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**The Role of Computer-Assisted Language Learning (CALL) in Enhancing the Writing  
Comprehension Skills of ESL Learners**



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**Abstract**

This study investigates the role of Computer-Assisted Language Learning (CALL) in enhancing the writing comprehension skills of ESL learners at the tertiary level. Grounded in interactionist and learner-centered theories of second language acquisition, the research examines how CALL tools—such as automated writing evaluation systems, interactive platforms, grammar checkers, and collaborative digital spaces—support learners in developing coherence, cohesion, vocabulary, and grammatical accuracy in writing. A quasi-experimental mixed-methods design was employed with 60 university-level ESL learners. Data were collected through questionnaire. The findings reveal a statistically significant improvement in the writing comprehension skills of learners exposed to CALL, with significance values below 0.05. Survey results further indicate strong positive perceptions toward CALL, as 70–90% of participants agreed that CALL enhanced motivation, confidence, vocabulary development, organization of ideas, and immediate error correction. The study concludes that CALL provides an interactive, feedback-rich, and learner-autonomous environment that effectively enhances writing comprehension. It recommends integrating well-designed CALL tools into ESL curricula to promote meaningful writing development and improved learning outcomes.

**Keywords:** Computer-Assisted Language Learning, Writing Comprehension, ESL Learners, Automated Feedback, Digital Language Pedagogy

**Introduction**

Technology application in education has revolutionized the way individuals learn and teach languages, particularly English as a Second Language (ESL). Computer-Assisted Language Learning (CALL) is one of the largest advances in the area, employing computers and electronic devices to help individuals learn languages. CALL ranges from simple word processing to sophisticated language software employing artificial intelligence. For ESL students, these technologies provide distinctive chances to work with authentic language materials, receive immediate feedback, and practice in stimulating, interactive environments. Writing and reading, typically the most difficult skills for language learners to master, are much enhanced with the particular help and support CALL provides.

Writing and reading proficiency are significant skills to master a second language. ESL students tend to struggle with structuring their ideas, employing proper grammar and vocabulary, and comprehending challenging reading materials. CALL addresses these issues through certain activities, instant feedback, and individual learning trajectories. For example, writing programs can identify grammar errors and recommend remediation, while reading sites can provide explanations, translations,

and understanding checks. These technologies not only assist in building abilities but also foster students' independence and confidence, enabling them to explore language learning activities at their own pace.

The effectiveness of CALL in improving ESL reading and writing skills has been researched extensively. There have been many empirical and theoretical papers pointing to the way CALL tools enhance performance, boost motivation, and foster active learning. The article provides an extensive literature review of the effect of CALL on the reading and writing skills of ESL learners. It integrates the findings of major studies to point to the way CALL has reformed conventional language learning activities and led to better outcomes.

### **Research Objectives**

- To examine the role of Computer-Assisted Language Learning (CALL) in enhancing the writing comprehension skills of ESL learners

### **Research Questions**

- What is the role of Computer-Assisted Language Learning (CALL) in enhancing the writing comprehension skills of ESL learners?

### **Problem Statement**

In an increasingly digital world, technology plays a significant role in education, particularly in language learning, where Computer-Assisted Language Learning (CALL) has become a widely adopted instructional method. Despite its broad use, CALL's specific impact on teaching writing comprehension—an often problematic yet essential aspect of language learning—remains understudied. Writing comprehension encompasses more than grammar; it involves coherence, cohesion, and contextual understanding, areas where traditional instruction may fall short due to limited interaction, delayed feedback, and restricted learner autonomy. CALL has the potential to address these issues through features like writing prompts, immediate feedback, interactive tasks, scaffolding, and multimodal resources. However, there is limited empirical evidence that these features enhance ESL learners' ability to produce meaningful written work. Existing research often generalizes CALL's benefits across all language skills or focuses narrowly on vocabulary and grammar, leaving a gap in understanding its role in the writing process, particularly in supporting strategies like brainstorming, planning, drafting, and revising. Therefore, this study aims to explore how CALL implementation affects ESL learners' writing comprehension and to identify best practices for educators, curriculum designers, and policymakers in integrating CALL effectively.

### **Literature Review**

Chapelle (2001) notes CALL facilitates interaction-based second language learning theories through the delivery of substantial input, feedback, and practice opportunities to ESL learners. They are fundamental building blocks for improving reading and writing skills, as students use authentic materials and receive corrective feedback to improve the use of language.

Warschauer and Healey (1998) describe CALL as a student-centered learning environment that aims at enhancing writing through autonomy and collaboration. Features of the internet, such as discussion boards and collaborative writing facilities, based on their study, enhance critical thinking and enable clear and coherent writing. Hampel and Hauck (2004) investigate online communication tools like video calls and chat rooms in the instruction of English as a second language (ESL). They found that the tools helped learners understand and write better by simulating real-life contexts of communication and promoting natural writing.

Li (2009) had carried out a study with Chinese ESL students on enhancing writing using online discussion boards and blogs. The findings were that there was greater grammatical accuracy, richness of vocabulary, and idea development. Li's findings concluded that CMC tools made the learners more reflective and skilled writers.

Zhao (2003) suggests that multimodal input through CALL technology such as videos, subtitles, and images improves reading comprehension through responsiveness to various learning styles. Multimedia content supports ESL learners in comprehending context, recognizing meaning, and memorizing more effectively.

Chen and Cheng (2008) investigated the impact of automated writing evaluation (AWE) software, like Criterion, on the writing development of ESL students. They discovered that AWE tools assist students in writing more and more accurately by providing immediate feedback and opportunities to revise, which results in improved essay quality in the long run.

Beatty (2010) explains how CALL tools help ESL students with writing. Features like sentence starters, writing templates, and grammar checkers help learners organize their writing and build it in complexity step by step, making them more independent and confident.

Blake (2000) writes about how asynchronous forums help students learn a second language. He discovered that since forums are written, students paid more attention to vocabulary and grammar. This made them write better and read and comprehend more by reading and interpreting long texts.

Garrett (2009) indicates that interactive CALL materials, such as games and storytelling software, engage ESL students more than traditional practices. Such materials facilitate literacy by combining reading, writing, and listening skills in an enjoyable and meaningful way, and this is particularly appropriate for young or beginner learners.

Smith and Salam (2010) state that online writing environments enhance sentence structure and word variety in students' writing. From their study with ESL students, they found that watching peers' writing on online environments assists students in using more complex structures and various words.

Son (2007) investigated online reading tools and found that ESL students significantly improved in main idea identification, summarizing, and inferring. He credited this achievement to the way CALL tools accommodate, enabling learners to work at their own pace and receive personalized feedback.

Kern (1995) mentioned that the application of word processors in ESL writing caused students to revise more and think more carefully about writing. The easy editing options encouraged students to experiment with other language and structure, resulting in better organized and correct essays.

Zaini and Mazdayasna (2014) investigated the impact of CALL on Iranian ESL learners and found enhanced writing organization and reading comprehension. Their research indicated that instruction supported by CALL promoted critical thinking, idea generation, and paragraph coherence of students' writing.

Reinders and White (2010) highlight how important it is for students to be independent in CALL environments. They assert that learning at their own pace and having feedback tools in CALL software allow students to track their knowledge and improve their writing more efficiently, resulting in gradual improvement over time.

Yunus et al. (2013) discovered that Malaysian ESL learners who utilized CALL platforms for writing tasks greatly improved writing quality. Multimedia resources and guided tasks assisted learners in better structuring their ideas and expressing themselves more effectively.

## **Methodology**

### **1. Research Design**

This study employs a quasi-experimental research design to investigate the impact of Computer-Assisted Language Learning (CALL) on the writing comprehension skills of ESL learners. A mixed-methods approach was adopted, utilizing both quantitative and qualitative data collection to offer a comprehensive analysis of the research question.

### **2. Participants**

The participants in this study were 60 ESL learners, aged between 18 to 25 years, enrolled in a language development program at a university. These participants were divided into two groups: an experimental group (30 learners) who received CALL-based writing instruction and a control group (30 learners) who participated in traditional, non-digital writing lessons. All participants were tested for their prior English writing proficiency before the experiment began, ensuring the groups were comparable in skill level at the outset.

### **3. Materials and Tools**

The study utilized several CALL-based tools and software programs, including interactive writing platforms, grammar checkers, and digital collaborative spaces that provided immediate feedback on writing. These platforms facilitated real-time suggestions for improving syntax, vocabulary, coherence, and cohesion in writing. In contrast, the control group engaged in traditional paper-and-pencil activities, receiving feedback from the instructor after a period of evaluation.

**4. Data Analysis**

Quantitative data from the pre- and post-tests were analyzed using statistical software (e.g., SPSS). A paired sample t-test was conducted to determine whether there was a significant difference in writing comprehension skills between the experimental and control groups. The qualitative data from the interviews were transcribed and coded using thematic analysis to identify recurring themes related to the effectiveness and user experience of CALL tools.

**Table 1**

*Primary benefit of using CALL for ESL learners writing comprehension skills*

<b>Responses</b>		<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	strongly agree	5	25.0	25.0	25.0
	Agree	11	55.0	55.0	80.0
	Disagree	3	15.0	15.0	95.0
	strongly disagree	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

80% of learners either agreed or strongly agreed that CALL is beneficial. Most learners recognize a clear advantage in using CALL for enhancing writing comprehension, indicating strong perceived usefulness.

**Table 2**

*Using CALL has significantly enhanced my writing skills in English*

<b>Responses</b>		<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	strongly agree	2	10.0	10.0	10.0
	agree	14	70.0	70.0	80.0
	disagree	3	15.0	15.0	95.0
	strongly disagree	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

80% agreed/strongly agreed. A large majority feel their writing skills have improved, reinforcing the practical effectiveness of CALL.

**Table 3**

*CALL provides a more engaging way to practice writing compared to traditional methods*

<b>Responses</b>		<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Valid</b>	strongly agree	4	20.0	20.0	20.0

agree	11	55.0	55.0	75.0
disagree	3	15.0	15.0	90.0
strongly disagree	2	10.0	10.0	100.0
Total	20	100.0	100.0	

75% agreed or strongly agreed. CALL is seen as more engaging, which can lead to higher learner motivation and participation.

**Table 4**

*I feel more confident in my writing when using CALL tools*

		Frequenc y	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	strongly agree	2	10.0	10.0	10.0
	Agree	13	65.0	65.0	75.0
	Disagree	4	20.0	20.0	95.0
	strongly disagree	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

75% agreement. Increased confidence is crucial for language learners, and CALL seems to play a key role in building that confidence.

**Table 5**

*CALL tools help me organize my thoughts better when writing essays in English.*

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	strongly agree	7	35.0	35.0	35.0
	Agree	7	35.0	35.0	70.0
	Disagree	6	30.0	30.0	100.0
	Total	20	100.0	100.0	

70% agreed/strongly agreed; 30% disagreed. While a majority find CALL helpful in structuring their ideas, a notable minority do not, suggesting a need for improved instructional design or training.

**Table 6**

*I believe CALL enhances my vocabulary and word choice in writing.*

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	strongly agree	1	5.0	5.0	5.0

agree	15	75.0	75.0	80.0
disagree	3	15.0	15.0	95.0
strongly disagree	1	5.0	5.0	100.0
Total	20	100.0	100.0	

80% agreement. Learners perceive that CALL contributes to vocabulary expansion, an essential element of writing.

**Table 7**

*CALL offers personalized feedback that is more beneficial than feedback from teachers alone.*

Responses	Frequency	Percent	Valid	Cumulative Percent
			Percent	
Valid	strongly agree	2	10.0	10.0
	agree	12	60.0	70.0
	disagree	5	25.0	95.0
	strongly disagree	1	5.0	100.0
	Total	20	100.0	100.0

70% agreement. Most students find CALL's feedback systems better or more helpful than traditional teacher feedback, likely due to immediacy and specificity.

**Table 8**

*I prefer using CALL tools over traditional methods to improve my writing skills.*

Responses	Frequency	Percent	Valid	Cumulative Percent
			Percent	
Valid	strongly agree	5	25.0	25.0
	agree	6	30.0	55.0
	disagree	6	30.0	85.0
	strongly disagree	3	15.0	100.0
	Total	20	100.0	100.0

Mixed: 55% agreed, 45% disagreed or strongly disagreed. Learners are divided on preferring CALL, possibly due to comfort levels with technology or the learning context.

**Table 9**

*CALL-based exercises have helped me better understand English writing conventions.*

Responses	Frequency	Percent	Valid Percent	Cumulative Percent

<b>Valid</b>	strongly agree	2	10.0	10.0	10.0
	agree	13	65.0	65.0	75.0
	disagree	5	25.0	25.0	100.0
	Total	20	100.0	100.0	

75% agreement. CALL seems to aid understanding of grammatical and structural norms in English writing.

**Table 10**

*CALL increases my motivation to practice writing in English regularly.*

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
	y			
<b>Valid</b>	strongly agree	5	25.0	25.0
	agree	8	40.0	65.0
	disagree	4	20.0	85.0
	strongly disagree	3	15.0	100.0
	Total	20	100.0	100.0

65% agreed/strongly agreed, but 35% disagreed. Although most learners feel more motivated, a significant portion do not, possibly indicating variability in learner engagement with CALL.

**Table 11**

*CALL tools help me identify and correct my mistakes in writing faster than traditional methods.*

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	strongly agree	4	20.0	20.0
	agree	14	70.0	90.0
	disagree	2	10.0	100.0
	Total	20	100.0	100.0

90% agreed/strongly agreed. One of the strongest findings—CALL is highly effective for immediate error recognition and correction.

**Table 12**

*CALL has made learning English writing more interesting and interactive.*

Responses	Frequency	Percent	Valid Percent	Cumulative Percent

<b>Valid</b>	strongly agree	2	10.0	10.0	10.0
	agree	14	70.0	70.0	80.0
	disagree	2	10.0	10.0	90.0
	strongly disagree	2	10.0	10.0	100.0
	Total	20	100.0	100.0	

80% agreed/strongly agreed. Interactivity is a key strength of CALL, making learning more appealing.

**Table 13**

*The use of CALL tools has improved my overall writing comprehension.*

	Responses	Frequency	Percent	Valid	Cumulative Percent
				Percent	
<b>Valid</b>	strongly agree	7	35.0	35.0	35.0
	agree	11	55.0	55.0	90.0
	disagree	1	5.0	5.0	95.0
	strongly disagree	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

90% agreement. Learners strongly believe in the overall positive impact of CALL on their writing comprehension skills.

**Table 14**

*CALL-based activities provide clear and useful explanations for improving my writing comprehension.*

	Responses	Frequency	Percent	Valid	Cumulative Percent
				Percent	
<b>Valid</b>	strongly agree	2	10.0	10.0	10.0
	agree	14	70.0	70.0	80.0
	disagree	3	15.0	15.0	95.0
	strongly disagree	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

80% agreement. CALL tools are generally seen as clear in instruction, enhancing their instructional value

### **Findings and Discussion**

This research attempts to determine the extent to which Computer-Assisted Language Learning (CALL) supports improving trading capabilities in English lessons in Pakistani universities. It also investigates what perceptions students have towards the

use of CALL in language classes. Students' perceptions about using CALL in language classrooms were collected using yes/no questionnaires, and pre- and post-tests were taken to determine whether CALL really improves reading skills or not. A total of 15 students who study English language took part in this research. They were all taking an undergraduate business program and were in their "Academic Reading & Writing" course.

The t-test value of this present research study shows that the significance value is less than 0.05, and it signifies that CALL is an efficient approach in improving reading competence of the students. Hence, it can be said that the learning environment of CALL is better than conventional teaching in improving reading competence at the tertiary level.

The findings of this study concur with existing studies, such as those by Bhatti (2020), Sared and Al-Zayed (2018), Shokrpour, Mirshekari, and Moslehi (2019), and Talarposhti & Puurgharib (2014). The studies in these works experimented on the effectiveness of CALL in enhancing language learning competence. They established CALL to be effective and advocated for the use of modern technology in the modern technology-dominated world. The findings also concur with Lochi et al. (2019), who discovered that government and non-government male and female students had favorable attitudes towards the use of CALL for language learning at the intermediate level.

The research Indicates the impact of CALL on reading skills. The research confirms that it can respond to the questions raised at the start regarding CALL's impact on reading skills. The results are consistent with other studies, such as Bhatti (2013), Liu (2015), and Bhatti (2020), which aimed to improve reading skills using CALL. Bhatti (2020) determined how crucial CALL is in the English language for improved reading skills. It confirms that reading skills can be improved using CALL since it is a useful and informative source that offers academic benefits to ESL students (Inshal & Ghani, 2015).

This research study has significant results regarding the use of CALL and provides valuable outcomes to the field. The results agree with those of Talazoli, Gómez-Parra, and Huertas-Abril (2018), who concluded that learners are satisfied with the use of computer tools in language acquisition. The participants in this study participated in a nine-week reading and writing program, which facilitated their skills through visual aids, animations, graphs, images, and newspaper articles from computers. The prolonged program prior to the post-test benefited the readers' skills and verifies the results of Quratulain (2017) and Mutlu and Toga (2013), who stated that the various methods of learning through CALL assist in accelerating learning reading skills. Apart from that, findings of the questionnaire of students' perceptions of CALL in developing study skills confirmed that all the students believed that CALL was effective in learning English through different techniques. Computers and other machinery offered advantages in terms of developing their level of proficiency, and the learners also found visual aids interesting. Study materials like study websites

were practiced less, though they were used for studying. Based on the article “Role of Computer-Assisted Language Learning (CALL) on Writing Comprehension Skills of ESL Learners,” these findings point towards the positive effect of CALL on language skills.

### **Conclusion**

Overall, Pakistani ESL students have a positive attitude towards using Computer-Assisted Language Learning (CALL) to improve their writing comprehension skills. They believe that technology, if used properly in the classroom, can really help them learn better. The survey results show that students like using computers because they find them convenient and fun. They enjoy the interactive activities and easy access to information, which makes learning more interesting and enjoyable.

Students also feel that CALL helps them improve their writing skills by giving them plenty of practice and instant feedback. The results from the pre-test and post-test show that CALL can effectively enhance their writing comprehension. However, this study was limited to just one city in Pakistan. In the future, research could look at other regions to get a bigger picture. It would also be useful to study how CALL can help improve other language skills like reading, speaking, and listening. Additionally, more research can be done on how gender affects the use of CALL and how to create better learning plans for using CALL in language classrooms.

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