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Impacts of Self-Compiled Corpus-Based Instruction on Ethiopian EFL Students' Academic Writing Sub-Skills Development: A Focus on Using AntConc Software Tools



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Abstract

This study aimed to investigate the effect of self-compiled corpus-based instruction (CBI) on English as a Foreign Language (EFL) learners' academic writing development with a focus on specific writing sub-skills and their perceptions toward learning through the target corpora. A class of 51 participants from the second-year Software Engineering Department students at Woldia University, Ethiopia, was conveniently selected for a 40-hour intervention in 2025. Using AntConc software, a self-compiled corpus of 200 IELTS Writing Task I test responses was analyzed. A mixed-methods approach with an interrupted time series quasi-experimental design was employed. To collect quantitative data, test scores were used, and participant interviews for qualitative data. Data analysis involved paired samples *t*-tests and one-way repeated measures (RM) ANOVA for quantitative results, and thematic analysis for qualitative findings. The paired samples *t*-test revealed a significant effect of CBI on each writing sub-skill, with $p < .01$, except for task achievement. Similarly, the one-way RM ANOVA

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analysis revealed that the CBI had a significant effect in developing the participants' writing sub-skills quality at a value of at $F(6, 50) = 243.659$, $\eta^2 = .970$, $p < .001$) for lexical resources, $F(6, 50) = 149.459$, $\eta^2 = .952$, $p < .001$ for grammar accuracy and range, and $F(3.34, 50) = 322.107$, $\eta^2 = .866$, $p < .001$) for coherence and cohesion, while its effect on task achievement was comparatively less pronounced ($F(4.247, 50) = 18.433$, $\eta^2 = .222$). Thematic analysis of participant interviews revealed that participants were particularly interested in the CBI, especially in learning grammar and vocabulary for both autonomous and collaborative learning, due to its innovative nature and authenticity. However, challenges remained in learning task achievement that promote further investigation in this area. While the findings underscore the overall effectiveness of CBI, future research should explore its application across different academic writing genres.

Keywords: Academic writing sub-skills; corpus-based instruction; AntConc software; self-compiled corpora; perception.

Introduction

Recently, digital technology (DT) has begun to transform English as Foreign Language (EFL) learning, particularly in academic writing (Strobl et al., 2019). DT includes advanced resources such as electronic devices and tools for generating, storing, processing, editing, and disseminating data. It integrates hardware (computers, mobile phones), software (applications, programs), networking (internet and communication technologies), and online platforms, enhancing data accessibility and transfer (Abdel-Haq & Ali, 2017; Alenezi, 2023). Therefore, to address academic writing challenges, corpus-based instruction (CBI) has gained popularity following the advancement of technology for teaching various writing genres, enabling EFL students to access diverse materials, correct errors, and receive feedback (Durrant, 2022; Flowerdew, 2010; Luo & Liao, 2015; Oshima & Hogue, 2007). Moreover, the work of young scholars in EFL/ESL, like Wang et al. (2022) emphasized that technology enhances second language academic writing learning in different ways. Among computer-mediated writing instructions, corpus plays a great role for its flexible and authentic nature (Durrant, 2022).

A corpus is a collection of written texts that can be exploited in various approaches (direct or indirect) for target language teaching with the help of internet access, or user-friendly software tools and print-outs (Anthony, 2005; Friginal et al., 2023; Yoon, 2011; Zhao, 2015). Even if obtaining appropriate written corpora is challenging, they can be collected from real sources and analyzed using software like AntConc and WordSmith (Antony, 2005; Saunders et al., 2012). Nowadays, the IELTS Writing Tasks (Task 1 and Task 2) seem to have a potential source for academic writing instruction after being examined in a specific context (Smirnova, 2017). Since IELTS Writing Task test responses have been written mainly based on factual data interpretations like numbers, percentages, or ratios, they are more advantageous to teach academic writing (Divsar & Heydari, 2017; Pham, 2022).

However, despite huge credit given to the EFL instruction in the Ethiopian education system, local research findings revealed that it is not effective as needed in all government primary, secondary, and tertiary levels students (Bazezew, 2019; Eshetie, 2013). In this regard, empirical research findings consistently reveal that Ethiopian EFL students' English language competence has not achieved the objectives outlined in the syllabus for their respective grade levels (Wossenie, 2014). Similarly, impacts of instructional materials and methods, scarcity of resources such as textbooks, reference books, audio-visual materials, authentic learning materials, and limited technology utilization were identified as the main reasons for EFL learners' English language incompetence (Amare, 2022; Amogne, 2013;

Wossenie, 2014). In this regard, the use of technology-assisted academic writing instruction and EFL learners' perceptions should be investigated before its practical application (Raine, 2023).

Hence, this study aimed to explore how IELTS Writing Task 1 Band 9 responses (freely available and very similar texts) as a self-compiled corpus affect EFL learners' academic essay writing development, particularly in the context of Woldia University, and generally in Ethiopia higher education institutions. The findings of this study offer valuable insights for EFL curriculum designers, teachers, and learners, suggesting that CBI using AntConc software can serve as an innovative and technology-enhanced approach to higher education academic writing instruction for all writing performance level students.

To effectively analyze corpus data, researchers commonly use various software tools such as AntConc, WordSmith, Sketch Engine, Voyant Tools, and Sonic Visualizer. Each tool is designed with unique features catering to specific analytical needs. For example, WordSmith is a commercial software package, while Sketch Engine and Voyant are web-based platforms for creating and analyzing corpora. Conversely, Sonic Visualizer focuses on spoken corpus analysis (Durrant, 2022).

AntConc stands out as a free tool that enables users to explore linguistic features through both deductive and inductive text analysis. Its user-friendly interface makes it ideal for individual and collaborative academic writing. Given the study's objectives, AntConc was chosen for its accessibility and multi-platform capabilities, including functions like concordance, word frequency, and keyword analysis—particularly useful for examining written corpora offline (Anthony, 2005).

Once downloaded, AntConc can be conveniently saved on the desktop. Researchers and learners have the option to utilize existing corpora or upload their self-compiled data for analysis. Accordingly, AntConc was selected for this study to analyze the self-compiled data (Anthony, 2005).

As illustrated in Figure 1, AntConc features several tools pertinent to text analysis, including concordances of keyword in context (KWIC), word frequency, collocates, keyword lists, N-gram, clusters, file view, word lists, text distribution, and concordance plots. Each tool serves a specific purpose in data exploitation (Anthony, 2017). Therefore, due to their relevance to the research objectives, this study particularly focused on concordance lines of KWIC (which display word usage in various contexts), N-gram (which reveal common phrases in the target text), clusters (which highlight patterns in sentence structures), and file view (which allows for examination of word usage in specific texts).

Statements of the Problem

In the context of Ethiopian universities, local researchers have consistently found that most EFL learners face significant challenges in developing their writing skills. The challenges are primarily attributed to inadequate vocabulary and grammar usage, as well as issues related to text organization and completeness (Amogne, 2013; Eshetie, 2013). These challenges stem from a lack of appropriate instructional materials and methods, including inadequate use of technology in EFL academic writing instruction.

Despite many challenges, very few researchers have examined the use of CBI in the context of Ethiopian higher education EFL academic writing. In Ethiopia, Amare (2022) found that CBI was crucial for developing argumentative essay writing among Mechanical Engineering EFL learners at Bahir Dar University. His study utilized a one-time pre- and post-test to assess writing changes following his intervention and employed small corpora from various engineering field journals. His findings indicated that CBI is important for enhancing academic writing, but he overlooked the role of corpora regarding particular writing sub-skills and the participants' perception toward learning each sub-skill

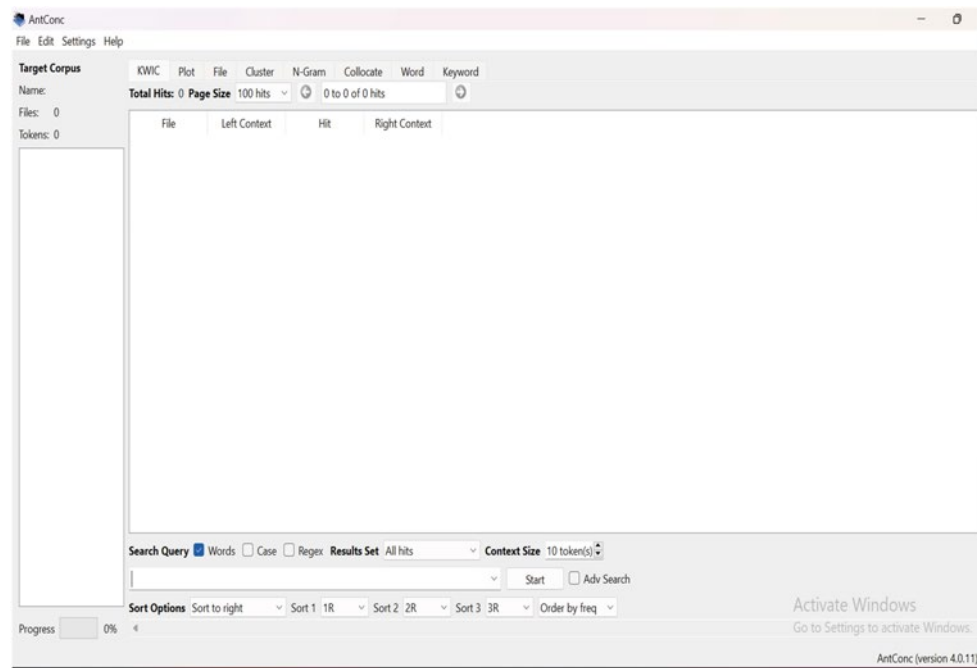


Figure 1 *Features of AntConc Software (Taken from Anthony, 2017)*

with the assistance of AntConc software, which we aimed to investigate further. As a result, we believe that the concepts and applications of CBI have not yet been examined in the Ethiopian context, and this should be explored using various research methods, instructional materials, and settings.

To identify the target writing genre, we conducted a preliminary assessment at Woldia University involving 100 randomly selected undergraduate students. The findings revealed that more than 90% ($N = 90$) of these students encountered difficulties with writing quality essays in the final exam for the Communicative Writing Skills (EnLa-102) course in 2023.

Despite significant academic writing challenges among EFL learners, Ethiopian universities have largely overlooked the potential of self-compiled CBI to improve writing skills. Efforts to utilize IELTS test responses or similar texts as written corpora, aided by AntConc, have been minimal.

Conversely, while numerous studies worldwide show that CBI greatly enhances the academic writing skills of EFL learners and encourages both researchers and educators to investigate effective strategies, significant inconsistencies remain concerning its potential and application. For instance, recent studies (Hu & Deng, 2023; Wang et al., 2022) found that corpus-based writing practices enhance lexical diversity and complexity, with learners appreciating these methods regardless of their performance levels. Alsehibany and Abdelhalim (2023) noted marked improvements in vocabulary use among students at a Saudi university who engaged directly with corpora. Others proved that EFL students generally favor learning vocabulary through direct corpus interaction (Yoon & Hirvela, 2004). Likewise, Tsai (2021) examined the effect of online corpora CBI on business English writing instruction in terms of vocabulary, syntactic structure, and content as a whole and learners' perceptions toward the intervention was positive.

The research findings of (Alsehibany & Abdelhalim, 2023; Hu & Deng, 2023) also confirmed that EFL learners were interested, and had positive perceptions toward learning vocabulary over grammar items using online corpora.

We found that most previous studies focused on the direct/online use of corpora. But, unlike the indirect use of written corpora, the dependence on online corpora poses accessibility challenges for learners in environments with limited internet access, such as Ethiopian universities. Moreover, previous researchers have primarily focused on examining short-term CBI effects referring to grammar and vocabulary language aspects, mostly neglecting other aspects like text coherence and cohesion, and task achievements which are essential for overall academic writing quality.

Most existing studies have focused on the direct or online use of corpora. However, reliance on online resources poses accessibility challenges in environments with limited internet, like Ethiopian universities. Furthermore, previous research often emphasizes short-term CBI effects on grammar and vocabulary, neglecting critical aspects such as text coherence, cohesion, and overall academic writing quality. This study aims to fill these gaps by exploring the broader implications of CBI in Ethiopian higher education academic writing instruction.

Due to the nature of the research objectives and design, this study is grounded in Activity Theory (AT) and aligns with the principles of the Data-Driven Learning (DDL) approach, which is associated with Tim Johns' inductive method. This method utilizes language input from corpora through concordance lines. According to Johns (1991, cited in Engeström, 2009), the DDL perspective from the 1980s viewed language learners as research workers who interacted directly with hands-on corpora. However, advancements in technology (e.g., computers, software) have broadened the DDL approach, making it more accessible. As a result, corpus-based instruction has emerged as an alternative approach to EFL learning (Vyatkina, 2020).

Based on the principles of DDL, CBI offers structured and up-to-date authentic texts to enhance learners' academic writing performance. The teacher's role is to facilitate this process, assisting students in using the designed software tools to explore the target language and promote independent and collaborative learning through either inductive or deductive approaches in specific contexts (Tribble, 2001). In accordance with the principles of DDL, AT, which stems from Sociocultural Theory, is founded on several key concepts: activity components, objectives, tool-mediated learning, collaborative analysis, feedback mechanisms (such as peer or self-reflection and assessment), context-based learning, and community practice evaluation. In this regard, CBI promotes real language use, autonomy, motivation, and activity-based learning for EFL learners (McCarthy & McCarten, 2022). Therefore, this study analyzed the learning environment in relation to the Engeström's (2009) expanded AT model, which includes components such as tools (AntConc software), subjects (learner participants), community (learners and instructor), rules (writing instructions, assessment criteria), division of labor (task assignments), and outcomes (instructional short and long-term results).

It was also proven that AT can serve as a foundation for studying ICT-based instruction in higher education to address EFL learning challenges including academic writing (Issroff & Scanlon, 2002; Rohrer-Murphy, 1999).

Based on the principles of DDL, AT is centred on context-based human activity and consciousness interaction concerning the learning process, and learners' performance (Engeström, 2009; Rohrer-Murphy).

In this regard, CBI promotes technology-assisted real language, autonomous, collaborative, motivation, and activity-based learning for all performance level EFL learners (Boulton, 2009; McCarthy & McCarten, 2022). Based on the principles of AT, language learning requires a socially constructed formal environment with shared roles, well-designed learning goals, and tools in line with learners' backgrounds (Engeström, 2009; Hardman, 2008).

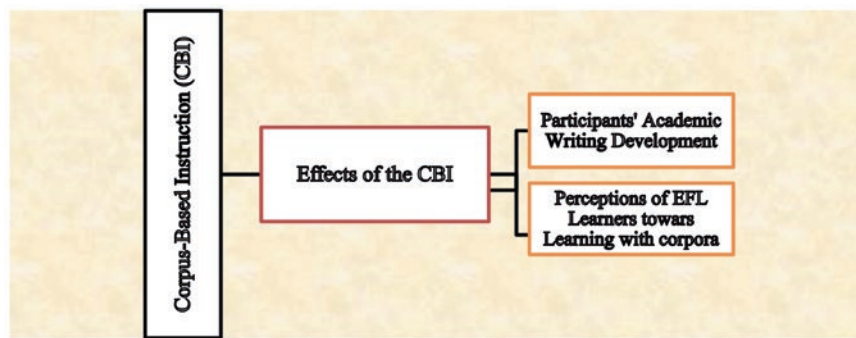


Figure 2 *Conceptual Framework of the Study*

Figure 2 illustrates the relationship between the impacts of the independent variable, i.e., corpus-based instruction on the dependent variables: academic writing performance and the perceptions of the study participants. With the support of CBI, EFL learners can engage with corpus data materials—either individually or in groups—using either a deductive or inductive approach. According to Issroff and Scanlon (2002), this interaction with innovative materials and peers allows EFL learners to explore alternative vocabulary or grammar items from concordance lines to edit, correct, or revise their drafts.

Therefore, this study aimed to address the identified gaps through examining effects of self-compiled corpora on EFL learners' academic writing development and their perceptions toward learning with the target corpora. The participants' writing development will be assessed in line with the four text quality assessment criteria: grammar accuracy and range, lexical resources, coherence and cohesion, and task achievement.

Research Questions

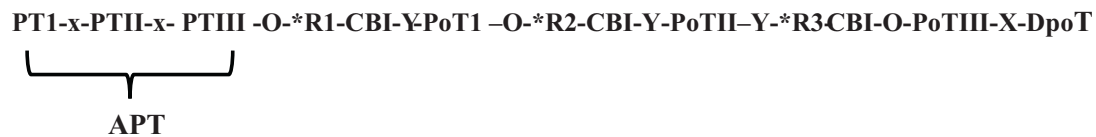
Based on the purpose of the study, the following research questions were addressed:

1. How does self-compiled corpus-based instruction using the AntConc software differently impact students' writing development across four text quality criteria: grammatical range and accuracy, vocabulary usage, task achievement, and cohesion and coherence?
2. How do students perceive learning academic writing through self-compiled corpus-based instruction with the assistance of AntConc software?

Methodology

Guided by a pragmatism worldview, this study utilized a mixed-methods approach, combining both quantitative and qualitative data to triangulate findings and enhance the validity and reliability of the results (Morgan, 2007). To assess the intervention's impact, an interrupted time series quasi-experimental research design (ITSQERD) was employed. The independent variable was the timing of the tests, while the dependent variable was the participants' writing development based on their achievements. The use of an ITSQERD is particularly beneficial as it emphasizes the importance of periodically repeated tests to monitor progress in students' writing development (Creswell, 2014). Hence, it can be argued that to explore the impacts of the intervention (i.e., self-compiled corpus-based instruction) on each of the target academic writing sub-skills, applying the ITSQERD on a single treatment group would be more appropriate.

As a result, the research design for the current study was adapted as shown in Figure 3.



Where:

PTI = pre-test one PTII = pre-test two PTIII = pre-test three APT = average of pre-tests

PoTI = post-test one PoTII = post-test two PoTIII = post-test three DPoT = delayed post-test

*R1-CBI = First round intervention after pre-tests

*R2-CBI = Second round intervention after post-test one

*R3-CBI = Third round intervention after post-test two

x = Five days' time interval between pre-tests

Y = A month time interval between each intervention round ending point, and the next post-test

X = Two months' time interval after post-test three

O = A two or a three days' time interval between the incidents

Figure 3 *Interrupted Time Series Quasi-Experimental Research Design for a Single Treatment Group (Adapted from Creswell, 2014)*

The Study Participants and Settings

Woldia University, a government institution in Ethiopia's Amhara region, was selected for this study due to its proximity to the residence of the corresponding author. A class of 51 second-year students (female = 16) from the Software Engineering Department was conveniently chosen based on their class schedule and the availability of adequate computers in the department. All participants had prior knowledge of English language academic writing, having studied it in primary and secondary school, and completed two English language courses (Communicative English Skills I and II) in their university freshman year.

Data Collection Instruments

Writing Tests

Mixed data gathering tools are essential for ensuring the validity and reliability of research findings (Creswell, 2014). In this study, we administered seven slightly adapted writing tests from the IELTS Writing Task I website at specific intervals to gather both quantitative and qualitative data. To ensure face and content validity, the same three tests were used for both pre-tests and post-tests, while a closely related test was given for the delayed post-test. Additionally, the two co-authors reviewed the tests prior to administration to further validate them.

Initially, we conducted three pre-tests (PTI, PTII, and PTIII) within a five day interval to assess participants' writing performance and establish baseline data, identifying their major writing difficulties related to each sub-skill. This information informed the development of instructional materials, including self-compiled corpora with relevant tasks and activities.

Following the pre-tests, we conducted a three-month intervention, meeting for 2–3 hours per week within three rounds. After one month of classroom intervention (*R1-CBI), we administered the first post-test (PoTI) and identified major writing difficulties based on the results. This led to a second round of intervention (*R2-CBI), with the second post-test (PoTII) given one month later to evaluate its impact. Again, we identified key writing difficulties, which prompted a third round of intervention (*R3-CBI) followed by the third post-test (PoTIII) to assess the effects on each writing sub-skill. To check for retention of the writing sub-skills, we conducted a delayed post-test two months after PoTIII.

Participant Interviews

To explore the participants' perceptions, qualitative data were gathered through participant interviews (PI) conducted immediately after the final classroom intervention, taking an hour for each interviewee. The interviews comprised eight semi-structured questions focused on the relevance of the intervention concerning instructional materials and methods, aligned with the four quality assessment criteria. Six participants were chosen for the interviews based on their baseline writing performance: two high scorers (PI-5 and PI-6), two medium scorers (PI-3 and PI-4), and two low scorers (PI-1 and PI-2). To ensure the validity of the interview questions, the two co-authors reviewed them and conducted two pilot interview sessions prior to the actual interviews.

Data Analysis Techniques

Quantitative Data Analysis

Mixed methods data analysis employed an explanatory sequential framework (quan-qual), beginning with quantitative data followed by qualitative analysis. Subedi (2016) notes this design aligns with a pragmatism worldview. The quantitative phase evaluated participants' academic essay scores through two experienced raters using the IELTS criteria. Each test was graded on a scale of 36%, with 9% allocated to each of the following text quality assessment criteria: grammar accuracy and range, vocabulary usage, coherence and cohesion, and task achievement. Statistical methods employed included a paired-samples *t*-test to assess significant differences (at a *p*-value of $< .01$) between pre-tests and post-tests, and a one-way RM ANOVA to determine the significance of the intervention across tests at a value of ($p < .05$).

Before proceeding with data analysis, test-retest reliability was confirmed and resulting Cronbach's alpha values ranged from .797 to .921 for all tests. Similarly, inter-rater reliability was also computed using Cohen's Kappa ranging from 0.75 to 1 at a confidence interval of 95%. When the raters encountered ambiguities and significant variations, they discussed the issues and took an average to be recorded as a final score. For this study, since the Cronbach's and Cohen's Kappa alpha values were greater than 0.7, it is considered that all tests were reliable for data collection and analysis (Creswell, 2014) (see Table 1 and Table 2).

Additionally, internal reliability coefficients were assessed using Cronbach's alpha, yielding values of .923, .867, and .931 for pre-tests I, II, and III; .941, .768, and .855 for post-tests I, II, and III; and .897 for the delayed post-test. These values were deemed suitable for all assessment criteria (i.e., the sub-skills). Keser et al. (2013) classify internal reliability coefficients of approximately .7, .8, and .9 as moderate, very good, and excellent, respectively. This classification reinforces the validity of the test results for analysis (see Table 2).

Before conducting data analysis, the key assumptions for one-way RM ANOVA and paired samples *t*-tests were assessed using various statistical tools in SPSS version 24. To examine data distribution, normality was verified through Shapiro-Wilk tests, which yielded results of $p > .05$ for all writing

Table 1 *Inter-Rater Reliability of Two Raters in Pre-test, Post-test, and Delayed Post-test for Each Writing Sub-Skill*

Time	Measure	Value				Confidence interval (95%)
		Grammar Accuracy and Range	Vocabulary Usage	Cohesion & Coherence	Task Achievements	
Pre-test One	Cohen's Kappa	0.85	0.75	0.86	0.93	(0.75–0.93)
Pre-test Two	Cohen's Kappa	0.77	0.78	0.84	0.97	(0.77–0.97)
Pre-test Three	Cohen's Kappa	0.88	0.92	0.91	0.92	(0.88–0.92)
Post-test One	Cohen's Kappa	1	0.96	0.98	0.94	(0.94–1)
Post-test Two	Cohen's Kappa	0.94	0.79	1	0.95	(0.79–1)
Post-test Three	Cohen's Kappa	0.87	0.86	0.89	0.93	(0.86–0.93)
Delayed Post-test	Cohen's Kappa	0.80	0.97	0.95	0.75	(0.75–0.97)

Table 2 *Cronbach's Alpha Reliability Statistics of Writing Tests Based on the Four Text Quality Assessment Criteria*

Time	Cronbach's Alpha (α)	Number of Items
Pre-test I	.923	4
Pre-test II	.867	4
Pre-test III	.931	4
Post-test I	.941	4
Post-test II	.768	4
Post-test III	.855	4
Delayed post-test	.897	4

tests, ranging from .061 to .944. This indicates that the data followed a normal distribution, making it suitable for analysis. Moreover, the significant p -values of the Mauchly's Test of Sphericity within the subjects: grammar accuracy and range, and lexical resources were .431 and .315 respectively, indicating that the dependent variables have equal variances. However, the significant value of Test of Sphericity for both coherence and cohesion, and the task achievement test results was computed as $p < .001$, which is below the threshold value ($p < .05$), suggesting that the test of Sphericity was severely violated. As a result, for the analysis of one-way RM ANOVA, the corrected significant value of Greenhouse-Geisser was used for its robust effect to reduce Type I error.

Qualitative Data Analysis

The participant interview responses from six interviewees were analyzed thematically to grasp their perceptions toward learning academic writing sub-skills using the target corpora. The interviewees were selected among the total participants and coded as from participant interview one (PI-1) up to participant interview six (i.e., PI-1, PI-2, PI-3, PI-4, PI-5, and PI-6). To make the study participants' participation balanced, they were chosen based on their average pre-test performance; three from the first top scorers and three from the first least scorers. The participants' responses were thematically organized and analyzed based on the four quality text assessment criteria, and the instructional materials and methodologies used in the entire intervention period.

The Intervention and Procedure

The following three specific phases were accomplished to ensure the effectiveness of the intervention procedure:

Phase I – Analyzing Students’ Writing and Model Collection

At the very beginning of the intervention, a diagnostic test (three pre-tests from freely available IELTS Writing Task I) was given to the study participants within a five day period. The raters slightly adapted and used the IELTS Writing Task I assessment criteria for scoring and identification of major writing difficulties. Then, spending two consecutive weeks, we collected 200 compare-and-contrast Band 9 model essays from the freely available IELTS Writing Task I website.

Phase II – Preparation Phase

To prepare the self-compiled corpora, we adapted Anthony’s (2005) self-compiled corpus preparation guidelines. Next, relevant tasks and activities were designed corresponding to the previously identified participants’ writing difficulties. We then trained the participants how to exploit corpus data using the AntConc software till they became clear for five days (2 hours per day).

Phase III: Conducting the Classroom Intervention

Following the completion of the three intervention phases mentioned above, the classroom intervention commenced. The corresponding author carried out this intervention over a total of 40 hours (2–3 hours per week), excluding time allotted for tests. The intervention was conducted in three rounds, with one round each month. The first round was conducted for 13 hours after pre-tests. Allocating the same time for each of the other two intervention rounds, for data exploitation, the participants used the AntConc software (version 4.0.11.0) tools, without internet connections using computers.

The Teaching Learning Cycle (TLC) guided the intervention classes through its five stages: building the context, modeling and deconstructing the text, joint construction, independent construction, and linking related texts similar to the target essay. The TLC is flexible, enabling learners to revisit and refine activities as necessary. This approach has been shown to enhance academic writing development in accordance with the principles of DDL within genre-based technology-assisted teaching framework (Singer & Moscovici, 2008). The intervention was conducted within four rounds, and finally one post-test was administered for evaluation.

The actual classroom intervention focused on the major writing difficulties as shown in Table 3 below. Instructional tasks and activities were designed aligning with these identified writing challenges, and aimed to assess the impacts of the target corpora for the development of academic writing, i.e., compare and contrast essay writing.

Ethical Considerations

Researchers conducting empirical studies, such as dissertations, must navigate several ethical considerations. These include obtaining informed consent, managing conflicts of interest, ensuring the right to withdraw, providing accessible materials, documenting consent forms, and avoiding plagiarism (Creswell, 2014). Therefore, as researchers, prior to commencing this study, we obtained permission from Woldia University to conduct the actual classroom intervention after we clearly explained the

Table 3 Major Writing Difficulties Based on IELTS Writing Task I Assessment Criteria

Grammar accuracy and range	Vocabulary usage	Coherence & cohesion	Task achievements
✓ Use of verb tenses/forms/gerunds	✓ Misuse/missing reporting verbs	✓ Lack of logical arrangement	✓ Inclusion of irrelevant/inappropriate information
✓ Faulty sentences	✓ In appropriate use of words (lack of using adverbs, and adjectives)	✓ Misuse/absence of cohesive devices	✓ Missing relevant/accurate information
✓ Misuse of articles	✓ Misuse/missing of movement verbs to show changes/variations	✓ Limited/over use/repetitive of words/phrases/expressions	✓ Misuse and missing of appropriate essay format/structure
✓ Misuse of prepositions		✓ Unclear/no relationship between ideas	
✓ Misuse of capitalization			
✓ Spelling error			
✓ Punctuation error			
✓ Overuse of simple sentence structure			

study's objectives and significance to the selected staff from the Department of Software Engineering and the participating students. This included discussions on conflicts of interest, the right to withdraw, and the importance of their consent. Written consent was secured from all participating students beforehand. Furthermore, we ensured the confidentiality of all information, which was used exclusively for this research purposes.

Results

This study aimed to explore the impact of corpus-based instruction on the academic writing development of EFL students, specifically targeting the four writing sub-skills and the participants' perceptions on corpus-based learning.

The results of the current study were presented in light of the research questions which we intended to address:

Research Question 1: *How does self-compiled corpus-based instruction using the AntConc software differently impact students' writing development across four text quality criteria: grammatical range and accuracy, lexical resources, task achievement, and cohesion and coherence?*

Effects of Corpus-Based Instruction on the Participants' Writing Sub-Skills Development

The first objective of this study was to examine how corpus-based instruction differently impacts students' writing development across four text quality assessment criteria: grammatical range and accuracy, lexical resources, task achievement, and cohesion and coherence. Therefore, the raters scored each participant student's test result based on the IELTS Writing Task I test response assessment criteria. The paired samples *t*-test indicated that the pre-tests had a significant effect, ranging from a

p -value of .183 between pre-test II & pre-test I to .907 between pre-test III and pre-test I results of the lexical resources. Since the p -values for all pairs of pre-tests were greater than the threshold value of $p < .01$, the participants had consistent performance, and the time interval between each test administration before the intervention did not affect their results. Similarly, before the intervention, the analysis of one-way RM ANOVA revealed that the p -value was $> .05$, implying that the participants' performance was consistent for all writing sub-skills.

Grammar Accuracy and Range

After each intervention round, the analysis of paired samples t -test shows that significant changes were observed between pairs of pre-tests and their corresponding post-tests, and the delayed post-test.

For the results of grammar accuracy and range, the mean scores increased across pairs of tests from pre-test I ($M = 2.0488$, $SD = 0.54549$) to post-test I ($M = 4.8659$, $SD = 0.67105$) with $t(50) = 20.049$; pre-test II ($M = 2.0244$, $SD = .65145$) to post-test II ($MD = 6.1098$, $SD = .55354$) with $t(50) = 32.168$; pre-test III ($MD = 2.0732$, $SD = .60788$) to post-test III ($M = 7.3049$, $SD = .52295$) with $t(50) = 46.738$; post-test I ($M = 4.8659$, $SD = 0.67105$) to post-test II ($MD = 6.1098$, $SD = .55354$) with $t(50) = 12.378$; post-test II ($MD = 6.1098$, $SD = .55354$) to post-test III ($MD = 7.3049$, $SD = .52295$) with $t(50) = 10.705$ at a value of ($p < .001$). Again, to evaluate changes of each post-test results with the delayed post-test, paired samples t -test analysis was made between the delayed post-test and each post-test as: post-test I ($M = 4.8659$, $SD = 0.67105$) to delayed post-test ($MD = 7.7683$, $SD = .40462$) with $t(50) = 46.738$ with $t(50) = 23.457$; post-test II ($MD = 6.1098$, $SD = .55354$) to delayed post-test ($MD = 7.7683$, $SD = .40462$) with $t(50) = 46.738$ with $t(50) = 16.426$; post-test III ($MD = 7.3049$, $SD = .52295$) to delayed post-test ($MD = 7.7683$, $SD = .40462$) with $t(50) = 3.939$ at a value of $p < .001$ for all pairs of tests. This indicates that all the intervention rounds were significant with certain level of effect size differences. Similarly, the results of one-way RM ANOVA ensured that each intervention round conducted after the three pre-tests had shown significant effects on the participants' grammar accuracy and range usage in their writing. The pairwise comparisons for the measured value of grammar accuracy and range confirmed that the all the intervention rounds after pre-tests (i.e., the independent variables) had shown significant impacts across the measured values of the dependent variables. Moreover, as Table 4 shows, the effect of the Wilks' Lambda in the multivariate tests indicates that the intervention was significant with a high value F -statistic $(6, 50) = 149.459$, $p < .001$, $\eta^2 = .952$. The large value of the partial eta squared ($\eta^2 = .952$), implies that 95.2 % of the variance of the dependent variable resulted from the CBI intervention.

Lexical Resources

The paired samples t -test analysis for participants' writing performance in lexical resources indicates a significant improvement in mean scores across assessment pairs. Specifically, mean scores improved

Table 4 *Multivariate Tests on Grammar Accuracy and Range*

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Grammar						
Pillai's Trace	.952	149.459	6.000	45.000	.000	.952
Wilks' Lambda	.048	149.459	6.000	45.000	.000	.952
Hotelling's Trace	19.928	149.459	6.000	45.000	.000	.952
Roy's Largest Root	19.928	149.459	6.000	45.000	.000	.952

from pre-test I ($M = 3.00$, $SD = 0.59$) to post-test I ($M = 5.24$, $SD = 0.81$), yielding a t -value of $t(50) = 13.46$. Similarly, the scores changed from pre-test II ($M = 2.93$, $SD = 0.54$) to post-test II ($M = 6.11$, $SD = 0.55$), resulting in a t -value of $t(50) = 25.67$. Additionally, the transition from pre-test III ($M = 3.01$, $SD = 0.67$) to post-test III ($M = 6.67$, $SD = 0.67$) produced a t -value of $t(50) = 29.50$. Further analysis of mean score differences among post-tests revealed significant increments: from post-test I ($M = 5.24$, $SD = 0.81$) to post-test II ($M = 6.11$, $SD = 0.55$) with a t -value of $t(50) = 10.21$; and from post-test II to post-test III ($M = 6.67$, $SD = 0.67$) with a t -value of $t(50) = 7.91$, with a value of $p < .01$ for both pairs of tests. To evaluate the effects of the two-month period following post-test III, the mean scores of the delayed post-test and each post-test were analyzed. The results indicated an increase from post-test I ($M = 5.24$, $SD = 0.81$) to the delayed post-test ($M = 7.17$, $SD = 0.71$) with a t -value of $t(50) = 37.72$. The change from post-test II ($M = 6.11$, $SD = 0.55$) to the delayed post-test resulted in a t -value of $t(50) = 18.14$ and the transition from post-test III ($M = 6.67$, $SD = 0.67$) to the delayed post-test produced a t -value of $t(50) = 10.82$, all at a strong significant value of ($p < .001$), which is $p < .01$. The analysis of multivariate tests confirmed that the CBI had significant impacts on the dependent variable, i.e., lexical resources across the entire intervention rounds. The assumptions of Mauchly's Test of Sphericity for the dependent variable (i.e., lexical resources) were satisfied with a value of $p > .05$. Consequently, as shown in Table 5, multivariate tests revealed that impact of the independent variables was strongly significant.

As shown in Table 5, the significant Wilks' Lambda statistic of $p < .001$, which is below the threshold value of $p < .05$, indicates a substantial effect of the intervention on the dependent variables. Furthermore, the partial eta squared value of .970, with $F(6, 50) = 243.659$, $p < .001$, suggests that the intervention had a strong significant impact on the participants' use of lexical resources in their target writing development.

Table 5 *Multivariate Tests on Lexical Resources*

Effect	Value	<i>F</i>	Hypothesis <i>df</i>	Error <i>df</i>	Sig.	Partial Eta Squared
Lexical						
Pillai's Trace	.970	243.659	6.000	45.000	.000	.970
Wilks' Lambda	.030	243.659	6.000	45.000	.000	.970
Hotelling's Trace	32.488	243.659	6.000	45.000	.000	.970
Roy's Largest Root	32.488	243.659	6.000	45.000	.000	.970

Text Coherence and Cohesion

For the test results of the participants on coherence and cohesion, the analysis of paired samples t -tests indicate that the mean scores showed remarkable increment across tests from pre-test I ($M = 2.5122$, $SD = .71141$) to post-test I ($M = 4.7439$, $SD = .81488$) with $t(50) = 28.510$; pre-test II ($M = 2.4146$, $SD = .54661$) to post-test II ($M = 5.7489$, $SD = .81488$) with $t(50) = 32.411$; pre-test III ($M = 2.4939$, $SD = .50152$) to post-test III ($M = 6.6951$, $SD = .69712$) with $t(50) = 44.447$ at the value of $p < .001$ for all pairs of tests.

The mean score differences between the delayed post-test and each of the post-tests was assessed to detect the long-term effects of the intervention (i.e., independent variables) on the dependent variables (i.e., writing performance). According to the analysis, an increment of mean score from post-test I

Table 6 *Mauchly's Test of Sphericity on Coherence and Cohesion*

Measure: Time							
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Coherence and cohesion	.064	131.034	20	.000	.556	.601	.167

($M = 4.7439$, $SD = .81488$) to delayed post-test ($M = 7.3171$, $SD = .69603$) with $t(40) = 34.206$; post-test II ($M = 5.7489$, $SD = .81488$) to delayed ($M = 7.3171$, $SD = .69603$) with $t(50) = 20.913$; and post-test III ($M = 6.6951$, $SD = .69712$) to delayed post-test ($M = 7.3171$, $SD = .69603$) with $t(50) = 10.378$ was observed with strong significance value of ($p < .001$).

As Table 6 shows, the assumption of Mauchly's Test of Sphericity on the dependent variable (i.e. coherence and cohesion) was strongly violated at a significant value of $p < .001$, which is less than the threshold value of $p < .05$.

However, for analysis, in the Tests of Within-Subjects Effects table (see Table 7), the Type III Sum of Squares has been corrected under the Epsilon's Greenhouse-Geisser, with an F -statistic of 322.107, $p < .001$, $\eta^2 = .866$.

This value being below the threshold value ($p < .05$) ensures that the effect of the intervention was significant on the dependent variable, i.e., coherence and cohesion. Additionally, the partial eta squared value was $\eta^2 = .866$, suggesting that approximately 86.6% of the variance in the CBI can be explained by the dependent variables (see Table 7). Moreover, the pairwise comparisons indicate that each the intervention rounds after the pre-tests had significant impact on the dependent variables.

Table 7 *Tests of Within-Subjects Effects*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Coherence						
Sphericity Assumed	1142.338	6	190.390	322.107	.000	.866
Greenhouse-Geisser	1142.338	3.336	342.406	322.107	.000	.866
Huynh-Feldt	1142.338	3.603	317.020	322.107	.000	.866
Lower-bound	1142.338	1.000	1142.338	322.107	.000	.866
Error(Coherence)						
Sphericity Assumed	177.323	300	.591			
Greenhouse-Geisser	177.323	166.810	1.063			
Huynh-Feldt	177.323	180.168	.984			
Lower-bound	177.323	50.000	3.546			

Task Achievement

The analysis of the paired samples t -tests shows that there were some inconsistencies in the mean differences of task achievement scores across the time points. Test scores increased from pre-test I

($M = 3.000$, $SD = .59161$) to post-test I ($M = 3.7317$, $SD = 1.04939$) with $t(40) = 3.958$; from pre-test II ($M = 2.9878$, $SD = .76230$) to post-test II ($M = 4.0244$, $SD = 1.12889$) with $t(50) = 5.16$; from pre-test III ($M = 2.9024$, $SD = .64439$) to post-test III ($M = 4.1707$, $SD = .97217$) with $t(50) = 6.923$ at a value of ($p < .001$) for all pairs of tests. Regarding the relative long-term effects of the intervention, the MD was computed between the delayed post-test and each post-test. As a result, even though there was some increments from post-test I ($M = 3.7317$, $SD = 1.04939$) to delayed post-test ($M = 4.1707$, $SD = .89170$) with $t(50) = 1.219$, $MD = .439$, $p = .230$; from post-test II ($M = 4.0244$, $SD = 1.12889$) to delayed post-test ($M = 4.1707$, $SD = .89170$) with $t(50) = .595$, $MD = 0.1463$, $p = .555$, and from post-test III ($M = 4.1707$, $SD = .97217$) to delayed post-test ($M = 4.1707$, $SD = .89170$) with $t(50) = 1.853$, $MD = 0.3408$, $p = .071$, indicating that the intervention had no significant effect.

Additionally, as Table 8 below indicates, the results of Mauchly's W test suggests that there was a strong violation of sphericity assumptions at ($W = .222$, $p > .05$), implying that the corrected epsilon value of Greenhouse-Geisser (i.e., .668), which is less than .75, should be used for analysis (Field, 2024).

Table 8 Mauchly's Test of Sphericity on Task Achievement

Within Subjects Effect	Measure: Time						
	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Task	.222	71.814	20	.000	.668	.674	.167

Therefore, the Type III Sum of Squares for the independent variable was 98.528 at $F(4.247, 50) = 18.433$, $p < .001$ with a value of partial eta squared = .269, suggesting that the intervention had small effect size overtime (see Table 9).

Research Question 2: *How do students perceive learning academic writing through self-compiled corpus-based instruction with the assistance of AntConc software?*

Table 9 Tests of Within-Subjects Effects on Task Achievement

Source	Measure: Time					
	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Task Achievement						
Sphericity Assumed	98.528	6	16.421	18.433	.000	.269
Greenhouse-Geisser	98.528	4.247	23.198	18.433	.000	.269
Huynh-Feldt	98.528	4.691	21.005	18.433	.000	.269
Lower-bound	98.528	1.000	98.528	18.433	.000	.269
Error(Task)						
Sphericity Assumed	267.258	300	.891			
Greenhouse-Geisser	267.258	212.367	1.258			
Huynh-Feldt	267.258	234.537	1.140			
Lower-bound	267.258	50.000	5.345			

To get an inclusive understanding of participants' perceptions of academic writing instruction through corpus, all interview questions were developed based on the four quality text assessment criteria, as well as the instructional materials and methodologies.

All the participant interviewees noted that the intervention positively influenced their writing. One interviewee (PI-1) stated, "...corpus-based instruction is highly comfortable for learning grammar, vocabulary, and text coherence in academic writing. I improved my writing performance by obtaining model usages from the corpus." Another (PI-2) remarked, "This method is crucial for enhancing our grammar and vocabulary knowledge and creating coherent texts." However, several interviewees (PI-3, PI-4, and PI-5) mentioned challenges in extracting relevant information from concordance lines for grammar and vocabulary. For all interviewees, the AntConc is more suitable for grammar and vocabulary learning, but it had relatively little relevance to learn Task Achievement.

This study used various materials, including self-compiled corpora and AntConc software. While interviewees had varying performance levels in the target writing before the intervention, all three reported positive benefits from the materials. Initially, participants expressed concerns about using AntConc and session duration. However, as the intervention progressed, they became more motivated and engaged. One participant remarked, "...as time goes on, everything becomes interesting and encourages better participation." PI-2, PI-3, and PI-6 resounded this sentiment, feeling motivated to explore corpus data form patterns, correct errors, and practice using modern technology (i.e., the AntConc software) in their learning. Moreover, the study participants were highly motivated for autonomous and collaborative use of CBI.

Since the interviewees had never used such kinds of instructional materials, they claimed that they would have produced quality texts if they had previously learned writing using written corpora. In this regard, PI-1 said, "...let alone my primary education, I suffered getting relevant and authentic teaching materials with better quality and quantity at secondary school and university levels....I think even our English teachers did not know this teaching method." Again, PI-2 explained that this method

File	Left Context	Hit	Right Context
15 The pie charts below show the online sales ...	and 2013. Generally speaking, online sales of books and movies/music	increased	in a decade while clothing and travel related services
16 The pie charts below show the online ...	online sales in 2015. E-commerce of food & beverage items slightly	increased	while a nominal decrease could be observed in the
17 Coded and arranged compare-and-contras...	is attached. Overall, it is clear that most countries experienced	increased	sales of those products and the most significant rise
18 Coded and arranged compare-and-contras...	men, 16, actually represents a decrease. The data suggest that the	increased	presence of women in the paid work force has
19 Coded and arranged compare-and-contras...	It is evident from the chart that car transport gradually	increased	throughout the period, while the other means of transport
20 Coded and arranged compare-and-contras...	led than the number of female memberships. Women fitness members	increased	over the years with some fluctuations, highest being in 1985
21 Coded and arranged compare-and-contras...	Sweden, they were the lowest. Furthermore, banana sales in Switzerland	increased	while there was a drop in bananas in Sweden
22 Coded and arranged compare-and-contras...	sen 1985 and 1995 Japanese tourists travelling abroad was dramatically	increased	In 85 there was about 5 millions traveller go abroad. Since 85
23 The graphs below show the average month...	between 2008 and 2014. Overall, monthly spending on children's sports	increased	over time and football was the most popular sports
24 Coded and arranged compare-and-contras...	presented in the graph, the number of female fitness members	increased	over time but this number decreased for male fitness
25 Coded and arranged compare-and-contras...	in education decreased over time while the expenses for transportation	increased	to 14%. All other expenditure in 1950 was only 4.4% which increased
26 Coded and arranged compare-and-contras...	almost doubled, from 42% to 76%. In contrast, in Europe, it only	increased	by 21%. However, over half the people in Europe already
27 Coded and arranged compare-and-contras...	bought in 1999 and 2004 in 5 countries. Overall, while sales of bananas	increased	in Switzerland, the UK and Belgium and decreased in

Figure 4 Sample Concordance Lines to Learn the Language Uses of the Word *Increase in the KWIC AntConc Tool (Taken from the Self-Compiled Corpora)

can motivate the EFL learners and others to use modern technologies in a very simplified way saying “... this approach is very advanced in technology, simple, and helpful to learn writing either individually or in group.” Similarly, PI-1, PI-3, and PI-6 emphasized all the materials used were innovative and assisted them for independent or collaborative learning, particularly for vocabulary and grammar learning. They also expressed that the methods helped them to learn writing from simple to complex in a very systematic way, in addition to getting feedback both in self and peer correction. They also appreciated concordance lines which provided alternatives for how to use words, phrases, and expressions in their target writing as illustrated in Figure 4.

Discussion

The Effects of the Self-Compiled Corpus-Based Instruction on Academic Writing Sub-Skills Development

Based on the data obtained through a paired-sample *t*-test and one-way RM ANOVA, it is indicated that the development of the participants’ writing sub-skills had shown significant improvement, except task achievement.

Based on the results of the paired-samples *t*-test, all test pairs (pre-tests and their corresponding post-tests) showed strong significance, with a value of ($p < .001$). For grammar accuracy and range, even if effect sizes varied, statistically significant differences were observed with post-test I and pre-test I yielding $t(50) = 20.049$, and post-test III and pre-test III showing $t(50) = 46.738$. Additionally, the Wilks’ Lambda results from the one-way RM ANOVA indicated a significant impact of the intervention, with a high *F*-statistic of 149.459 ($df = 6, 50$), $p < .01$, and partial $\eta^2 = .952$. This suggests that 95.2% of the variance in participants’ grammar accuracy and range test results improved due to the intervention.

Regarding lexical resources, the intervention produced significant mean differences, ranging from pre-test I to post-test II with $t(50) = 13.463$ ($MD = 2.2439$, $p < .01$) to pre-test III and post-test III with $t(50) = 25.673$ ($MD = 3.6585$, $p < .01$). Notably, significant mean differences were also observed between each post-test and the delayed post-test, with mean differences increasing from post-test III and pre-test III, $t(50) = 10.823$, $MD = 0.50$, $p < .001$) to post-test I and the delayed post-test, $t(50) = 37.715$, $MD = 1.9268$, $p < .01$), indicating consistent improvement over the intervention period. The one-way RM ANOVA analysis revealed a partial eta squared value of .970 ($F(6, 50) = 243.659$, partial $\eta^2 = .970$), suggesting that the intervention greatly improved participants’ use of lexical resources in their writing.

Both the paired-samples *t*-test and the one-way RM ANOVA confirmed that the intervention significantly enhanced text coherence and cohesion in key writing sub-skills. The mean difference (*MD*) increased from the first pre-test to the first post-test, with $t(50) = 28.510$ ($MD = 2.2317$, $SD = .71141$, $p < .01$). This trend was maintained from the third pre-test to the third post-test ($t(50) = 44.447$, $MD = 4.2012$, $SD = .50152$, $p < .01$). Moreover, the intervention’s impact remained highly significant even two months post-completion, with an *F*-statistic of 322.107 with ($p < .01$), and a partial eta squared value of $\eta^2 = .866$, indicating a moderate effect of the CBI on coherence and cohesion over time.

For task achievement, some inconsistencies were observed across the intervention. Analysis of the paired samples *t*-test indicated that mean values for pre-tests I ($M = 3.000$), II ($M = 2.9878$), and III ($M = 2.9024$) improved in the respective post-tests I ($M = 3.7317$), II ($M = 4.0244$), and III ($M = 4.1707$). However, no significant differences were observed between each post-test and the delayed

post-test. The p -values between post-test I and the delayed post-test, post-test II and the delayed post-test, and post-test III and the delayed post-test were .230, .555, and .071, respectively, all exceeding the significance threshold of $p < .05$, indicating that the effect of each intervention round was not significant. Additionally, the analysis of one way RM ANOVA resulted in the F -value of $(4.247, 50) = 18.433$, with $\eta^2 = .222$, implying that the intervention produced a small effect size over time.

The findings of the quantitative analysis are also supported by the qualitative data collected through participant interviews. The participant interviewees' response indicated that they were interested in learning grammar accuracy, lexical resources, and text coherence and cohesion using corpora with the assistance of AntConc software.

The findings of the present study align with previous research by Boulton (2009), Campoy et al. (2010), Hu and Deng (2023), and Timmis (2015), which demonstrated that corpus-based instruction significantly enhances grammar and vocabulary acquisition. Additionally, Adeyemi (2017) confirmed that using corpora to teach cohesive devices helped EFL learners create coherent and logically structured texts. Durrant (2022) further ensured that corpus-mediated instruction serves as a valuable resource for developing academic writing and its sub-skills.

On the contrary, it was also revealed that the target corpora had a minimal effect on task achievement, offering additional research areas. In addition, in contrast to earlier studies, this research indicates that corpus-based instruction led to better immediate learning outcomes over the long term. Hence, regarding the impact of corpora on the task achievement, conducting a longitudinal study would provide comprehensive understanding. According to the analysis of qualitative data, to learn the "Task Achievement" writing sub-skill, the participants could not apply the AntConc software for target language use exploitation due to its diversified features; the tools used in the software could not directly manipulate the language components of the "Task Achievement."

Analysis of the interview responses revealed that participants viewed the intervention positively, consistent with earlier research (Amare, 2022; Anthony, 2017; Elsherbini & Ali, 2017). While the study participants appreciated the intervention for its academic writing features, their focus was primarily on using the corpus to improve grammar and vocabulary. Participants expressed particular enthusiasm for AntConc's features, such as keyword in context and N-gram, which enabled them to explore alternative grammar and vocabulary usages to enhance their writing performance. This aligns with the research findings of Jiang and Eslami's (2022) and Yijen and Ali (2023), who demonstrated that motivation in technology-assisted language learning can boost students' academic writing performance in both collaborative and independent settings, which is a sentiment echoed by the interviewees of the current study participants.

This finding also revealed that the target CBI effectively supports self-directed, collaborative, and innovative learning, aligning with the research findings by Jitpaisarnwattana and Saville (2025), which shows that EFL learners have a highly positive perception toward technology-assisted and corpus-based academic writing instruction.

Conclusion

The present study examined the effects of corpus-based instruction on the development of academic writing, concentrating on four sub-skills and the participants' perceptions towards learning with corpora. The results revealed that CBI significantly benefited writing sub-skills development such as lexical resources, coherence and cohesion, grammar accuracy, and range over task achievement. Similarly, participants showed positive perceptions toward learning with offline corpora in both autonomous and

collaborative approaches, implying that CBI can be one of the most effective approaches in academic writing pedagogy.

The participants repeatedly utilized the instructional materials (i.e., corpus data and AntConc software) for peer and self-error correction. Hence, this study confirmed that self-compiled corpora are the most effective method for error correction to develop EFL learners academic writing (Divsar & Heydari, 2017). As EFL teachers and researchers, we would like to suggest that EFL curriculum designers, teachers, and learners utilize technology-assisted and updated materials, particularly freely available responses from IELTS test takers, as potential target written corpora. Most importantly, all the findings of this study are based on Activity Theory, which is informed by the principles of DDL.

In conclusion, this study shows that using AntConc to create customized self-compiled corpora for offline access provides an effective alternative for academic writing instruction. This approach is especially advantageous in Ethiopian higher education, offering access to high-quality, authentic, and updated instructional materials, all enhanced through technology.

Limitations

This study provides meaningful insights, but it has several limitations that future researchers should consider. Firstly, the use of a single intact group means no control group for comparison with other conventional writing instruction methods. Hence, we recommend that further investigation with two intact groups, i.e., one treatment and one control group with CBI and other traditional instruction, is needed for comparison. Secondly, the sample size of 51 students may not adequately represent the broader population, limiting the generalizability of the findings. And thirdly, since the study focused specifically on compare-and-contrast essays, the results may not apply to other writing genres. Considering these limitations, we suggest that future researchers undertake longitudinal studies on various academic writing genres using larger sample sizes.

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