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THE ROLE OF COMPUTATIONAL LINGUISTICS IN TEACHING ENGLISH

Muxammadjonova Nilufar Ibroximovna
O'zDJTU "Ingliz tilini ikkinchi chet tili sifatida o'qitish" kafedrasi stajyor o'qituvchisi
Email: muxammadjonova76@bk.ru
Мухаммаджонова Нилуфар Иброхимовна
стажер кафедры «Преподавание английского языка как второго иностранного языка» УзГУМЯ
Электронная почта:muxammadjonova76@bk.ru
Muxammadjonova Nilufar Ibroximovna
an intern teacher of the department of the Teaching English as a second language, UzSWLU
Elektron pochta: muxammadjonova76@bk.ru

Abstract The swift advancement of digital technologies has revolutionized language learning and opened up new avenues for English instruction. A major component of contemporary English language instruction (ELT) is computational linguistics, an interdisciplinary area that blends linguistics, computer science, and artificial intelligence. Computational linguistics offers cutting-edge techniques that improve language learning and teaching efficacy through natural language processing (NLP), corpus linguistics, machine translation, speech recognition, and intelligent tutoring systems. Through a survey of recent research and an analysis of its pedagogical applications, this paper explores the role of computational linguistics in English language instruction. The results show that data-driven language training, vocabulary building, pronunciation practice, tailored learning, and instant feedback are all supported by computational linguistics. But issues like technological constraints, teacher readiness, and moral dilemmas still exist. The research finds that computational computational linguistics has become an essential component of contemporary English education and will continue to shape future teaching methodologies.

Keywords: Computational Linguistics, English Language Teaching, Natural Language Processing, Corpus Linguistics, Artificial Intelligence, Language Learning

Introduction. One of the most important developments in this field is computational linguistics, which focuses on the computational processing and analysis of human language. Through a variety of technologies, including speech recognition systems, machine translation tools, automated writing evaluation, and corpus-based learning platforms, computational linguistics contributes to English language teaching by offering learners interactive and personalized learning experiences while helping teachers design more effective instructional strategies. As a global language, English is taught in a variety of educational settings where technology-based solutions are becoming more and more common.

Recent studies have demonstrated that corpus linguistics and data-driven learning approaches enable students to explore authentic language usage patterns and improve their linguistic competence. Similarly, natural language processing applications facilitate automated assessment and adaptive learning environments that support language acquisition.

The purpose of this study is to examine the role of computational linguistics in teaching English and evaluate its impact on language learning outcomes.

Methods. A qualitative literature review methodology was used in this investigation. Academic publications, systematic reviews, and pertinent scientific articles about corpus linguistics, computational linguistics, natural language processing, and English language instruction were examined.

Peer-reviewed journal publications published between 1998 and 2025 were among the data sources. Studies addressing the use of computational linguistics tools in language instruction were the main focus of the selection criteria. We reviewed articles about NLP-supported language instruction, intelligent tutoring systems, machine learning applications, and corpus-based learning.

The collected literature was categorized into three main themes:

Corpus linguistics and data-driven learning.

Natural language processing applications in ELT.

Artificial intelligence and personalized language learning.

The findings from these categories were synthesized to identify common trends, benefits, and challenges.

Results. The analysis showed that computational linguistics makes several important contributions to the teaching of English.

Large sets of real texts are used in corpus linguistics to examine language usage and patterns. Corpora give students actual examples of vocabulary, grammar, collocations, and conversation patterns for teaching English.

Research indicates that data-driven learning (DDL) encourages learners to investigate language independently and discover linguistic patterns through corpus analysis[1]. Students using corpus-based tools demonstrate improved vocabulary acquisition, grammatical accuracy, and writing proficiency.[2]

Moreover, instead of relying solely on intuition, corpus technology assists educators in creating instructional materials based on real-world language use. Corpus-informed education increases learner engagement and fosters learner autonomy, according to systematic reviews.[3]

Natural Language Processing (NLP) has become a central component of modern language education. NLP applications include:

Automated essay scoring.

Grammar checking systems.

Speech recognition software.

Chatbots and virtual tutors.

Machine translation tools.

According to Otajonova and Inogamova, NLP technologies provide immediate feedback to learners, allowing them to identify and correct errors efficiently. Automated

[1] Lusta, A., Demirel, Ö., & Mohammadzadeh, B. (2023). Language Corpus and Data-Driven Learning (DDL) in Language Classrooms: A Systematic Review. Heliyon, 9(12), e22731. https://doi.org/10.1016/j.heliyon.2023.e22731

[2] Yang, S., & Wan Adnan, W. N. A. (2025). Examining the Integration of Corpus Technology into English Language Teaching: A Systematic Review (2020–2024). International Journal of Research and Innovation in Social Science, 9(2), 4342–4351.

[3] Barnoeva, N. (2026). Enhance ICT Students' Linguistic Competence Through Corpus Linguistics. Acta NUUz, 1(1), 1–12.

assessment systems also reduce teachers' workload while maintaining consistent evaluation standards.

By evaluating learners' speech and offering remedial feedback, speech recognition systems enhance pronunciation. For English language learners who do not have access to native speakers, these solutions are especially helpful.

Adaptive learning environments that cater to the needs of individual learners are made possible by artificial intelligence and machine learning techniques. Based on a learner's skills and shortcomings, educational platforms can evaluate their performance and provide tailored assignments.

Studies reviewing machine learning applications in ESL and EFL contexts found that AI-supported learning environments enhance learner motivation and improve language performance[4]. Intelligent tutoring systems can monitor progress, adjust difficulty levels, and provide personalized learning pathways.

The integration of AI with computational linguistics has also facilitated the development of conversational agents that simulate real-life communication scenarios, thereby improving speaking and listening skills.

Benefits for Teachers

Computational linguistics benefits teachers by:

Providing access to authentic language data.

Supporting material development.

Facilitating assessment and feedback.

Tracking student progress.

Enabling data-informed instructional decisions.

Teachers can provide focused interventions by identifying common student errors using corpus analysis methods. Assessment systems with technological help also increase productivity and save time.

Discussion. The results show that more interactive and learner-centered methods of teaching English have replaced traditional teacher-centered methods thanks to computational linguistics.

The application of corpus-based learning is one significant contribution. In contrast to traditional textbooks, corpora give students exposure to genuine language in context, enabling them to comprehend how English is truly used in everyday speech. This method encourages student autonomy and critical thinking.[5]

By giving quick feedback, natural language processing technology improve language acquisition even further. Without having to wait for teacher review, instant correction enables students to identify errors and improve their language proficiency. In big classrooms where individual teacher attention may be scarce, such feedback techniques are very beneficial.

Through customized learning experiences, artificial intelligence expands these advantages. Adaptive systems make training more inclusive and effective by accommodating a variety of learning styles and skill levels.

[4] AlHarbi, A. A. (2022). The Uses of Machine Learning (ML) in Teaching and Learning English Language: A Methodical Review. Educational Journal of Sohag Faculty of Education, 93, 25–52.

[5] Wachyudi, K. (2019). Disentangling the Role of Linguistics in English Language Teaching. ELT in Focus, 2(1), 1–10.

Despite these benefits, there are also a number of difficulties. First, a lot of educational institutions don't have enough technology. Second, in order to properly employ computational linguistic tools, teachers might need specific training. Third, issues like algorithmic unfairness, data privacy, and excessive reliance on technology need to be addressed.

Furthermore, human teachers cannot be completely replaced by computing technologies. Language learning requires social connection, emotional support, and cultural awareness—all of which are still challenging for technology to imitate. Therefore, rather than being a replacement for conventional teaching methods, computational linguistics should be seen as an enhancement.

Conclusion. By offering cutting-edge resources that promote language learning and instructional efficacy, computational linguistics is becoming more and more significant in the teaching of English. Improved vocabulary learning, grammar education, pronunciation practice, evaluation, and individualized learning experiences are made possible by corpus linguistics, natural language processing, machine learning, and artificial intelligence.

According to the literature this study analyzed, computational linguistics fosters student autonomy and engagement while improving teaching and learning outcomes. However, sufficient technology resources, teacher preparation, and ethical considerations are necessary for successful adoption.

Computational linguistics is anticipated to play an ever bigger role in English language instruction as digital technologies develop further.[6] Future studies should determine the optimal ways to incorporate computational linguistic tools into various educational environments and examine the long-term consequences of AI-powered language learning systems.

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