International Journal on Studies in English Language and Literature (IJSELL)
Volume 13, Issue 5, May 2025, PP 1-6
ISSN 2347-3126 (Print) & ISSN 2347-3134(Online)
https://doi.org/10.20431/2347-3134.1305001
www.arcjournals.org

An Exploration of the Impact of AI Technology on English Language Majors' Speaking Skill Improvement: A Bibliometric Analysis

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Abstract: *This study conducts a bibliometric analysis to examine the impact of Artificial Intelligence (AI) technology on the development of speaking skills among English language majors. By analyzing Scopus-indexed literature published between 2015 and 2025, the study identifies global trends, key contributors, and thematic developments within the field. The findings reveal a growing interest in AI-assisted speaking practices, particularly through the use of AI chatbots and conversational agents, which have been shown to enhance learners' intrinsic motivation, reduce anxiety, and offer personalized, interactive learning environments. A notable geographical shift is also observed, with increasing contributions from Southeast Asian countries, highlighting their emergence as hubs of educational innovation. Despite these advancements, research gaps persist-especially in longitudinal studies and the development of adaptive learning models. This study provides valuable insights for educators, researchers, and policymakers aiming to integrate AI technologies into English language education and proposes future directions for improving speaking proficiency through technology-enhanced approaches.*

Key words: *Artificial Intelligence, Speaking Skills, Language Learning, Intrinsic Motivation, Bibliometric Analysis.*

1. INTRODUCTION

Among the four core language skills, speaking proficiency is widely recognized as a fundamental component of communicative competence in foreign language acquisition. Speaking is an essential means of communication and serves as a primary channel through which individuals interact and share their ideas, thoughts, and emotions (Kim et al., 2023). Furthermore, Sari (2023) emphasized that effective English-speaking skills are crucial for success in higher education, active participation in global networks, and competitiveness in the international job market.

A critical factor in developing speaking proficiency is motivation. Without a sustained and genuine desire to improve, learners often experience slow progress or even stagnation. Motivation fuels persistence and engagement, especially when learners face challenges such as fear of making mistakes, limited vocabulary, or anxiety related to public speaking.

Dörnyei (2020) noted that among the various types of motivation, intrinsic motivation—the internal drive stemming from personal interest or enjoyment of the activity—has been found to be particularly powerful in sustaining long-term learning efforts. When learners are intrinsically motivated, they are more likely to take risks, engage in frequent practice, and remain resilient in the face of setbacks.

Salehpour & Roohani (2020) found a significant correlation between intrinsic motivation and higher levels of speaking proficiency. Similarly, Marszalek et al. (2022) revealed a strong positive relationship between intrinsic motivation and learners' self-perception, suggesting that students with higher intrinsic motivation are more likely to experience a state of "flow," which enhances their engagement and effectiveness in speaking activities.

In recent years, AI chatbots have garnered increasing attention due to their user-friendliness, perceived neutrality, and ability to boost users' confidence in a supportive and interactive environment (Alsadoon, 2021). Specifically, Artificial Intelligence (AI) has emerged as a valuable tool to enhance language learning, particularly in maintaining learners' motivation to practice speaking. AI-driven applications,

such as conversational bots, personalized speaking assistants, and real-time pronunciation feedback systems, provide engaging and low-pressure environments for learners to practice and improve.

Godwin-Jones (2022) emphasized that these tools not only offer immediate corrective feedback but also adapt to the learner's pace and interests, which reinforces intrinsic motivation and facilitates the development of speaking fluency over time. With AI's growing role in language education, learners now have more opportunities than ever to stay motivated and committed to improving their spoken English skills. As a result, Van den Berghe et al. (2019) noted that AI chatbots are increasingly being used as tutors in both first- and second-language education. The field of robot-assisted language learning is developing rapidly. Furthermore, Wei et al. (2025) agreed that AI chatbots indirectly influence learning outcomes by moderating the effects of human likeness, self-efficacy, and social presence on learning motivation.

Bibliometric analysis is a widely recognized method for assessing the impact of academic publications, providing insights that cannot be obtained through traditional review methods (Kar et al., 2022). This approach is particularly valuable for mapping the structure of a research field, identifying both established and emerging topics, and recognizing the most influential scholars and publications. Furthermore, bibliometric techniques, such as cluster network mapping, allow for the visualization of a field's progression over time, offering a dynamic perspective on its development and shifts in focus. By examining citation patterns and collaboration networks, this method uncovers underlying trends and provides a comprehensive overview of scholarly contributions. This research addresses the following questions:

Question 1: What are the emerging research trends related to the role of Artificial Intelligence in fostering the development of English-speaking skills?

Question 2: What gaps can be identified in current research trends concerning the use of AI to enhance learners' motivation and improve their English-speaking skills?

As noted by Hulland & Houston (2020), from the perspective of reviewing theories and publications indexed in Scopus over the past ten years, this study aims to further explore and identify new research directions for the future. In terms of academic contribution, such an evaluation plays a crucial role in advancing concepts, methodologies, and topics across various fields by synthesizing existing research and identifying gaps in the literature.

Criollo-C et al. (2022) suggested that a hybrid methodology, combining traditional instructional approaches with emerging digital innovations—such as AI-powered chatbots—provides a more comprehensive and adaptive framework for enhancing communicative competence in English language learning. By integrating the strengths of both conventional teaching methods and technology-enhanced tools, this approach facilitates mutual reinforcement, where each methodology compensates for the limitations of the other. In doing so, it fosters a more dynamic and interactive learning environment that prioritizes the individual needs, preferences, and learning styles of students, ultimately promoting sustained engagement and improved language outcomes.

2. METHODOLOGY

2.1. Data Source

The author conducted data collection from the Scopus database using the keyword phrase "AI technology and English-speaking skills" with the search limited to the period from 2015 to 2025. Additional filters were applied to restrict the results to specific types of publications and reputable academic journals. These limitations were established to ensure that the selected articles were peer-reviewed and of high scholarly credibility, thereby enhancing the academic rigor and persuasiveness of the findings. Furthermore, detailed information regarding citations, national institutions, and data sources was readily accessible (Yang et al., 2021).

During the data collection process, the author searched for publications limited by language (English) and document type (journal articles and conference papers). The selected database met the following criteria: (1) the content focused entirely or partially on the role of AI chatbots in developing speaking skills; and (2) the data contributed to research on intrinsic motivation in relation to speaking skill development.

Roziqin et al. (2023) argued that the Scopus database was selected as the primary platform for this research due to its status as the largest and most comprehensive global database. It includes a vast collection of abstracts and citations from peer-reviewed journals, books, and conference proceedings,

making it an essential resource for academic research. The extensive scope of Scopus provides a detailed and in-depth view of scholarly activities across various disciplines, allowing researchers to gain a broad perspective on trends, innovations, and developments within a particular field. With its global reach, Scopus offers access to a diverse array of high-quality, peer-reviewed content, providing valuable insights into the state of research worldwide. This makes it an ideal tool for tracking academic progress and identifying key topics and influential works within the research community

2.2. Analytical Method

In this study, a bibliometric analysis approach is employed to systematically review a broad range of research articles, focusing on key factors such as the countries, authors, and journals contributing to various academic fields. This method enables a comprehensive exploration of the scholarly landscape, offering valuable insights into the geographical and institutional distribution of research. Additionally, the study analyzes an extensive corpus of published works to highlight significant statistical patterns, identify emerging trends, and compare and contrast findings across different studies. By doing so, it aims to uncover gaps in the existing knowledge base, which can inform the identification of underexplored areas and guide future research directions, ultimately contributing to the advancement of the field (Paul & Criado, 2020).

Zhang et al. (2022) stated that various characteristics of the articles, including document type, language, year of publication, authorship, frequently cited authors, countries, research organizations, journal sources, commonly referenced journals, keywords, and the most widely cited references, were thoroughly analyzed using bibliometric methods in conjunction with VOSviewer software. This approach facilitated a comprehensive evaluation of the scholarly landscape. Specifically, VOSviewer was used to explore the relationships between different research organizations and the most frequently occurring keywords in the literature, providing valuable insights into collaboration patterns, research focus, and the terminology commonly used within the field

3. Research Results

3.1 Publication Year Statistics

In the initial search covering the period from 2005 to 2025, a total of 2,028 publications were identified. To refine the scope, filters were applied to limit the subject areas to Social Sciences, Computer Science, and Environmental Science, resulting in 1,781 relevant documents. Further narrowing was done by restricting the results to publications within the 2005–2025 period, specifically focusing on journal articles and conference papers published in English within the selected subject areas. This yielded 1,505 documents. To enhance accessibility and ensure full-text availability for in-depth analysis, the final filter applied was based on open access status. As a result, 730 open access publications were identified, providing a valuable dataset for comprehensive examination.

3.2 Distribution by Year of Publication

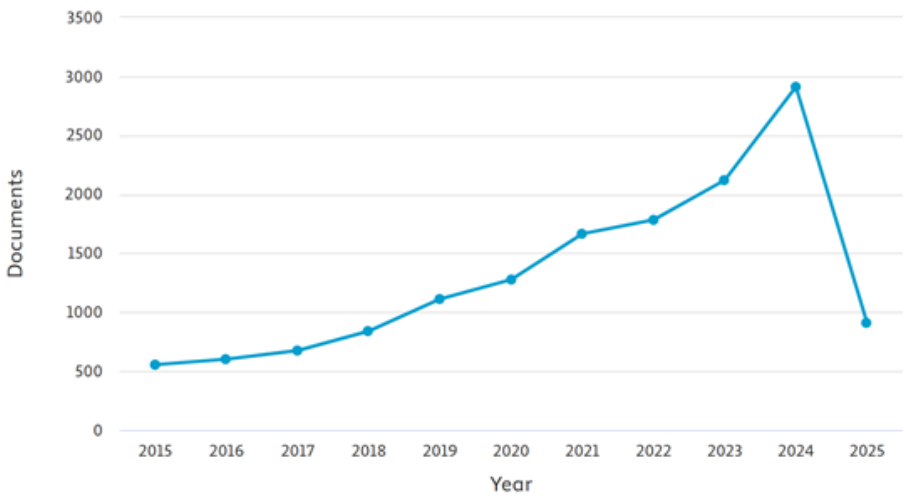

Figure 1. *Statistical results of articles and conference papers from 2015 to 2025*

(Source: Author, 2025)

Among the 730 Open Access documents retrieved from the 2005–2025 period, the number of publications gradually demonstrated a gradual upward trend over time. The earliest record dates back to 2005 with only 2 publications. The peak was reached in 2024, with a notable increase to 164 publications, reflecting a growing scholarly interest in the topic in recent years. The results are presented by the author in Figure 1.

3.3 Country-Based Analysis

The bibliometric analysis involved examining the distribution of research by country through the use of VOS viewer's bibliographic coupling and co-authorship functions. This approach facilitated the identification of countries that have made significant contributions to the field of AI technology and the development of English language speaking skills.

The United States leads with approximately 120 publications (16.4%), reflecting its robust research infrastructure and extensive interdisciplinary collaborations. China follows with 98 publications, highlighting its advancements in technology and the application of AI in education. The United Kingdom contributed approximately 85 publications. Notably, Southeast Asian countries such as Indonesia and Malaysia have emerged as significant contributors, collectively accounting for over 16% of the total publications. This growing participation indicates an increasing regional interest in educational technology and the enhancement of English language proficiency. The results are summarized by the author in Table 1.

This country-wise distribution underscores the global engagement in AI-assisted language education and highlights both established and emerging centers of research excellence (Wahyuni et al., 2024).

The distribution of publications by country emphasizes the global involvement in AI-assisted language education and brings attention to both well-established and emerging hubs of research excellence

Table 1. *Distribution of Open Access Publications by Country (2005–2025)*

Country	Number of Publications	Percentage (%)
United States	120	16.4%
China	98	13.4%
United Kingdom	85	11.6%
Indonesia	65	8.9%
Malaysia	54	7.4%
Australia	42	5.8%
Spain	37	5.1%
South Korea	34	4.7%
India	31	4.2%
Vietnam	28	3.8%
Others (combined)	136	18.6%
Total	**730**	**100%**

3.4. Publication Type Analysis

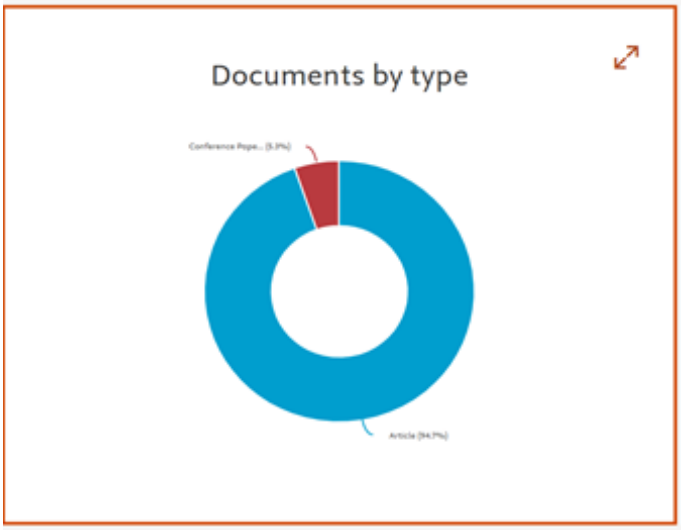

Figure 2. *Distribution of Open Access Publications by Type: Journal Articles and Conference Papers (Source: Author, 2025)*

Out of the 730 documents, journal articles comprised the majority, with 691 items (94.7%), while conference papers accounted for 39 items (5.3%). This shows a strong preference for disseminating research on this topic through scholarly journals. The results are presented in Figure 2

3.5 Bibliographic Coupling

Over the past decade, the impact of AI has gained increasing recognition. Once an emerging topic with limited attention, it has now become a significant focus during the 2015-2025 period. Research on the role of AI technology in enhancing speaking skills among English language majors is crucial for understanding how technology shapes learning in diverse sociocultural contexts (Wei et al., 2025). The results of the bibliometric analysis are presented in Figure 3.

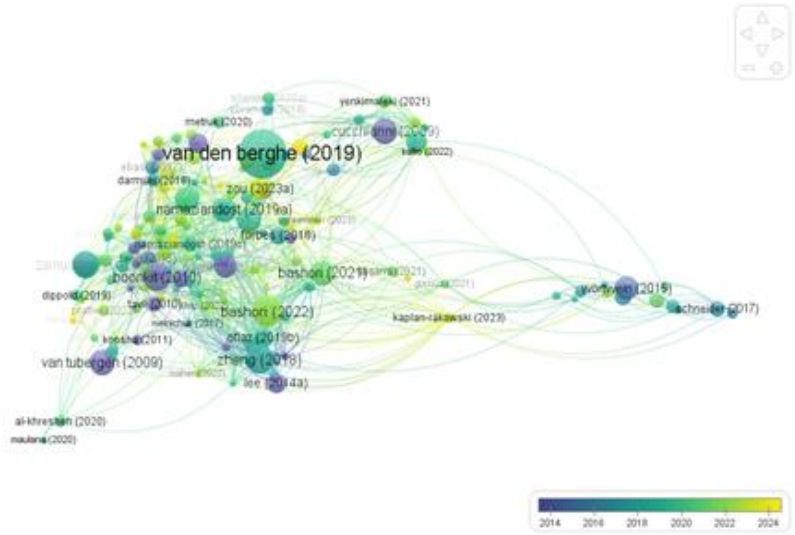

Figure 3. *The results of the bibliometric analysis using VOSviewer software*

(Source: Author, 2025)

4. Conclusion

This study presents a comprehensive bibliometric analysis of the evolving landscape concerning the impact of Artificial Intelligence (AI) on the development of English language majors' speaking skills. The findings highlight a significant and growing body of scholarly work recognizing AI, particularly through chatbots and conversational agents, as a transformative force in language learning. The steady increase in publications over the past decade, especially the peak observed in 2024, illustrates not only heightened academic interest but also broader acceptance of AI-enhanced language education globally.

The findings confirm that AI technologies contribute to improving learners' speaking proficiency by providing interactive, personalized, and non-threatening environments for practice. These features have been shown to reduce anxiety, promote fluency, and sustain learners' intrinsic motivation (Godwin-Jones, 2022; Kim et al., 2021). Notably, intrinsic motivation is identified as a crucial factor in the acquisition of speaking skills. AI tools that tailor content to learner preferences and progress support this motivational drive (Salehpour & Roohani, 2020).

Moreover, the country-based and institutional analyses highlight a global shift in research leadership, with significant contributions not only from traditionally dominant countries like the United States and the United Kingdom but also from emerging academic hubs in Southeast Asia. This geographic diversification reflects the growing global recognition of the importance of integrating AI into English language instruction as a in response to educational and technological advancements.

Despite these advancements, the analysis identifies research gaps that require further investigation. There is a need for longitudinal studies that evaluate the long-term impact of AI tools on speaking proficiency across diverse learner populations. Additionally, further exploration is necessary into the intersection of AI and personalized learning to better understand how adaptive technologies can accommodate varied learning styles and sociocultural contexts (Wei et al., 2025).

In conclusion, this study highlights the transformative potential of AI in supporting English language majors' speaking development, particularly through motivational and interactive engagement. As AI

continues to evolve, it is essential for educators, researchers, and policymakers to harness its strengths while addressing emerging challenges to ensure equitable and effective language learning experiences. Future research should focus on expanding theoretical frameworks and practical models that integrate AI into curricula, ultimately fostering communicative competence in increasingly digital learning environments.

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Citation: *Lê Vũ Ngân Hà. "An Exploration of the Impact of AI Technology on English Language Majors' Speaking Skill Improvement: A Bibliometric Analysis ", International Journal on Studies in English Language and Literature (IJSELL), vol. 13, no.5, pp. 1-6, 2025. Available: DOI: https://doi.org/10.20431/2347-3134.1305001.*