control measures were implemented. The study maintained identical testing conditions, including time limits and invigilation protocols, for both the pre-test and post-test. The essay prompts for both assessments were drawn from the same prompt families to ensure comparability. Furthermore, an automated scoring system, calibrated against expert human judgments, was used to ensure consistent and objective evaluation across all essays. Throughout the semester, instructional fidelity indicators were systematically tracked to verify that the intervention was delivered as planned.

### **3.2 Setting and Participants**

The study was conducted across a public-sector university in Punjab, Pakistan: the University of Agriculture Faisalabad. A total of 400 undergraduate students participated in the research. The sample was drawn from intact class sections, with university contributing one section of Functional English (comprising first-semester students) and one section of Communicative English (comprising third-semester students). This approach enhanced the ecological validity of the study by ensuring that the research was conducted within typical classroom arrangements.

Due to institutional timetable constraints that made random assignment of students impossible, a cluster convenience sampling method was utilized, wherein entire classes were selected as intact units. The inclusion criteria required that participants be officially enrolled in one of the target courses, provide informed consent for the use of their writing samples and demographic data for research purposes, and contribute a nominal fee of 100 Pakistani Rupees. In return for this fee, students received individualized feedback on their writing and a certificate of participation. The informed consent statement explicitly detailed the voluntary nature of their involvement and assured them of the strict confidentiality protocols governing the storage, analysis, and reporting of their data.

### **3.3 Instruments**

To score the argumentative essays, a custom Automated Writing Evaluation (AWE) system was developed using a Python pipeline with OpenAI's o3-mini-high reasoning model (OpenAI, 2024) via the Batch API (Bano,2025). The system employed a chain of 36 prompts aligned with the IELTS Writing Task 2 rubric, evenly distributed across four criteria: Task Response, Cohesion and Coherence, Lexical Resource, and Grammatical Range and Accuracy (9 prompts each). Each prompt generated XML outputs with a raw 0–10 score and justification, and a regression model, trained on 100 pilot essays scored by certified IELTS examiners, predicted the final band scores.

Development proceeded in three cycles. In the first, prototype prompts and XML structures were designed and tuned with temperature fixed at 0.0 for consistency. In the second, a pilot corpus was batch-processed in RapidMiner (2023) to refine prompts and validate reliability. AWE scores showed strong alignment with expert examiner ratings but weaker correlation with a commercial IELTS scoring service, leading to reliance on examiner judgments as the benchmark. In the third cycle, the system was ported to the OpenAI Batch API, enabling large-



scale asynchronous processing with reduced costs and robust error-handling, supported by detailed logging for auditability.

A Google Form was used to collect demographic data (gender, mother tongue, prior academic achievement) and essay submissions. Each participant uploaded both a typed version and a scanned copy of their handwritten essay. Built-in validation enforced a 200-word minimum, standardized file naming, and checks to reject duplicates or AI-generated submissions.

### **3.4 Procedures**

Data collection began in Week 0 of the semester. Instructors received written protocols and a training video to standardize pre-test administration. During regular class hours, students completed handwritten argumentative essays under timed conditions, photographed their scripts, and submitted them with typed transcriptions via a Google Form. OCR software was used to cross-check typed and handwritten versions, and authenticity checks excluded duplicates or suspected AI-generated texts. Validated essays were securely stored on both local and cloud servers.

A needs analysis of 100 pre-test essays, scored by the Automated Writing Evaluation (AWE) system, identified common cohesion and coherence errors, including lexical redundancy, weak referential ties, misuse of logical connectors, and topic drift. These findings informed the development of a 12-unit “Argumentative-Writing Package” aligned with IELTS descriptors for Cohesion and Coherence. Each unit combined mini-lectures, interactive classroom tasks, peer-review checklists, and annotated model answers.

Teacher fidelity was supported through an intensive workshop, a follow-up online session, weekly self-reports, and classroom observations. The intervention spanned 16 weeks: early units introduced substitution and reference; mid-phase focused on connectors and lexical chains; later units addressed paragraph unity, global coherence, and revision strategies; the final weeks simulated full IELTS writing cycles.

The post-test was administered under identical conditions as the pre-test, using parallel IELTS-style prompts. Essays were processed through the same AWE pipeline, ensuring direct comparison. Full participation across the semester yielded a complete matched dataset for analysis.

### **3.6 Data Analysis**

The data analysis for this study was conducted in several stages, employing both descriptive and inferential statistical methods to address the research questions regarding the effectiveness of the instructional intervention. Initial analysis involved computing descriptive statistics to summarize the students' performance on the pre-test and post-test argumentative writing tasks, specifically focusing on the cohesion and coherence (CC) component. Mean scores, standard deviations, minimum, and maximum values were calculated for pre-test CC, post-test CC, and the gain scores (Post-Test CC - Pre-Test CC). Similar descriptive statistics were also generated for the overall final assessment scores. This provided an overview of the central tendency and variability of the data.

Further descriptive analysis disaggregated the gain scores by key demographic variables: gender (male vs. female) and academic department (BBA, Computer Science & IT, Department of English, and Urdu). Mean gain scores and standard deviations were calculated for each subgroup to identify any apparent trends or differences in improvement before formal hypothesis testing. The distribution of the primary outcome variable, the gain score in cohesion



and coherence, was visualized using a histogram, and boxplots were utilized to illustrate gain score distributions across gender and department.

### **Inferential Statistics**

To formally test the study's hypotheses and establish statistical significance, a series of inferential tests were conducted:

- **Overall Improvement in Writing Scores:** A paired samples t-test was performed to ascertain whether the observed increase in students' cohesion and coherence scores from the pre-test to the post-test was statistically significant. This test was chosen because it compares two related means (pre- and post-intervention scores from the same participants). A similar paired samples t-test was used to assess the overall improvement in final test scores.
- **Differences in Improvement by Gender:** An independent samples t-test was employed to determine if there was a statistically significant difference in the mean gain scores in cohesion and coherence between male and female students. This test is appropriate for comparing means from two independent groups.
- **Differences in Improvement by Department:** To investigate whether the improvement in writing scores (specifically CC gain scores) differed significantly across the four academic departments, a one-way Analysis of Variance (ANOVA) was conducted. This test is suitable for comparing the means of three or more independent groups.
- **Controlling for Initial Writing Ability:** To provide a more robust analysis of departmental differences while accounting for potential baseline variations in writing proficiency, an Analysis of Covariance (ANCOVA) was performed. This analysis examined the effect of academic department on post-test CC scores, using pre-test CC scores as a covariate. This allowed for the statistical control of initial ability, thus isolating the effect of the intervention more precisely.
- **Relationship between Post-Test Scores:** A Pearson product-moment correlation coefficient was calculated to examine the strength and direction of the linear relationship between students' post-test cohesion and coherence scores and their overall post-test final scores. A scatterplot was generated to visually represent this relationship.

This comprehensive approach to data analysis allowed for a thorough examination of the intervention's impact, both overall and across relevant demographic subgroups, while also accounting for initial student abilities.

### **3.7 Ethical Considerations**

The complete research protocol, including procedures for participant recruitment, data handling, and remuneration, received formal clearance from the Board of Studies. A mandatory Ethical Consent and Payment Agreement was included in the Google Form, which all participants were required to complete. This agreement clearly outlined the study's purpose, the data protection safeguards in place, and the terms of the nominal fee of 100 Pakistani Rupees paid by students in exchange for personalized writing feedback and a certificate of appreciation.

The consent statement emphasized that all collected data would be used solely for research purposes. It also detailed the security measures, confirming that data would be stored in an encrypted format on both a secure university NAS drive and a password-protected cloud server. Participants were assured that all findings would be reported only in aggregate form to ensure



that no individual could be identified. Students were explicitly informed that their decision on whether to participate, or to withdraw at any point, would have no negative impact on their course grades or academic standing. The collaborating universities deemed the educational risk to be minimal, as the intervention addressed a documented curricular need for instruction in cohesion and coherence and did not replace any core curriculum content. All participating instructors also signed a separate agreement, acknowledging their responsibility to deliver the instructional materials as scripted and to maintain the confidentiality of student data by using only the secure platforms provided by the research team.

#### 4. Results

This section details the statistical analysis of the data collected to evaluate the effectiveness of the systematically developed instructional materials on students' argumentative writing. The analysis begins with descriptive statistics to summarize the overall performance and group-based trends, followed by inferential statistics to test the study's hypotheses.

##### 4.1 Descriptive Statistics

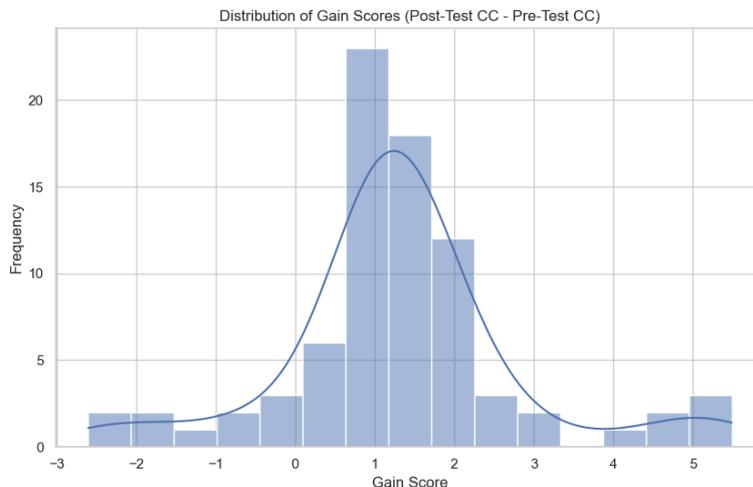
The study included a total of 80 undergraduate students. An initial analysis of the overall performance on the cohesion and coherence (CC) component of the writing tests was conducted. Prior to the intervention, the mean pre-test score was 3.90 ( $SD = 1.21$ ). Following the nine-week instructional period, the mean post-test score increased to 5.22 ( $SD = 1.25$ ). This reflects an average gain score (Post-Test CC - Pre-Test CC) of 1.32 ( $SD = 1.47$ ) across all participants. Table 1 provides a comprehensive summary of the descriptive statistics for the pre-test, post-test, and gain scores for both the cohesion and coherence (CC) and final assessments.

**Table 1** Descriptive Statistics for Pre-Test, Post-Test, and Gain Scores

Variable	<i>M</i>	<i>SD</i>	Minimum	Maximum
Pre-Test (CC)	3.90	1.21	0.32	5.76
Post-Test (CC)	5.22	1.25	2.00	6.92
Gain Score (CC)	1.32	1.47	-2.60	5.49
Pre-Test (Final)	4.53	1.16	1.00	6.52
Post-Test (Final)	5.83	1.19	2.13	7.70
Gain Score (Final)	1.29	0.16	0.91	1.77

*Note.*  $N = 80$ . CC = Cohesion and Coherence.  $M$  = mean;  $SD$  = standard deviation.

The distribution of the primary outcome variable, the gain score in cohesion and coherence, is presented in Figure 1. The histogram shows that the majority of students achieved a positive gain score, with the most frequent gains falling between 0.5 and 2.5 points.



**Figure 1: Distribution of Gain Scores**

Further analysis was conducted to examine the gain scores across demographic subgroups, specifically gender and academic department. The sample was evenly divided by gender, with 40 female and 40 male participants. The mean gain score for female students ( $M = 1.29, SD = 1.35$ ) was very similar to that of male students ( $M = 1.35, SD = 1.60$ ).

Among the academic departments, the Department of English had the highest average gain score ( $M = 2.14, SD = 1.72$ ), followed by Computer Science & Information Technology ( $M = 1.39, SD = 1.34$ ), BBA ( $M = 1.22, SD = 1.80$ ), and Urdu ( $M = 0.87, SD = 1.24$ ). A summary of these descriptive statistics is provided in Table 2. Visual comparisons of the gain score distributions by gender and department are shown in the boxplots in Figures 2 and 3, respectively.

**Table 2** Descriptive Statistics for Gain Scores (CC) by Gender and Department

Group	Subgroup	<i>n</i>	<i>M</i>	<i>SD</i>
<b>Gender</b>	Female	40	1.29	1.35
	Male	40	1.35	1.60
<b>Department</b>	BBA	16	1.22	1.80
	Computer Science & IT	39	1.39	1.34
	Department of English	8	2.14	1.72
	Urdu	17	0.87	1.24

Note. CC = Cohesion and Coherence. *n* = sample size; *M* = mean; *SD* = standard deviation.

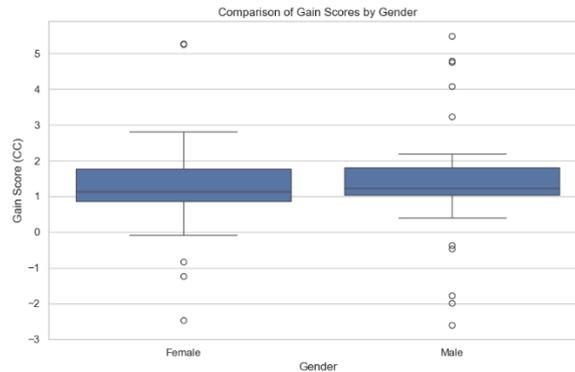


Figure 2: Comparison of Gain Scores by Gender

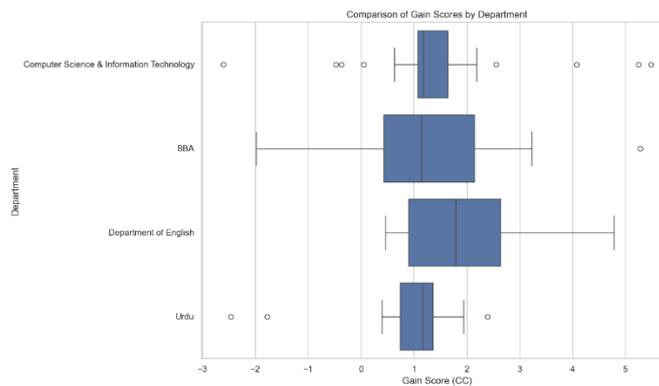


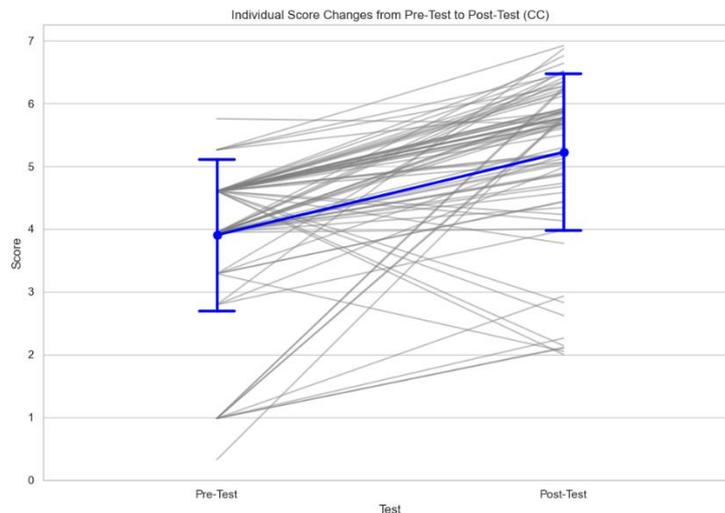
Figure 3: Comparison of Gain Scores by Department

#### 4.2 Hypothesis Testing

To determine the statistical significance of the observed changes and differences, a series of hypothesis tests were conducted. These included a paired samples t-test, an independent samples t-test, a one-way analysis of variance (ANOVA), and an analysis of covariance (ANCOVA).

#### 4.3 Overall Improvement in Writing Scores

A paired samples t-test was conducted to evaluate whether the instructional intervention led to a statistically significant improvement in students' cohesion and coherence (CC) scores. The results indicated that the post-test scores ( $M = 5.22$ ,  $SD = 1.25$ ) were significantly higher than the pre-test scores ( $M = 3.90$ ,  $SD = 1.21$ ),  $t(79) = 8.00$ ,  $p < .001$ . This finding confirms that the observed improvement in students' writing was statistically significant. The general upward trend from pre-test to post-test for individual students is illustrated in Figure 4. A similar significant improvement was also observed for the final test scores,  $t(79) = 71.28$ ,  $p < .001$ .



**Figure 4: Individual Score Changes from Pre-Test to Post Test (CC)**

#### 4.4 Differences in Improvement by Gender and Department

An independent samples t-test was performed to determine if there was a statistically significant difference in the gain scores between male and female students. The analysis revealed no significant difference in the mean gain scores between females ( $M = 1.29, SD = 1.35$ ) and males ( $M = 1.35, SD = 1.60$ ),  $t(78) = 0.20, p = .841$ . This suggests that the instructional materials were equally effective for both male and female students.

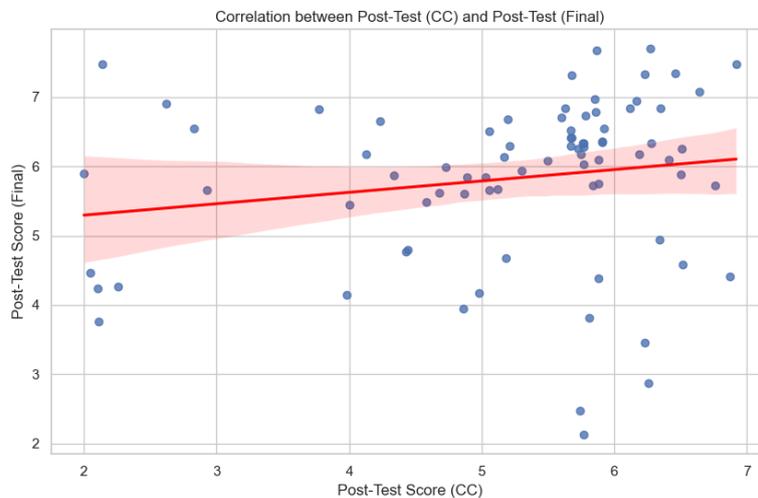
To assess whether the improvement in writing scores differed across academic departments, a one-way ANOVA was conducted on the CC gain scores. The results showed that there were no statistically significant differences in the mean gain scores among the four departments (BBA, Computer Science & IT, Department of English, and Urdu),  $F(3, 76) = 1.44, p = .239$ . Although descriptive statistics indicated some variation, this difference was not statistically significant, suggesting the intervention's effectiveness was consistent across departments.

#### 4.5 Controlling for Initial Writing Ability

To provide a more rigorous analysis of departmental differences, an ANCOVA was performed. This analysis examined the effect of department on post-test CC scores while statistically controlling for students' initial writing proficiency (pre-test CC scores). After accounting for the pre-test scores, the effect of department on post-test scores remained non-significant,  $F(3, 74) = 1.00, p = .396$ . The pre-test score, however, was a significant predictor of the post-test score,  $F(1, 74) = 7.69, p = .007$ , indicating that students with higher initial scores also tended to have higher scores after the intervention.

#### 4.6 Correlation between Post-Test Scores

Finally, a Pearson correlation analysis was conducted to examine the relationship between students' scores on the Post-Test (CC) and the Post-Test (Final). The analysis revealed a weak, positive, but not statistically significant correlation between the two variables,  $r(78) = .17, p = .126$ . This relationship is visualized in the scatterplot in Figure 5, which shows a slight upward trend but with considerable variability in the data points.



**Figure 5: Correlation between Post-Test (CC) and Post-Test (Final)**

## 5. Discussion

The current research examined how the systematically designed instructional intervention, which is based on the principles of the ADDIE model and the Task-Based Language Teaching (TBLT), could improve cohesion and coherence in the argumentative writing of Pakistani ESL undergraduates. The results present strong empirical evidence that these critical discourse-level writing skills can be really enhanced with the help of such a focused intervention. This discussion discusses these findings considering both the aim of the study and the available literature as well as expressing the implications of the findings, limitations and future research prospects.

### 5.1 Interpretation of Findings

The main aim of the research was to find out to what degree of improvement is obtained with the help of the TBLT-based instructional intervention developed within the frames of the ADDIE model in terms of the cohesion and coherence of the argumentative writing of the Pakistani ESL undergraduate students. The findings clearly indicate that there is a tremendous improvement, as the post-test results indicate that cohesion and coherence scores were significantly above the pre-test results. Such statistically significant improvement in the mean (1.32 points,  $p < .001$ ) is a solid argument in favor of the effectiveness of instructional materials and the pedagogical method used. This result is in line with the theoretical framework, which emphasizes the significance of explicit teaching and practice in the process of mastering higher-order writing skills (Hyland, 2004).

The significant change that was observed is explainable by a number of factors that are inherent in the structure of the intervention. To start with, the ADDIE model provided a systematic and data-oriented methodology, where a detailed analysis of the errors in pre-test essays was conducted to reveal certain weaknesses in the areas of cohesion (e.g., the improper use of the cohesive tools) and coherence (e.g., the bad structure of the paragraphs, the lack of flow). This analysis that is needs based enabled the specific customization of the teaching resources and it went beyond the generic teaching of writing to the real problems the participants were experiencing (Molenda, 2003). The created materials such as handouts, worksheets, scripts,



and presentations were focused on explaining and giving exercises on each of the identified error types.

The application of the principles of the task-based language teaching (TBLT) was found useful in promoting meaningful learning. Unlike grammar-based instruction with most Pakistani ESL situations (Ahmed & Bidin, 2016), TBLT involved communicative and authentic writing activities such as argument mapping, essay writing, and peer review (Ellis, 2003; Nunan, 2004). This task-based practice changed students not to get practice in the controlled way but more complexly applied, thus, allowing them to actively develop and apply discourse-level writing strategies. The 9-week lecture program which was organized in a modular manner to follow the building-block component of the argumentative writing up to practicing complete essays with built-in feedbacks created a systematic but interactive learning process. This is in line with the claim made by Bygate (2016), who believes that TBLT proves especially successful in the development of the discourse competence, including cohesion and coherence. The research also focused on the existence of significant differences in the increase of writing among male and female students and among different academic departments. Findings showed that there were no statistically significant gender ( $p = .841$ ) or academic department ( $p = .239$ ) differences in gain scores. Despite the fact that the descriptive statistics showed minor differences, including the fact that the average gain scores were higher in the English Department, they were not statistically significant which indicates that the instructional intervention was overall fair and productive across these demographic subgroups. The observation is interesting especially in situations like Pakistan where the educational differences could be common (Nickson & Nudrat, 2022). It suggests that the pre-developed differences were overcome by the well-designed materials and pedagogical strategy that provided a solution applicable to a wide range of people.

The insignificant correlation of post-test scores of cohesion-coherence (CC) scores and final academic performance ( $r(78) = .17$ ,  $p = .126$ ) should be mentioned. Despite the fact that a positive tendency was detected albeit rather modestly, its statistical insufficiency suggests that, despite the success of the given intervention in terms of giving cohesion and coherence to writing, both traits represent a part of the bigger whole of writing proficiency. The wider construct is arguably mediated by variables that were not directly quantified and that did not directly reflect the focus of the intervention such as grammatical range, lexical richness and task achievement as conceptualized in the broad IELTS rubric.

## 5.2 Theoretical Implications

This research provides some of the theoretical implications of ESL writing pedagogy especially in discourse level competencies. The empirical results support the existing synergistic interaction between the instructional design frameworks and the communicative language teaching (CLT) pedagogies. The effective combination of the ADDIE model, which is an iterative system of curriculum development, and task-based language teaching (TBLT), a learner-oriented strategy, provides a sound prototype to address the complex writing tasks. The integration demonstrates how a systematic design process may guide and streamline communicative practice to attain desired learning goals and thus add to the discursive body of writing pedagogy (Ahmed & Bidin, 2016).

In addition, the findings support theoretical orientations that emphasize the fact that cohesion and coherence are dependent yet the two aspects need to be explicitly taught. Later theories shed light on deeper levels of coherence, whereas Halliday and Hasan (1976) focused on the



superficial cohesive devices, schema theory (Carrell, 1982) and thematic progression (Danes, 1974) take the tack. The intervention in this study was very successful in dealing with the two layers. Cognitive strategies (Module 5) and techniques of maintaining logical flow and conceptual cohesion (Module 6) were specifically taught, hence evidence of the fact that a moderation policy is crucial to the development of truly coherent and cohesive argumentative writing. Both modes are being improved, which implies that paying attention to the surface-level connectivity in parallel with the deeper logical flow is a necessity of the ESL learners. The study also contributes to the understanding of the second-language writing development in specific situations. Previous studies have always outlined issues related to cohesion and coherence among Pakistani ESL learners and often ascribe them to the first-language interferences and grammar-translation didactic methods (Bilal et al., 2013; Haider and Mahmood, 2022; Khalid Mahmood, 2021). This study puts an empirically tested intervention in place that directly tries to solve these challenges by providing a situation-specific, error-driven, and communication-focused approach. It hypothesizes that although interfering with first-language writing may be conditioned by antecedent pedagogical experiences, carefully planned interventions are capable of neutralizing them and stimulating the acquisition of target-language rhetorical constructions in writing.

### **5.3 Practical Implications**

The implications of this study to the practical risks of the stakeholders in ESL education in Pakistan and the rest are immense. In the case of language teachers, the study provides a tested model to use in formulating and applying instructional resources that shall be effective in improving the cohesion and coherence of argumentative writing. The specific methodology (especially the ADDIE-TBLT model and the nine-module lecture course) is a blueprint that could be adjusted and repeated in a similar situation. With error analysis, the teachers are able to identify particular areas of weaknesses in the students and consequently use the task based activities to offer real practice and feedback to the students and therefore outperform the rote grammar drills.

To curriculum developers, the study emphasizes the role of a needs-based and error-driven approach to the development of material. It emphasizes that generic teaching resources are not always adequate to respond to the discourse-level issues of ESL students, which are quite subtle. The study supports curricula which puts explicit teaching of cohesion and coherence as a priority and incorporates communicative and task-based pedagogies because it has shown the success of a systematically designed intervention. This would be a trigger to change the exam-focused curricula with emphasis on lower-order skills to those with emphasis on higher-order thinking and advanced writing skills, especially since these skills are important in high-stakes exams like IELTS (British Council, 2018).

In the case of students, this intervention will provide empirically tested strategies and systematically scaffolded tasks not only to perfect their writing skills but also to improve academic performance and employment opportunities. The ability to create coherent and cohesive argument is one of the inherent competencies to achieve success in postgraduate academia as well as in professional discourse. Through the intervention specifically designed to correct the personal writing shortcomings, learners feel confident and develop transferable skills that are invaluable in the complexities of advanced academic and work environments.

As the investigation has a specific topicality to the Pakistani context, the research directly tackles the existing gap in the literature on the topic, i.e., the lack of focus on the concept of



cohesion and coherence in ESL writing syllabuses (Ahmed and Bidin, 2016; Haider and Mahmood, 2022). The empirical results are therefore a rich source of evidence that could be used to inform curricular changes and pedagogical strategies that would facilitate the provision of more effective and contextually sensitive writing instructions in Pakistani universities. This necessity is emphasized by the fact that English is still the most used language in the tertiary level, and mastery of academic writing has a decisive impact on the achievements of a student (Haider and Mahmood, 2022).

## 6. Conclusion

The efficacy of a systematically designed instructional intervention, based on the ADDIE model and complemented with to the principles of Task-Based Language Teaching, in significantly improving cohesion and coherence in the argumentative writing of Pakistani ESL undergraduates, is empirically supported in this study. These data indicate statistically significant improvement of writing scores of the students between pre-test and post-test, and thus the fact that a purposeful, error-driven, communicative strategy is effective in alleviating the long-term problem of discourse level difficulties in this contextual milieu. The effectiveness of the intervention highlights some of the main theoretical and practical implications. In theory it testifies to the intersection of vigorous instructional design patterns with communicative pedagogies in such a way as to support the necessity of explicit instruction in both surface level cohesive strategies and more profound level logical form of truly coherent writing. In practice, this study offers a tested model of language teaching to Pakistan and other curriculum developers in the country. It promotes a shift in the old system of teaching grammar as the main subject to teaching based on needs and tasks that develop the high-order writing skills that are invaluable in academic and professional success. The uniform effectiveness of the intervention in the case of various demographic subgroups, irrespective of gender or belonging to a specific discipline, also suggests its wide applicability and its possible impact on the educational disparity reduction.

## Limitations

Although this research has a strong methodological design and interesting results, it has a number of limitations that should be given serious attention. First, the institutional setting is limited to the University of Agriculture, Faisalabad (UAF). Secondly, the sample of participants was undergraduate students (3 rd -semester) between the ages of 18 to 22. Third, the study focused on the scope of language acquisition that focused mostly on coherence and cohesion in argumentative writing. Lastly, the pedagogical model implied the creation of instruction resources through the ADDIE model and implementation of these resources in a Task-Based Language Teaching (TBLT) paradigm.

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