

## BRIDGING THE LEXICAL GAP: A QUASI-EXPERIMENTAL INVESTIGATION OF CORPUS-GUIDED CONSULTATION FOR ENHANCING ESL ACADEMIC WRITING PROFICIENCY

<sup>1</sup>*Dr. Farah Zaib\**

*Lecturer, Department of English Linguistics*

<sup>2</sup>*Maham Sultana*

*Research Scholar, Department of English Linguistics*

**\*Corresponding Author:** <sup>1</sup>*Dr. Farah Zaib\**, *Lecturer, Department of English Linguistics*

### **Abstract**

Despite growing pedagogical interest in the application of corpora, learner-centered research regarding direct engagement and perceptions in L2 academic writing remains relatively scarce. The present study investigated the effectiveness of Corpus-Guided Consultation in enhancing the academic writing performance of 100 Pakistani ESL undergraduates. Utilising a quasi-experimental design, the experimental group engaged in data-driven learning (DDL) activities through the Corpus of Contemporary American English (COCA), whereas the control group utilised traditional textbooks and dictionaries. Data were collected through pre- and post-tests, corpus-guided activities, and a 33-item Likert scale questionnaire. Statistical comparisons revealed that the experimental group significantly outperformed the control group, confirming that corpus-guided instruction is more effective for developing academic writing skills than conventional pedagogical methods. Although participants maintained a highly favourable attitude toward corpus utility, the analysis identified critical challenges, including data overload, temporal constraints, and limited technological access. These findings suggest that integrating corpus-based tools into the Pakistani higher education framework can effectively bridge the "lexical gap," provided that educators offer sufficient scaffolding to mitigate technological and cognitive hurdles. This research underscores the transformative potential of Data-Driven Learning (DDL) as a viable, technologically advanced alternative to traditional lexicographical tools. Ultimately, adopting such learner-oriented approaches empowers educational stakeholders to dismantle long-standing writing barriers and foster a more refined level of academic discourse within the ESL landscape.

**Keywords:** *Lexical-Gap, Corpus-Guided Consultation, Academic Writing, Vocabulary Activities, ESL Learners*

### **Introduction**

The academic writing genre requires robust vocabulary knowledge, a requirement that many English as a Second Language (ESL) learners struggle to meet. This is particularly true for the finely-tuned vocabulary needed to address complex academic issues (Kilic, 2019; Wu, 2016). Conventional pedagogical approaches can be inefficient at exposing learners to the authentic use of the language; consequently, students often continue to make errors regarding collocations, connotations, and word forms (Al-Tamimi, 2018; Holmberg Sjöling, 2020). In response to these challenges, corpus linguistics has emerged as an invaluable resource in language teaching by providing vast repositories of natural language data (Reppen, 2010). Data-Driven Learning (DDL) facilitates this through Corpus-Guided Consultation, allowing learners to interact actively with these datasets. By observing words within their natural contexts, students can foster independent vocabulary acquisition (Alsehibany & Abdelhalim, 2023; Johns, 1991). This method is especially promising for academic writing, where lexical accuracy is paramount (Khorsheed, 2018; Qoura et al., 2018).

### **Corpus**

A corpus is a principled, machine-readable collection of authentic, human-generated text, systematically curated to represent a specific language variety or dialect (McEnery & Wilson,

1996; Sinclair, 2004). More than a mere digital archive, an optimal corpus balances quality and quantity, prioritising representativeness and verifiability to ensure research validity (see Figure 1; Dash, 2010; Evans, 2018). In the context of academic writing, corpora foster metalinguistic awareness by offering learners deep contextual insights into word morphology, collocations, and usage—nuances that often extend beyond standard dictionary definitions (Nation, 2001; Qoura et al., 2018). Through tools such as concordance lists, learners interact directly with empirical data, bridging the gap between raw, massive datasets and specific pedagogical applications via Corpus-Guided Consultation (Abdulrahman, 2015; Lee, 2018).

Figure 1  
The Hexagonal Model of Core Corpus Attributes



The shift from simply hosting a corpus to actively utilising it for language acquisition is best captured by the framework of Data-Driven Learning (DDL). While a corpus provides the raw linguistic evidence, DDL provides the pedagogical philosophy, transforming the learner from a passive recipient of rules into an active "researcher" of language patterns. As Johns (1991) famously argued, DDL encourages students to "identify, classify, and generalise" based on their own observations of data. This inductive process allows ESL writers to move beyond the limitations of traditional textbooks to master the nuanced vocabulary required for high-level academic discourse.

### **Corpus-Guided Consultation (CGC) and Writing Proficiency**

While DDL establishes the theoretical groundwork, Corpus-Guided Consultation (CGC) serves as the practical vehicle for this approach. CGC enables students to move from observing linguistic patterns to actively implementing them in their own prose. Specifically, this pedagogical method facilitates language acquisition through a learner's direct interaction with linguistic corpora, providing the targeted support and training necessary to refine academic writing. A corpus consists of written or spoken materials stored digitally and analysed via specialised software (Qilichevna, 2020). Within this framework, learners may be trained to use existing online concordance tools, or researchers may develop bespoke corpora specifically designed to model academic text composition (Alsehibany & Abdelhalim, 2023; Birhan et al., 2021). Through this direct engagement, learners can identify the pragmatic processes and semantic nuances of lexical items within authentic contexts. However, professional guidance remains mandatory; many extant corpora were developed for linguistic research rather than pedagogical use, necessitating structured instruction on their application (Qilichevna, 2020). Properly designed training courses empower students to search for patterns, analyse findings, and refine their written drafts. Ultimately, this allows them to select the most appropriate

lexical constructions and collocations, rendering their prose increasingly native-like (Khorsheed, 2018; Qilichevna, 2020). The ultimate goal of such technical precision is the mastery of writing, a skill whose importance is emphasised in the Expert Panel Report (Sommers & Saltz, 2004). The report indicates that writing is a unique skill that provides students with the agency to express both themselves and their societies, allowing them to articulate and address a profusion of collective problems. Beyond its functional use, writing helps learners organise their thoughts, remain active participants in modern society, and engage in complex problem-solving. Furthermore, it necessitates the creation of intentional content for a specific audience. Through the practice of writing, students develop their rhetorical voices; this practice refines their conceptual imagination and permits a "visage of the self" to better understand internal thoughts and feelings. Historically, the value of writing has evolved significantly since its emergence around 4000 BC, where scripts were primarily utilised for commercial dealings. In ancient Egypt, writing transitioned from a tool for political administration into a medium for historical record. Today, this legacy continues as poets, novelists, and academic writers alike utilise written representation to express complex sentiments and preserve knowledge for future generations.

### **Problem Statement**

Despite the growing prevalence of corpus-based pedagogy, a significant research gap remains concerning Pakistani ESL learners' perceptions of, and direct engagement with, Corpus-Guided Consultation (CGC) to improve lexical accuracy. This study addressed this oversight by exploring the systemic writing difficulties faced by these non-native speakers and the specific challenges of integrating data-driven tools into their academic practice. By identifying these pedagogical hurdles and learner attitudes, the research aims to foster greater awareness among both students and instructors. Ultimately, these insights inform the design of more effective, supportive instructional methods tailored to the unique linguistic and cultural needs of the Pakistani higher education context.

### **Research Questions**

1. How does Corpus-Guided Consultation affect Pakistani ESL learners' academic writing proficiency?
2. What are Pakistani ESL learners' perceptions regarding the use of Corpus-Guided Consultation in developing their academic writing proficiency?
3. What difficulties do Pakistani ESL learners face when utilising Corpus-Guided Consultation for academic writing?

### **Hypotheses**

1. Alternative Hypothesis ( $H_1$ ): The application of Corpus-Guided Consultation leads to a statistically significant improvement in the academic writing proficiency of Pakistani ESL learners.
2. Null Hypothesis ( $H_0$ ): There is no statistically significant impact of Corpus-Guided Consultation on the academic writing proficiency of Pakistani ESL learners.

### **Significance of the Study**

Academic writing remains a formidable challenge for Pakistani ESL learners, often characterised by persistent grammatical inaccuracies and a lack of lexical cohesion (Naseem et al., 2021). These deficiencies frequently undermine research quality and constrain global career prospects, necessitating the adoption of innovative strategies such as Corpus-Guided Consultation (CGC) (Kazimi & Sultan, 2025). By shifting the pedagogical focus from passive instruction to active, evidence-based knowledge construction, this study—conducted at The Islamia University of Bahawalpur—aims to empower students with greater academic autonomy and refined linguistic precision. Such interventions do more than just improve immediate performance in thesis writing; they significantly enhance the international

employability of graduates in an increasingly competitive global market. Ultimately, this research provides an empirical paradigm for curriculum designers to modernize ESL pedagogy. By adopting technology-driven, learner-oriented approaches, educational stakeholders can effectively dismantle long-standing writing barriers and foster a more refined level of academic discourse within the Pakistani higher education sector.

### **Literature Review**

A corpus serves as a digital repository of authentic written or spoken texts, systematically processed through computational methods for linguistic analysis (O’Keeffe et al., 2007; Römer, 2011). At the heart of its pedagogical application is Data-Driven Learning (DDL), a concept pioneered by Tim Johns (1991) that shifts the learner's role from a passive recipient to an active linguistic researcher. This approach utilises concordance lines to facilitate inductive reasoning, allowing students to identify structural regularities and patterns through intensive scanning and observation (Frankenberg-Garcia, 2014; Geluso & Yamaguchi, 2014; Quinn, 2014). This process aligns with Schmidt’s (1990) Noticing Hypothesis, as learners prioritise specific forms and lexical items within real-world data (Boulton, 2010). Despite its effectiveness in fostering autonomy and providing multi-contextual exposure (Gilquin & Granger, 2010; Binkai, 2012), DDL can initially overwhelm students due to the unconventional horizontal alignment of Key Word in Context (KWIC) outputs and the cognitive load required for interpretation (Koosha & Jafarpour, 2006; Lamy & Klarskov Mortensen, 2012; Yoon, 2011). Nevertheless, extensive research underscores the superiority of Corpus-Guided Consultation over traditional methods for lexical and grammatical development. Studies by Thurstun and Candlin (1998) and Koosha and Jafarpour (2006) demonstrate that DDL significantly improves the acquisition of academic vocabulary and prepositional collocations compared to conventional textbook exercises. Furthermore, empirical findings from Binkai (2012) and Yilmaz and Soruç (2015) indicate that learners not only prefer the innovative nature of corpus-based tasks but also achieve higher word-recognition scores through repetitive contextual exposure. In writing contexts, Quinn (2014) observed that corpus consultation enables tertiary students to self-correct errors more effectively, leading to more "natural" linguistic production. While it is well-established that DDL promotes writing proficiency and error correction (Boulton, 2009; Lin & Lee, 2015; Smart, 2014), its specific impact on lexical precision remains a cornerstone of recent scholarship. Because academic writing presupposes an advanced mastery of language, corpus-related tasks are uniquely positioned to foster this ability. The existing body of empirical studies suggests that educators can significantly enhance the quality of student writing and vocabulary depth by providing exposure to authentic, real-world texts within English as a Foreign Language (EFL) and ESL contexts. Moreover, the integration of corpus tools into the language-teaching process empowers learners to explore subtle lexical effects, such as collocation, prosody, and semantic nuances (Pérez, 2020; Yoon, 2011). Recent research has specifically examined learner attitudes toward the introduction of Corpus-Guided Consultation as a core teaching strategy. These studies consistently report encouraging results, indicating that students find the method both engaging and effective for navigating the complexities of academic discourse (Sinha, 2021; Yoon & Hirvela, 2004). Despite these benefits, a persistent gap remains regarding the consistent integration of these tools into professional teacher practice and standard classroom instruction (Mukherjee, 2006).

### **Related Studies**

The existing body of literature consistently demonstrates that ESL learners maintain predominantly positive attitudes toward Corpus-Guided Consultation, viewing it as a practical, innovative, and effective method for enhancing academic writing and vocabulary acquisition (Tekin et al., 2016; Paker & Ergul Ozcan, 2017; Yoon & Hirvela, 2004). Studies across diverse geographical contexts—including the United States (Balunda, 2010), Turkey (Tekin et al.,

2016), and Saudi Arabia (Al-Howishil, 2019; Alsolami & Alharbi, 2020)—highlight that direct corpus interaction fosters heightened linguistic awareness and increased learner self-confidence. However, despite these benefits, learners frequently encounter significant challenges, such as the extensive time required for data processing, the cognitive difficulty of analysing dense concordance lines, and varying levels of technological anxiety (Luo & Liao, 2015; Oktavianti et al., 2022; Youssef, 2020). While previous research has established the general utility of corpora, it often relegates student perception to a secondary theme or focuses narrowly on a single tool. This leaves a significant gap in understanding the specific hurdles faced by Pakistani ESL students, particularly regarding the correction of lexical errors (Youssef, 2020). The present study addresses this oversight through a rigorous quantitative analysis, aiming to map both the perceptions and the practical obstacles inherent in corpus-based consultation within the context of the Pakistani higher education framework.

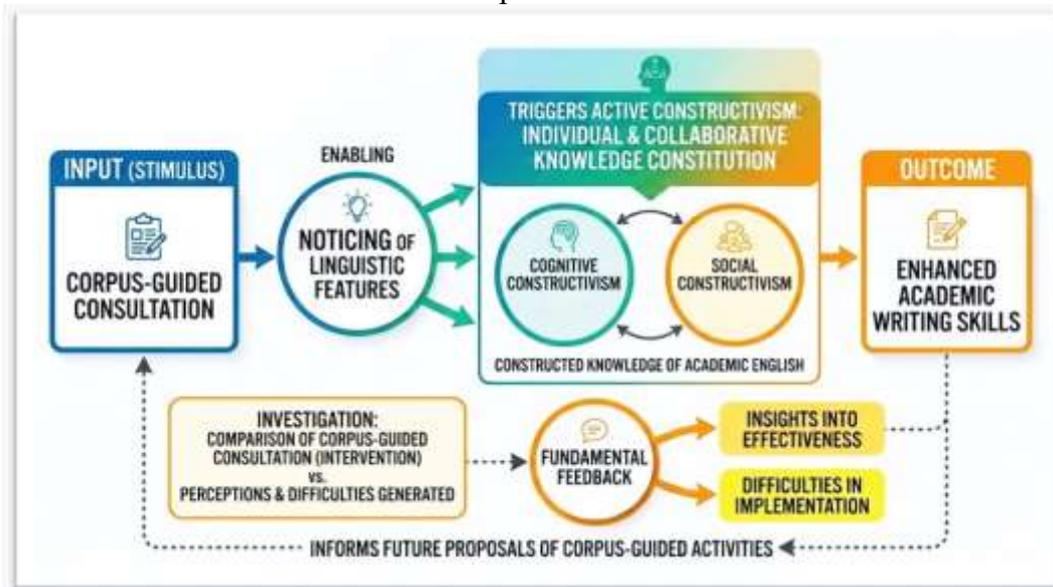
### **Theoretical Framework**

This research is anchored in a multifaceted theoretical framework that integrates constructivism and cognitive linguistics to elucidate how Corpus-Guided Consultation (CGC) facilitates academic writing development. At its core, the study aligns with the Constructivist paradigm, which posits that learners are active architects of their own knowledge. This model encompasses two complementary perspectives: Jean Piaget's Cognitive Constructivism (1981), which emphasises the internal mental processes of assimilation and accommodation as individuals integrate new linguistic data, and Lev Vygotsky's Social Constructivism (1978), which underscores the necessity of social interaction, collaboration, and scaffolding during guided pedagogical activities. Furthermore, the framework incorporates Richard Schmidt's (1990) Noticing Hypothesis, which asserts that conscious cognitive awareness of specific linguistic features is a prerequisite for successful language acquisition. By intertwining these theories, the study provides a comprehensive lens through which to explore how the inductive "noticing" of corpus data, supported by instructional scaffolding, empowers ESL students to construct a more sophisticated and accurate academic discourse.

### **Conceptual Framework**

The conceptual framework for this study posits a chronological progression wherein Corpus-Guided Consultation (CGC) serves as the primary pedagogical stimulus (Input). This intervention facilitates the Noticing of specific linguistic features, a cognitive stage that acts as a catalyst for active Constructivism. During this phase, learners engage in both individual mental processing (Cognitive Constructivism) and collaborative interaction (Social Constructivism) to reconstruct their understanding of academic English conventions. This internal and social synthesis of data is hypothesised to result in Enhanced Academic Writing Skills (Outcome). Furthermore, the investigation incorporates an analysis of learner perceptions and difficulties, providing a critical feedback loop. These insights evaluate the intervention's efficacy and identify implementation barriers, thereby informing the design and optimisation of future corpus-guided pedagogical frameworks.

Figure 2  
The Conceptual Framework



### Research Methodology

This study utilised a quantitative, two-group pre-test/post-test quasi-experimental design spanning twelve weeks to investigate the impact of Corpus-Guided Consultation (the independent variable) on academic writing proficiency (the dependent variable). Quasi-experimental research is characterised by the absence of random assignment, a choice often necessitated by the practical and ethical constraints of established classroom settings (Shadish et al., 2002; Scribbr, 2024). To mitigate selection bias and enhance internal validity, the study employed a nonequivalent control group approach, in which both a treatment group and a comparable control group were evaluated (Alessandri et al., 2017). Baseline equivalence was established through a pre-test, ensuring that any statistically significant divergence in post-test scores could be attributed to the intervention rather than pre-existing differences. While the lack of randomisation requires careful consideration of potential confounding factors, this design offers high ecological validity, making the findings highly applicable to natural pedagogical environments such as the Pakistani ESL classroom (Campbell & Stanley, 1963; Harris et al., 2006).

### Population and Sample

In research, the population constitutes the entire set of individuals or objects possessing common characteristics that define the study's scope (Creswell, 2014; Sileyew, 2020). While the broad target population for this investigation encompasses all ESL learners within the Pakistani higher education sector, the practical constraints of time and resources necessitated the selection of a representative sample to ensure logistical feasibility (Davies, 2008). Consequently, a sample of 100 ESL learners was selected to provide generalizable insights into the academic writing challenges and responses to corpus-guided interventions representative of the wider population. To ensure the study's manageability without compromising statistical integrity, the sample was divided into an experimental group and a control group. This approach allows for the generation of meaningful conclusions that are applicable to the target demographic within the Pakistani higher education framework.

### Data Collection Tools and Phases

This study employed a two-phase data collection framework utilising the Corpus of Contemporary American English (COCA) alongside a 33-item, 5-point Likert scale questionnaire adapted from Yoon and Hirvela (2004). COCA was selected as the primary

instrument due to its status as a genre-balanced, dynamic monitor corpus containing over one billion words, which allows students to verify collocations, grammatical structures, and academic stance in real-time. The adapted 33-item questionnaire demonstrated high internal consistency, yielding a Cronbach's alpha coefficient of 0.89, which confirms the strong reliability of the instrument in measuring learner perceptions and attitudes within the Pakistani ESL context. In the initial quasi-experimental phase, two intact classes were assessed via a pre-test essay to establish a proficiency baseline. Subsequently, the experimental group underwent a twelve-week intervention focusing on Corpus-Guided Consultation activities—such as analysing concordance lines, prepositional phrases, and lexical bundles—while the control group received traditional instruction. This phase concluded with a post-test to quantify performance improvements. In the second phase, the experimental group completed the closed-ended questionnaire to evaluate four critical dimensions: the efficacy of corpus consultation in error reduction, the utility of specific Data-Driven Learning (DDL) activities, encountered challenges, and overall perceptions of the corpus as a language-learning tool. This integrated approach ensures that the quantitative performance data is substantiated by nuanced learner insights, providing a comprehensive evaluation of the intervention.

Figure 3

Corpus of Contemporary American English (COCA)



### Pilot Study

A pilot study serves as a small-scale feasibility assessment designed to evaluate the various procedural facets required for a more intensive investigation (Arain et al., 2010). Rather than testing specific research hypotheses, the primary objective of a pilot study is to prevent the implementation of a large-scale project that may lack methodological rigour, thereby avoiding the costs associated with flawed experimental design. In this research, the pilot study involved the full simulation of the intended experimental procedures. The treatment protocol and the survey instrument were piloted with a group of 20 ESL students over the course of one week prior to the main intervention. To maintain the statistical integrity of the primary research, these 20 participants were excluded from the final study sample. The findings from this pilot phase confirmed the viability of both the data collection tools and the pedagogical procedures, ensuring the study's readiness for full-scale implementation.

### Ethical Considerations

Ethical integrity was maintained by obtaining formal approval from the departmental ethics committee and securing informed consent from all 100 participants. The students were briefed on the research objectives, their right to voluntary participation, and the guarantee of anonymity through the use of pseudonyms in data reporting. To uphold pedagogical equity, the control group was provided with the same corpus-guided materials and training sessions following the completion of the post-test, ensuring that no student was permanently deprived of the innovative instructional benefits. All digital data, including test scores and questionnaire

responses, were stored securely to protect participant confidentiality throughout the analytical process.

### Limitations and Delimitations

The primary limitation of this study is the restricted timeframe imposed by institutional and programmatic requirements. Such temporal constraints inevitably narrow the study's scope and impact the data collection process, limiting the potential for a more extended longitudinal analysis. Furthermore, as is common in classroom-based research, the fixed academic calendar and resource availability act as external pressures that the researchers must navigate. In contrast, the delimitations of this study represent the intentional boundaries established to define the investigation's scope. This research is specifically delimited to graduate-level students, deliberately excluding other educational levels to ensure a focused analysis of advanced academic writing. Geographically and institutionally, the study is confined to the Department of English Linguistics at The Islamia University of Bahawalpur. While expanding the research to multiple institutions could broaden the scope, these parameters are maintained to ensure a regulated and manageable research procedure within the existing constraints of time and funding.

### Data Analysis

This research evaluated the efficacy of Corpus-Guided Consultation through a dual-analytical approach. To address the quantitative performance data, the study utilised Independent Samples t-tests to compare the mean scores of the experimental and control groups. By analysing the gain scores between pre- and post-tests, the analysis determined the intervention's impact on writing proficiency. Complementing the experimental data, the questionnaire results were processed using descriptive statistics—including mean, standard deviation, and frequency distributions—to capture subjective learner experiences. This analysis specifically evaluated perceived usefulness across various sub-skills, such as collocations and lexical bundles, while identifying technical barriers. Together, these findings provide a robust empirical basis for the tool's effectiveness within the Pakistani ESL classroom.

### Findings of the Quasi-Experimental Research: Intergroup Comparisons

#### Baseline Equivalence of Writing Skills (Pretest)

Table 1

Descriptive Statistics

Pretest Scores in Writing	Groups	N	Mean	Std. Deviation	Std. Error Mean
	Control Group	50	28.57	9.67	1.36688
Experimental Group	50	28.71	9.73	1.37582	

Table 1 presents the descriptive statistics for the pre-test writing scores of the two sample groups: the Control Group (CG) and the Experimental Group (EG). Each group consisted of 50 participants (N=100). The CG recorded a mean score of 28.57 (SD = 9.67), while the EG recorded a nearly identical mean of 28.71 (SD = 9.73). The minimal difference between these initial means suggests that both groups possessed a similar level of writing proficiency prior to the pedagogical intervention. To statistically validate this assumption of baseline equivalence, an independent samples t-test was conducted. The results ( $p > 0.05$ ) confirmed that there was no statistically significant difference between the two groups at the outset of the study, thereby providing a stable foundation for measuring the subsequent impact of the Corpus-Guided Consultation.

Table 2  
Results of the Independent Samples *t*-Test for Pretest Scores

Pretest Scores in Writing	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.007	0.934	-0.072	98	0.943	-0.140	1.9394
Equal variances not assumed			-0.072	98	0.943	-0.140	1.9394

Table 2 presents the results of the independent samples *t*-test conducted on the pre-test scores. To verify the assumption of homogeneity of variance, Levene's Test was applied; the resulting *F*-value of 0.007 ( $p = 0.934$ ) indicates that the variances between the two groups are equal ( $p > 0.05$ ). Consequently, the data fulfills the requirement for homogeneity of variance. The *t*-test yielded a value of -0.072 with 98 degrees of freedom (*df*). The associated *p*-value of 0.943 ( $p > 0.05$ ) confirms that there is no statistically significant difference between the means of the Control and Experimental groups (Mean Difference = -0.140).

#### Differences in Overall Scores in Writing Skills (Posttest)

Table 3  
Descriptive Statistics

Posttest Scores in writing	Mean	N	Std. Deviation	Std. Error Mean
Control Group Posttest	53.53	50	10.46	1.47927
Experimental Group Posttest	60.60	50	9.206	1.30188

Table 3 presents the descriptive statistics for the post-test writing scores of the Control Group (CG) and the Experimental Group (EG). Following the 12-week intervention, the CG achieved an average score of 53.53 (SD = 10.46), whereas the EG recorded a notably higher average score of 60.60 (SD = 9.206). To determine whether this observed improvement in the EG was a result of the experimental manipulation—specifically the effect of Corpus-Guided Consultation (CGC) on the academic writing competencies of Pakistani ESL learners—further inferential analyses were conducted. These tests evaluate whether the score differential between the groups reaches the threshold of statistical significance, thereby allowing for the rejection of the null hypothesis.

Table 4  
Results of the Independent Samples *t*-Test for Posttest Scores

	Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
<b>Control &amp; Experimental Groups Posttest</b>	-7.07	10.82	1.53024	-4.62	49	0.000

Table 4 illustrates the results of the independent samples t-test comparing the post-test scores of the control and experimental groups. The analysis reveals a mean difference of -7.07, indicating that the experimental group's scores were, on average, 7.07 points higher than those of the control group. The standard deviation of the difference scores was 10.82. With a calculated t-statistic of -4.62 and 49 degrees of freedom (*df*), the resulting p-value is < .001. This result indicates a statistically significant positive impact of Corpus-Guided Consultation on the academic writing performance of Pakistani ESL learners, allowing for the rejection of the null hypothesis ( $H_0$ ).

### Findings of Closed-Ended Questionnaire

Table 5

Summary of ESL Learners' Perceptions and Experiences with Corpus-Guided Consultation  
Section 1: Perceived Impact & Linguistic Gains

Questionnaire Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. General Corpus Consultation Impact	6.0%	0%	16.0%	50.0%	28.0%
2. Vocabulary Understanding	0%	6.0%	22.0%	52.0%	20.0%
3. Semantic Function Comprehension	0%	0%	32.0%	50.0%	18.0%
4. Identifying Spelling Errors	4.0%	0%	22.0%	48.0%	26.0%
5. Part of Speech Recognition	0%	0%	28.0%	48.0%	24.0%
6. Collocation Learning	0%	0%	30.0%	52.0%	18.0%
7. Connotation Learning	0%	4.0%	40.0%	44.0%	12.0%
8. Contextual Usage	0%	0%	26.0%	52.0%	22.0%
9. Usage Instance Analysis	0%	6.0%	32.0%	30.0%	32.0%
10. Native Speaker Usage	0%	0%	28.0%	54.0%	18.0%
11. Incidental Vocabulary Acquisition	0%	0%	38.0%	46.0%	16.0%

Section 2: Usability and Facilitation

Questionnaire Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
12. Overall Corpus Usability	0%	0%	40.0%	42.0%	18.0%
13. Search Guidance Effectiveness	0%	0%	32.0%	50.0%	18.0%
14. Understanding Research Results	0%	4.0%	20.0%	52.0%	24.0%
15. Corpus Search Facilitation	0%	6.0%	20.0%	50.0%	24.0%
16. Corpus Ease of Use	0%	4.0%	34.0%	56.0%	6.0%
17. Information Retrieval Success	0%	8.0%	16.0%	72.0%	4.0%

Section 3: Implementation Challenges

Questionnaire Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
18. Interface Usability Issues	4.0%	24.0%	36.0%	20.0%	16.0%
19. Difficulty Analysing Output	0%	16.0%	30.0%	36.0%	18.0%
20. Difficulty with New Words	0%	18.0%	40.0%	30.0%	12.0%
21. Complex Sentence Structure	0%	4.0%	42.0%	42.0%	12.0%
22. Segregated Sentences	0%	12.0%	30.0%	52.0%	6.0%
23. Time and Effort Required	6.0%	10.0%	10.0%	42.0%	32.0%
24. Difficulty: Resource Access	0%	10.0%	12.0%	46.0%	32.0%
25. Difficulty: Limited Training	0%	14.0%	28.0%	42.0%	16.0%

Section 4: Future Intent & Satisfaction

Questionnaire Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
26. Corpus Consultation Purpose	0%	4.0%	14.0%	70.0%	12.0%
27. Resolve Linguistic Problems	0%	22.0%	34.0%	22.0%	22.0%
28. Corpus Transferability	0%	20.0%	34.0%	34.0%	12.0%
29. Overall Perception of Utility	0%	0%	14.0%	54.0%	32.0%
30. Future Intent to Use	0%	0%	26.0%	56.0%	18.0%
31. Missed Opportunity (Adv. Vocab)	0%	0%	24.0%	58.0%	18.0%
32. Integration of Corpus in Learning	0%	0%	20.0%	58.0%	22.0%
33. Desire to Learn More	0%	0%	14.0%	58%	28%

Table 5 provides a comprehensive summary of ESL learners' perceptions and experiences with Corpus-Guided Consultation (CGC). The data reveals an overwhelmingly positive reception of CGC as a transformative tool for academic writing. A significant majority of participants—exceeding 70% in most categories—acknowledged its efficacy in enhancing linguistic precision, particularly in mastering native-like usage, understanding complex collocations, and refining vocabulary within authentic contexts. The high agreement rates regarding "Information Retrieval Success" (76%) and "Corpus Consultation Purpose" (82%) suggest that students successfully transitioned from passive learners to active researchers. This shift enables them to independently resolve linguistic ambiguities, validating the "Noticing" phase of the conceptual framework. In this stage, the corpus acts as a cognitive stimulus, allowing learners to identify and internalise refined language patterns that traditional pedagogical methods might overlook. However, the findings also highlight a critical "implementation gap" characterised by technical and cognitive challenges. While the tool's utility is undisputed, a substantial portion of the group reported difficulties regarding the time and effort required for consultation (74%) and the complexity of analysing fragmented concordance outputs (54%). The notable percentage of "Neutral" responses in areas such as "Corpus Transferability" and "Interface Usability" indicates that while students value the pedagogical outcomes, the process involves a steep learning curve. Despite these hurdles, the strong desire to further integrate the corpus into their curriculum (80%) and the high intent for future usage (74%) suggest that the linguistic

benefits far outweigh the initial difficulties, provided that future interventions offer more robust training and streamlined interface access.

### **Findings and Discussion**

The findings of this research confirm that Corpus-Guided Consultation (CGC) significantly outperforms traditional pedagogical methods in improving the academic writing proficiency, lexical accuracy, and fluency of Pakistani ESL learners. While both groups commenced the study with equal baseline scores, the experimental group demonstrated statistically superior gains in collocational proficiency, mirroring the empirical successes reported by Yoon and Hirvela (2004) and Al-Howishil (2019). These quantitative advancements align with the results of Youssef (2020), reinforcing the conclusion by Al-Solami and Al-Harbi (2020) that data-driven interventions are superior to conventional textbook tasks for fostering advanced linguistic knowledge. The survey data supports this "dual narrative": while 78% of participants credited corpus consultation with reducing vocabulary errors and over 70% valued its role in mastering native-like usage, these positive perceptions—consistent with global studies by Tekin et al. (2016)—are tempered by significant structural and cognitive barriers. Much like the participants in Luo and Liao's (2015) study, 74% of the group cited the process as time-consuming and cognitively demanding. Furthermore, a unique regional hurdle was identified, as 78% of learners faced poor internet and resource access, suggesting that while the pedagogical value of the corpus is undisputed and fosters high learner autonomy (80%), its successful implementation in the Pakistani higher education context remains contingent upon institutional support and structured technical scaffolding to bridge the "implementation gap."

### **Conclusion and Recommendations**

Through a rigorous quasi-experimental design, this research concludes that Corpus-Guided Consultation (CGC) significantly outperforms traditional instruction in enhancing the academic writing, accuracy, and lexical competence of Pakistani ESL learners. While learners overwhelmingly perceive the tool as essential for mastering collocations and native-like usage—expressing a strong desire for its institutional integration—successful implementation remains contingent upon overcoming significant logistical barriers, including interface complexity and inconsistent internet access. Ultimately, this study positions Data-Driven Learning (DDL) not as a mere pedagogical adjunct, but as an essential, high-impact approach for developing advanced writing proficiency when supported by robust instructional scaffolding. To build upon these findings, future research should prioritise longitudinal studies to assess the long-term retention of corpus skills and conduct comparative analyses across diverse proficiency levels and L1 backgrounds. Furthermore, there is an urgent need for design-oriented research to develop simplified, scaffolded interfaces that mitigate data overload, ensuring that corpus tools become a more accessible and effective staple within the Pakistani ESL higher education framework.

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## Appendices

### Appendix A

#### Corpus-Based Vocabulary Activities

##### a. Concordance Lines

1. Read the concordance lines below and answer the following questions.

Campaign:

America is deep in the throes of its presidential **campaign** season, never a time noted for its Department of Health is launching a **campaign** to raise awareness of the symptoms of target people over the age of 55. The **campaign**, which will run from 8 May to 30 June, e-mails, the FBI raids. Solyndra investors raised **campaign** money for Obama.

1. Is '**campaign**' a(n) verb, noun or adjective?
2. What does '**campaign**' mean?
3. Can you write one sentence using '**campaign**'?

2. Read the concordance lines below and answer the following questions.

Issue:

1. The main **issue** at hand is how we will fund the new project.
2. The group is working hard to **issue** a new statement by Friday.
3. We need to address the **issue** of climate change with urgency.
4. The magazine's latest **issue** is on sale now.
5. Is '**issue**' a(n) verb, noun or adjective?
6. What does '**issue**' mean?
7. Can you write one sentence using '**issue**'?

7. Read the concordance lines below and answer the following questions.

Conduct:

1. The students' excellent **conduct** earned them a reward.
2. Scientists will **conduct** a new study on the effects of pollution.
3. The orchestra's new director will **conduct** the performance tonight.
4. Please **conduct** yourselves with respect during the ceremony.
5. Is '**conduct**' a(n) verb, noun or adjective?
6. What does '**conduct**' mean?
7. Can you write one sentence using '**conduct**'?

**9. Read the concordance lines below and answer the following questions.**

Access:

1. Students were given **access** to the library's online database.
2. You will need a key to **access** the building after hours.
3. The park's new ramp provides wheelchair **access** to all visitors.
4. The team was unable to **access** the old files from the server.
5. Is '**access**' a(n) verb, noun or adjective?
6. What does '**access**' mean?
7. Can you write one sentence using '**access**'?

**b. Use of Academic Vocabulary**

Exchange your notes with a partner and comment on hers.

- **Objective:** students will be able to use academic vocabulary correctly to express self-promotions for their personal statements.
- All the examples are taken from the concordance lines in the personal statement corpus

a. Fill in the gaps using the words in the box:

critical thinking    problem-solving skills    intellectual curiosity    analytical skills    academic growth    scholarly passion    unique perspective

1. My internship experience gave me the opportunity to apply my \_\_\_\_\_ to a real-world project.
2. I developed my \_\_\_\_\_ by dissecting complex arguments and identifying underlying assumptions.
3. My deep-seated \_\_\_\_\_ led me to take advanced courses in a variety of disciplines.
4. This challenge allowed me to demonstrate my \_\_\_\_\_ in a high-pressure environment.
5. Through my studies, I experienced significant \_\_\_\_\_ that prepared me for advanced research.
6. My \_\_\_\_\_ for ancient history was ignited during my undergraduate studies.
7. My background in both science and art gives me a \_\_\_\_\_ on complex issues.

### Classroom activity 6

- **Objective:** students will be able to use academic vocabulary correctly to express their scholarly approach and research skills for their personal statements.
- All the examples are taken from the concordance lines in the personal statement corpus

a. Fill in the gaps using the words in the box:

**systematic approach   rigorous training   critical perspective   meticulous attention   empirical data   scholarly inquiry   sound methodology**

1. My research project was based on a \_\_\_\_\_ that ensured all variables were accounted for.
2. I gained \_\_\_\_\_ in data analysis during my undergraduate thesis.
3. My \_\_\_\_\_ to detail helped me uncover inconsistencies in the original source material.
4. I learned to read academic literature with a \_\_\_\_\_, questioning assumptions and biases.
5. This project provided me with a foundation for future \_\_\_\_\_ in the field of sociology.
6. The conclusions of my paper are supported by \_\_\_\_\_ collected through direct observation.
7. The research project followed a \_\_\_\_\_ to ensure the validity and reliability of the findings.

### Classroom activity 10

- **Objective:** students will be able to use academic vocabulary correctly to describe the impact of their experiences and future intentions for their personal statements.
- All the examples are taken from the concordance lines in the personal statement corpus

a. Fill in the gaps using the words in the box:

**profound impact   deeper understanding   transformative experience   broaden my perspective   further my education   scholarly pursuits   well-rounded individual**

1. My volunteer work with marginalized communities had a \_\_\_\_\_ on my career path.
2. My travels helped me to \_\_\_\_\_ and develop a more global view of justice.
3. I believe this program will provide a \_\_\_\_\_ that will shape my future.
4. The rigorous coursework allowed me to gain a \_\_\_\_\_ of constitutional law.
5. I hope to \_\_\_\_\_ in order to become a leader in my field.
6. The university's resources will support my \_\_\_\_\_ in political theory.
7. I believe my diverse experiences have made me a \_\_\_\_\_ with a unique skill set.

### Classroom activity 4

- **Objective:** students will be able to use academic vocabulary correctly to express their abilities in critical analysis and research for their personal statements.
- All the examples are taken from the concordance lines in the personal statement corpus

a. Fill in the gaps using the words in the box:

**comprehensive review   rigorous analysis   empirical evidence   formulate a hypothesis   research methodology   critical examination   discerning eye**

1. My senior thesis involved a \_\_\_\_\_ of existing literature on the topic.
2. Through a \_\_\_\_\_ of the data, I was able to identify new trends.
3. I believe the most effective way to address this issue is to first \_\_\_\_\_ and then test it.
4. My research findings are based on solid \_\_\_\_\_ gathered over several months.
5. My training has given me a \_\_\_\_\_ for spotting subtle details in complex documents.
6. The course focused on mastering a sound \_\_\_\_\_ to ensure valid results.
7. A \_\_\_\_\_ of the case law revealed several contradictory precedents.

### c. Lexical Bundles

#### Classroom Activity 1: The 'In Addition to' Bundle

- **Objective:** To help students identify and correctly use the lexical bundle **in addition to** to add information in their writing.

**A.** Read the following sentences from a corpus. What is the function of the lexical bundle **in addition to**?

1. My experience tutoring high school students, **in addition to** my coursework, has prepared me for this program.
2. My research on climate change, **in addition to** my passion for environmental justice, motivates me to pursue this degree.
3. I have taken several advanced physics courses, **in addition to** my required science classes.

**B.** What academic context do these sentences have in common?

**C.** In your notebook, write three new sentences using **in addition to** to combine your academic experiences and skills.

#### Classroom Activity 2: The 'As a Result of' Bundle

- **Objective:** To help students identify and correctly use the lexical bundle **as a result of** to show cause and effect in academic writing.

**A.** Read the following sentences from a corpus. What is the function of the lexical bundle **as a result of**?

1. The company's profits declined **as a result of** the new regulations.
2. My research skills improved significantly **as a result of** the intensive summer program.
3. The experiment was terminated prematurely **as a result of** unexpected complications.

**B.** What kind of relationship does this bundle establish between two ideas?

**C.** In your notebook, write three sentences using **as a result of** to explain the outcomes of a project or an experience.

#### Classroom Activity 3: The 'In Spite of' Bundle

- **Objective:** To help students identify and correctly use the lexical bundle **in spite of** to introduce a contrasting or unexpected element.

**A.** Read the following sentences from a corpus. What is the function of the lexical bundle **in spite of**?

1. **In spite of** the challenges, the project was completed on time.
2. The study yielded a positive outcome **in spite of** the limitations in the experimental design.
3. **In spite of** the widespread criticism, the new theory gained traction among scholars.

**B.** How is this bundle similar to the word **despite**? How is it different from the bundle **on the other hand**?

**C.** In your notebook, write three sentences using **in spite of** to describe a positive outcome that occurred despite a negative situation or obstacle.

#### Classroom Activity 4: The 'In My Opinion' Bundle

- **Objective:** To help students recognize that this bundle is often less formal and to provide more suitable alternatives for academic writing.

A. Read the following sentences from a corpus. What is the function of the lexical bundle **in my opinion**?

1. **In my opinion**, the most effective solution is to increase funding for public education.
2. The author, **in my opinion**, fails to provide sufficient evidence to support their claims.
3. **In my opinion**, this theory is outdated and should be replaced with a more modern one.

B. Why is this bundle often considered too informal for academic papers, and what are some more formal alternatives?

C. In your notebook, rewrite the sentences from Part A using more formal academic language to present the same ideas.

#### d. Prepositional Phrase

##### Classroom Activity 2: Prepositions with 'Result'

- **Objective:** To help students distinguish between the prepositions **in** and **of** when used with the noun **result**.

A. Read the following sentences from a corpus. What is the difference between **result in** and **result of**?

1. The project's success was a direct **result of** the team's collaboration.
2. The new regulations will **result in** a significant decrease in pollution.
3. The economic downturn was a **result of** several factors, including rising inflation.

B. The first and third sentences show a cause-and-effect relationship using the noun **result**. The second uses **result** as a verb. Explain this difference.

C. In your notebook, write one sentence using **result of** as a noun and another using **result in** as a verb to describe an outcome related to a research project.

##### Classroom Activity 1: Prepositional Phrases with 'According to'

- **Objective:** To help students correctly use the prepositional phrase **according to** when attributing information to a source in academic writing.

A. Read the following sentences from a corpus. What is the function of the phrase **according to**?

1. **According to** the latest research, the new policy has had a positive effect.
2. The author argues that the social structure is a key factor, **according to** his most recent publication.
3. The company's profits increased, **according to** the annual report.

B. What academic context do these sentences have in common? How does this phrase help a writer avoid plagiarism?

C. In your notebook, write three new sentences using **according to** to introduce information from a source in your field of study.

#### Classroom Activity 4: Prepositions with 'Focus'

- **Objective:** To help students correctly use the prepositions **on**, **upon**, and **of** with the verb and noun **focus**.

**A.** Read the following sentences from a corpus. What prepositions are used with **focus**?

1. The study will **focus on** the long-term effects of the policy.
2. The final chapter provides a brief overview, while this one's **focus is on** the details.
3. My research places a strong **focus upon** the historical causes of the event.

**B.** Which preposition is most common with **focus**? Is there a difference in formality between **on** and **upon**?

**C.** In your notebook, write two sentences using **focus** with a preposition: one as a verb and one as a noun, to describe your research or academic interests.

#### Classroom Activity 4: Prepositions with 'Difference'

- **Objective:** To help students correctly use the prepositions **in** and **between** with the noun **difference**.

**A.** Read the following sentences from a corpus. What is the difference between **difference in** and **difference between**?

1. The study found a statistically significant **difference between** the two groups.
2. There was a noticeable **difference in** the final scores of the students.
3. The author highlights the key **difference between** the two theoretical frameworks.

**B.** When do you use **difference between** and when do you use **difference in**?

**C.** In your notebook, write one sentence using **difference between** to compare two things and another using **difference in** to compare a characteristic of multiple things.

**Appendix B**

**Questionnaire for Students**

**Section I: Demographic Part**

Name (optional): \_\_\_\_\_

Gender:  Male  Female

**Section II:**

Please indicate your views by making a tick (✓) with the box of your choice against each statement.

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA = Strongly Agree

Sr.#	Item/ Questionnaire Statement	SD	D	N	A	SA
1.	Corpus-Guided Consultation helped me to overcome my vocabulary errors in academic writing.					
2.	Corpus-Guided Consultation helped me to understand the meaning of vocabulary items.					
3.	Corpus-Guided Consultation helped me to comprehend the semantic function of vocabulary items.					
4.	Corpus-Guided Consultation helped me to overcome spelling errors in academic writing.					
5.	Corpus-Guided Consultation helped me to distinguish different forms (parts of speech) of vocabulary.					
6.	Corpus-Guided Consultation helped me to learn different collocations (compound words) of vocabulary items.					
7.	Corpus-Guided Consultation helped me to learn different connotation (word choice) of vocabulary items.					
8.	Corpus-Guided Consultation helped me to recognise various usages of each vocabulary item in different context.					
9.	Corpus-Guided Consultation provided me with various instances of using each vocabulary item.					
10.	Corpus-Guided Consultation showed me how native speakers tend to use different vocabulary items.					
11.	Corpus-Guided Consultation helped me to learn new academic vocabulary coincidentally.					
12.	The activities had clear and simple instructions on the corpus website.					
13.	The activities guided me to practice different search options on the Corpus of Contemporary American English (COCA) website.					
14.	The activities assisted me in understanding the corpus research results.					
15.	The activities facilitated the process of searching the corpus.					

16.	The interface of the Corpus of Contemporary American English (COCA) was confusing and puzzling.					
17.	I had difficulty in analysing the corpus search results due to the too many sentences that the search gives (the concordance output).					
18.	I had difficulty interpreting the concordance output due to the new words.					
19.	I had difficulty interpreting the concordance output due to the complexity of the given sentences.					
20.	I had difficulty interpreting the concordance output due to segregated/isolated sentences.					
21.	I had some difficulty in using the corpus due to the time and effort spent on analysing the data.					
22.	I had some difficulty in using the corpus due to the limited access to computer/Internet.					
23.	Limited training and practice made it difficult for me to use corpus guided consultation effectively.					
24.	The Corpus of Contemporary American English (COCA) was easy to use.					
25.	I understand the purpose of using corpus consultation in this writing course.					
26.	When I search for information in the corpus, I usually get the information that I needed.					
27.	I tried to consult the corpus for other linguistic problems that I encountered in essay writing.					
28.	I consult the corpus when writing papers for other courses too.					
29.	Overall, the corpus is a very useful resources for improving my English writing.					
30.	I will keep on consulting the corpus to enrich my vocabulary knowledge in the future.					
31.	If I had a chance to learn how to use Corpus-Guided Consultation tools earlier, I would have been better in using more advanced academic vocabulary in my writing.					
32.	I believe that the corpus should be introduced in all ESL writing courses.					
33.	I want to learn more about using Corpus-Guided Consultation.					