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Research Trends in Artificial Intelligence in English Language Teaching: A Bibliometric Analysis

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Abstract

The integration of artificial intelligence (AI) into education has gained significant attention over the past few years, driven by the potential of AI to revolutionize teaching and learning processes. Despite the growing body of research on the application of AI in education, there remains a significant gap in understanding its trends and specific details within English Language Teaching (ELT). This study employed a bibliometric analysis to present a snapshot of contemporary research trends in AI applications in ELT. The study systematically analyzed 1,994 documents from 522 sources and 3,316 authors from the Scopus database between 2019 and 2024. The inclusion criteria and carefully crafted search syntax ensure that only the most relevant publications are included in the analyses. The results identify the most productive authors, sources, affiliations, and countries. Additional bibliographic coupling analysis reveals seven main clusters, ranging from AI applications in contextual language learning to big data analysis in ELT. Co-occurrence network analysis further underscores the interconnectedness of various research topics, such

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as machine learning, natural language processing, and autonomous learning systems. The growing body of research indicates that AI technologies are increasingly being integrated into educational practices, offering more personalized, efficient, and engaging learning experiences. This study provides a detailed overview of the current landscape of AI research in ELT. By understanding these dynamics, educators, researchers, and policymakers can better leverage AI technologies to enhance educational outcomes and address the evolving needs of learners in a rapidly changing digital world.

Keywords: Artificial Intelligence, bibliometric analysis, English language teaching (ELT).

1. INTRODUCTION

The integration of artificial intelligence (AI) in education has garnered significant attention in recent years, driven by the potential of Generative AI technologies to revolutionize teaching and learning processes (Ahmad et al., 2021; Al-khresheh, 2024). In the context of ELT, AI applications range from intelligent tutoring systems that have been evolving for decades to language learning apps, automated grading and personalized learning experiences (Al-khresheh, 2024; Kaharuddin et al., 2024). As technology advances, understanding the current research trends in AI applications within ELT context becomes increasingly important for educators, researchers, and policymakers (Duan & Duan, 2021; Hockly, 2023).

AI has increasingly become a pivotal, albeit disruptive, element in multiple disciplines, and its integration into ELT is no exception. The past decade has witnessed a significant surge in incorporating AI technologies to enhance learning outcomes, streamline educational processes, and provide personalized learning experiences (Bender, 2024; Rusmiyanto et al., 2023). This trend is a testament to AI's transformative potential and a reflection of the growing academic interest in exploring its implications and efficacy.

Artificial intelligence (AI) has significantly impacted English language teaching by introducing innovative tools like *Wordtune* that assist EFL writers in formulating and translating ideas (Zhao, 2022). Additionally, machine learning algorithms have been utilized to monitor students' academic progress, enabling instructors to identify struggling students early on and provide the necessary support (Khan et al., 2021). The integration of AI has become crucial to training students in AI literacy, emphasizing the need for competency frameworks and curriculum adjustments to enhance learning outcomes (Casal-Otero et al., 2023). Moreover, machine translation tools have been integrated into language teaching, with users showing mixed attitudes toward their effectiveness and the need for continuous improvement in their integration processes (Deng & Yu, 2022). Efforts have focused on developing students' understanding of AI technologies and their implications, such as training students in modeling real-world text data to enhance their critical thinking and decision-making skills (Jiang et al., 2022).

These technologies have been heralded for their ability to offer scalable and individualized learning solutions, thus potentially revolutionizing traditional pedagogical methodologies. However, the rapid advancement of AI also brings forth critical discussions about its challenges, such as ethical considerations, academic integrity, the digital divide, and the role of teachers in an AI-integrated classroom. Previous research has highlighted the transformative impact of AI on educational practices, particularly in language learning and teaching. For instance, AI-powered language learning applications have been shown to enhance student engagement and improve learning outcomes (Almutairi, 2021; Rusmiyanto et al., 2023). Additionally, AI-based tools for automated grading and feedback provide significant time-saving benefits for educators while maintaining assessment accuracy (Yilmaz & Yilmaz, 2023). However, despite these advancements, there remain key challenges and ethical considerations that need to be addressed to ensure the effective and responsible integration of AI in education (Nguyen et al., 2023).

While the integration of AI in ELT offers numerous benefits, such as personalized learning experiences and enhanced engagement, it also presents challenges that need to be addressed (Khan et al., 2021; Zhao, 2022). One key challenge is ensuring the ethical use of AI in educational settings, including issues related to data privacy, algorithm bias, and transparency in decision-making processes (Abdulai & Hung, 2023). Additionally, there is a need to balance the use of AI tools with traditional teaching methods to maintain a human-centered approach to language instruction.

Apart from these challenges, the growing interest in AI applications in ELT presents exciting opportunities for innovation and research. By harnessing the power of AI, educators can gain valuable insights into student learning behaviors, adapt teaching strategies to individual needs, and create interactive and immersive language learning environments (Duan & Duan, 2021; Hockly, 2023). Furthermore, AI technologies have the potential to bridge language learning gaps, facilitate access to education for diverse learner populations, and promote lifelong learning opportunities.

Despite the growing body of research on the application of artificial intelligence (AI) in education, there remains a significant gap in understanding its trends and specific details within ELT. Existing studies often focus on general applications of AI in education or specific case studies without comprehensively analyzing publication trends, research clusters, and the global distribution of research efforts in this field. Additionally, the rapid evolution of AI technologies and their integration into educational practices calls for an updated bibliometric analysis to capture the latest developments and emerging themes. If this research is not conducted, it will be challenging for educators, researchers, and policymakers to understand the current landscape of studies, which may ultimately hinder efforts to fully harness the potential of AI in ELT. This lack of understanding also poses the risk of widening disparities in technology adoption among countries or educational institutions, thereby missing critical opportunities to enhance the quality of learning through AI.

The novelty of this research lies in its comprehensive bibliometric approach, which not only quantifies the growth of publications but also identifies key research clusters and trends within the field. By leveraging advanced bibliometric tools such as co-occurrence analysis, this study provides a detailed mapping of research topics, highlights the interdisciplinary nature of AI applications in ELT, and underscores the importance of international collaboration. This nuanced understanding of the research landscape offers valuable insights for educators, researchers, and policymakers to drive future innovations and improvements in the integration of AI technologies in ELT.

This study on research trends in AI in ELT is crucial for several reasons. Firstly, it provides a comprehensive analysis of the current landscape of AI applications in ELT, offering valuable insights into emerging trends, key themes, and gaps in research (Katsarou et al., 2023). By synthesizing data from the Scopus database and conducting a bibliometric analysis, this study contributes to a deeper understanding of how AI is being integrated into language education and the potential implications for teaching and learning practices. Furthermore, the findings of this study serve as a roadmap for educators, researchers, and policymakers to navigate the evolving field of AI in ELT, enabling them to make informed decisions about the adoption and implementation of AI technologies in educational settings (Maphosa & Maphosa, 2023). Ultimately, this study not only sheds light on the opportunities and challenges presented by AI in ELT but also paves the way for future research directions and advancements in leveraging AI to enhance language learning experiences.

Bibliometric analyses serve as a powerful tool to systematically review and synthesize existing literature in a field, thereby providing a comprehensive overview of its evolution, key themes, and research gaps (Kismoyo et al., 2023). Similarly, bibliometric analysis is a valuable method for providing a quantitative overview of scientific literature, identifying patterns, trends, and research gaps (Donthu et al., 2021). By leveraging the extensive data available in Scopus, this study offers a reliable snapshot of global literature on this topic.

The integration of AI into ELT is a rapidly evolving field that promises to offer new insights and transformative impacts on teaching and learning. This bibliometric analysis endeavors to

provide a robust foundation for educators, researchers, and policymakers to understand the current trends and prepare for the emerging future, ensuring that the deployment of AI technologies aligns with educational goals and ethical standards. The research questions of this study have been formulated as follows:

1. What are the prevailing research trends in artificial intelligence as applied to ELT?
2. How can artificial intelligence research in ELT be categorized thematically?
3. What are the major journals, prominent authors, affiliations, and countries contributing to artificial intelligence research in ELT?
4. What emerging directions and potential advancements can be identified in the future of artificial intelligence research within ELT?

2. METHODS

2.1 Research Design

This bibliometric study used scholarly publication data from the Scopus database for the period 2019-2024. This method involved several systematic steps designed to comprehensively collect, analyze, and present data. The Scopus database was chosen due to its strong reputation for providing extensive and high-quality data across various disciplines (Andriyani et al., 2023; Lutfiani et al., 2023). Scopus is also known for its broad international coverage and is frequently used in bibliometric studies to ensure a comprehensive representation of global literature (Dobrucali et al., 2023; Donthu et al., 2021).

2.2 Search Strategy

The search strategy was carefully designed using advanced bibliometric query techniques. Keywords and search syntax were developed to identify publications relevant to AI in ELT (Figure 1). These included terms such as “Artificial Intelligence,” “ELT,” “TESOL,” and “English Language Teaching,” combined with Boolean operators to ensure precision and inclusiveness. The query syntax also included filters for publication years (2019–2024), document type (journal articles), and language (English). Access to the Scopus database was conducted on May 15, 2024, retrieving 1,994 documents. This systematic search ensures that only highly relevant and high-quality data were included for analysis.

2.3 Inclusion and Exclusion Criteria

The inclusion criteria were meticulously developed to ensure the relevance and quality of the selected data. Only documents written in English, published from 2019 to May 15, 2024, and directly addressing the application of AI in ELT were included. The document types were limited to journal articles to maintain academic rigor and exclude less relevant publications such as editorials, notes, or non-peer-reviewed documents. Duplicates, incomplete records, and documents that did not meet the inclusion criteria were excluded during the data cleaning process to enhance the reliability of the results.

2.4 Coding Procedure

The data extracted from the selected articles included detailed metadata such as titles, abstracts, keywords, author names, affiliations, year of publication, and citation counts. This metadata was systematically coded into a structured format, enabling efficient processing and analysis. The coding process also involved cross-verification to ensure consistency and accuracy in data extraction, aligning with best practices in bibliometric research.

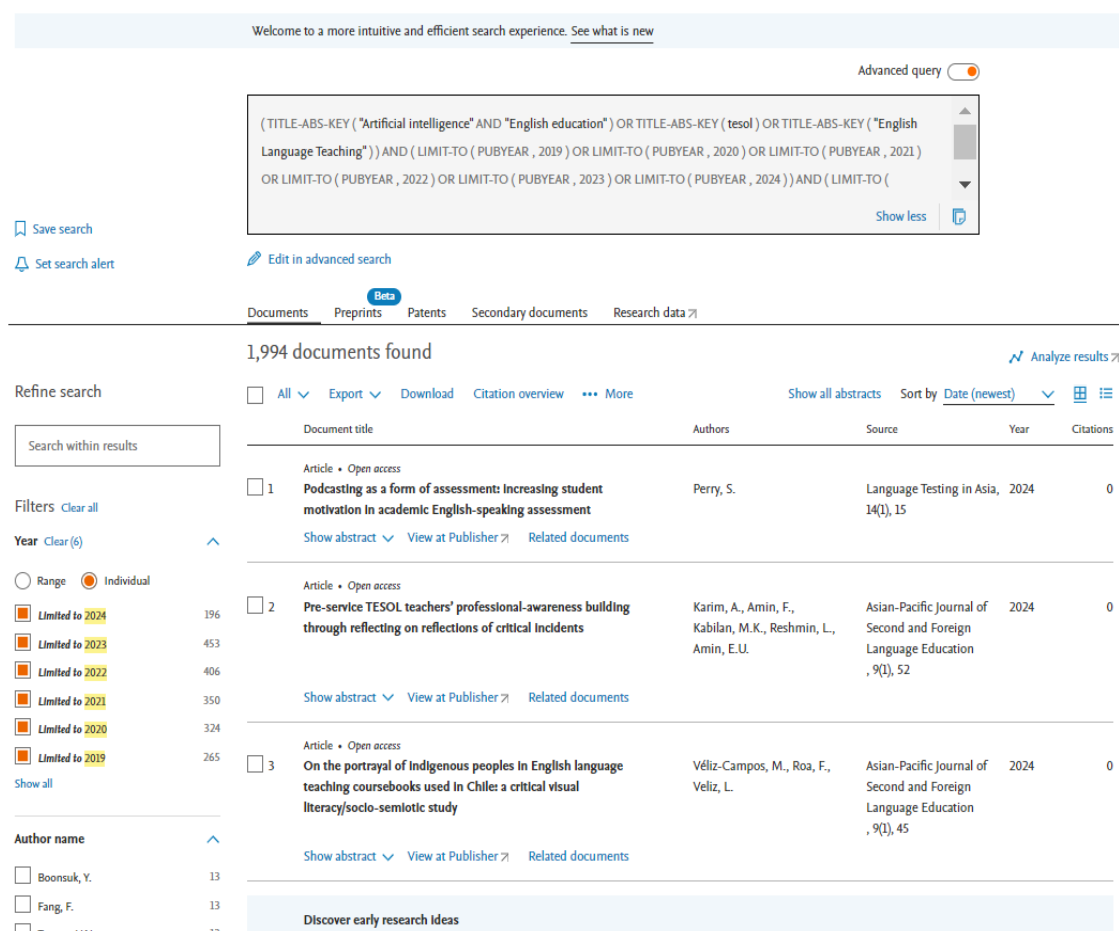


Figure 1. Article search on Scopus database.

2.5 Data Analysis

The collected data were analyzed using a combination of bibliometric and network analysis techniques. Bibliometric visualization tools such as VOSviewer and Biblioshiny were employed to map research trends, identify research clusters, and examine the relationships between key themes (Donthu et al., 2021; Kismoyo et al., 2023). Scientific network mapping techniques were applied to highlight major areas of focus, significant contributions, and patterns of international collaboration. The findings from these analyses provide valuable insights into the evolving landscape of AI research in ELT and its implications for future studies.

3. RESULTS

3.1 Key Information Emerging from the Data

Research on the integration of artificial intelligence (AI) in ELT has become increasingly relevant with the advancement of technology and the need for more effective teaching methods that are responsive to the evolving digital environment. Bibliometric studies offer a comprehensive way to understand research trends, evaluate impact, and identify gaps in the existing literature.

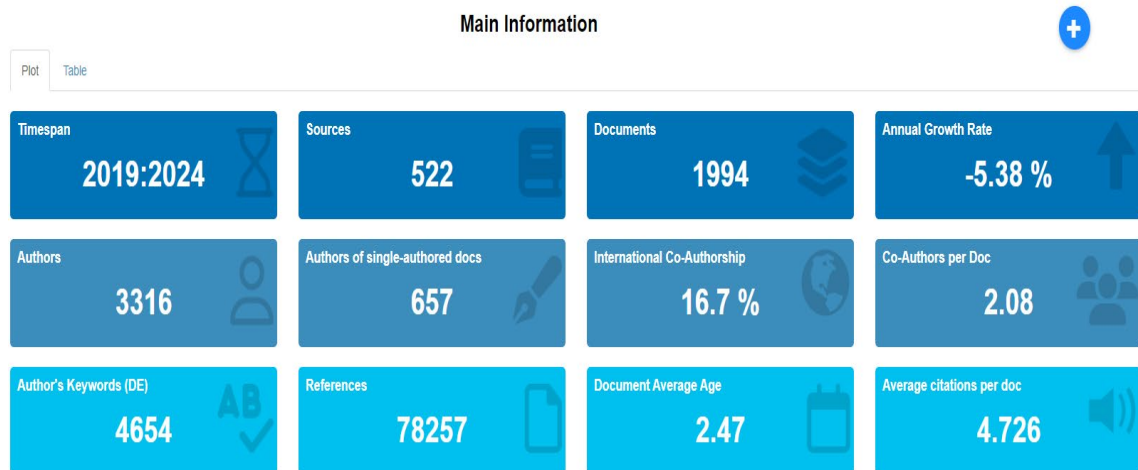


Figure 2. Key information.

Figure 2 provides key information about the data processed using Biblioshiny. This data includes publications from 2019 to 2024, covering a five-year analysis period. This study utilized 522 sources, encompassing various academic journals and publications. In total, 1,994 documents were analyzed, reflecting significant research in this area.

There are 3,316 authors contributing to this research, indicating broad participation from the academic community. Additionally, 16.7% of the documents were written with international collaboration, highlighting the importance of international cooperation in AI research in ELT. The average age of the analyzed documents is 2.47 years, indicating that the research is relatively recent and reflects current trends in the field.

The data suggests that research on AI in ELT is experiencing dynamic development. Although the annual growth rate slightly declines, the significant numbers of documents and international author involvements indicate that this topic remains a major focus within the academic community. The broad participation from various authors and international collaborations reflects the global significance of this topic. Furthermore, the relatively young average age of the documents indicates that research in this field continues to evolve and adapt to the latest technological advancements.

3.2 Annual Scientific Production

Research on AI application in ELT has seen significant development over the past few years. Bibliometric studies can help us understand the annual scientific production in this field, reflecting the academic community's level of interest and research activity. As indicated, the data for this study was collected from 2019 to May 15, 2024; therefore, the data for 2024 does not fully represent the total number of publications for that year.

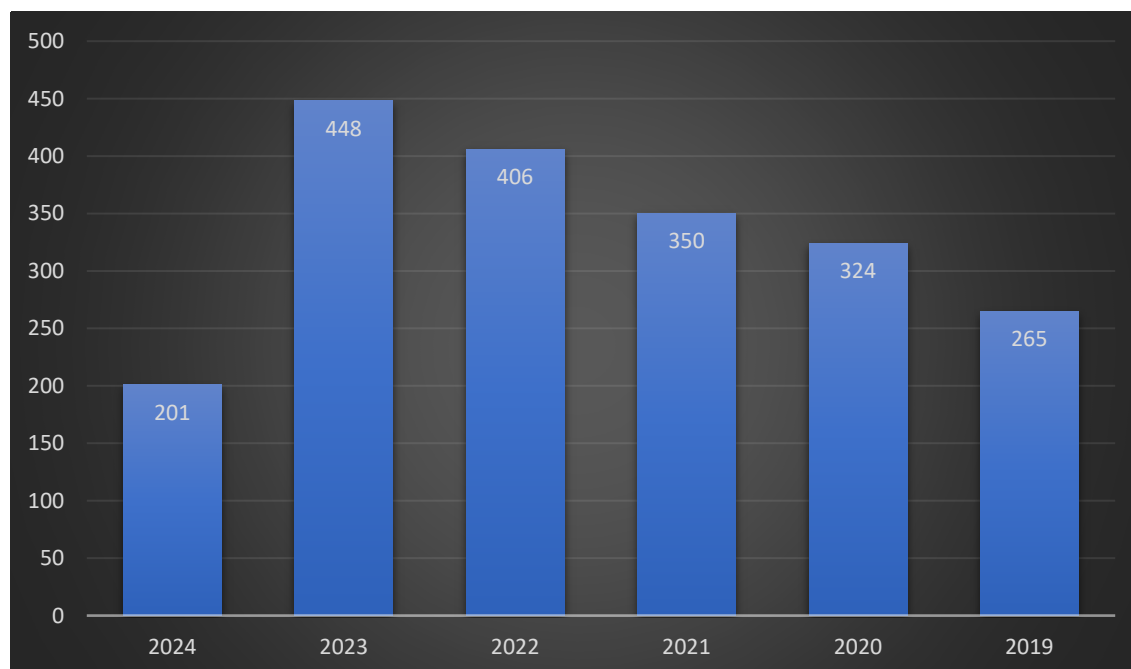


Figure 3. Annual scientific production.

Figure 3 shows the number of articles published each year from 2019 to 2024. In 2019, there were 265 published articles. This number increased in 2020 to 324 articles and continued to rise in 2021 with 350 articles. The peak in the number of publications occurred in 2023 with 448 articles. However, in 2024, up until May 15, the number of published articles has only reached 201, which the incomplete data for that year can explain.

The data indicates that interest and research in the application of AI in ELT have significantly increased, especially from 2019 to 2024. The rise in published articles each year reflects increased research activity and growing interest in this topic. The highest increase occurred in 2023, which may represent the peak of academic attention towards AI in ELT during this period. The decline in the number of articles in 2024 should not be taken as a definitive trend due to the still incomplete data for the year. This data clearly shows the upward trend in scientific production related to AI in ELT. It demonstrates that this topic is gaining more significant attention from researchers and continues to evolve as an important field of study in modern education.

3.3 Most Relevant Authors

This section provides an overview of the most productive authors in research on artificial intelligence (AI) in ELT. Identifying the most relevant authors in this field can provide insights into the key contributors and potential collaborations. The data processed with Biblioshiny highlights the most frequently involved authors in AI-related publications in ELT.

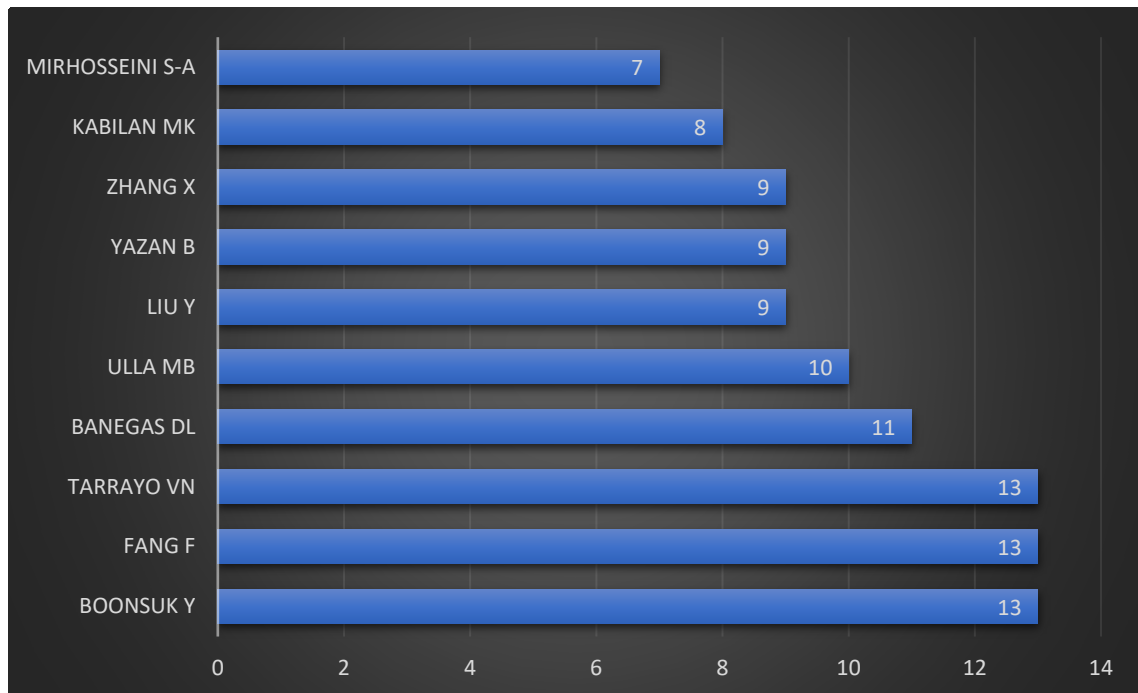


Figure 4. Most relevant authors.

Figure 4 shows the most relevant authors based on the number of their publications. The data indicates that several authors have become key contributors to research on AI in ELT. Boonsuk Y, Fang F, and Tarrayo VN emerge as the most productive authors, reflecting their high interest and dedication to this field. Their significant involvement suggests the quality and quantity of research they produce and their potential as leaders in this research area. Moreover, the presence of other authors with a high number of publications indicates that this field has many active contributors continuously working to advance knowledge and applications of AI in ELT. This also suggests the existence of a strong collaborative network among these researchers, which can further drive growth and innovation in the field.

3.4 Most Relevant Sources

Most relevant sources provide an overview of the most productive publication sources in research on AI in ELT, indicated by the number of articles published from each source. Identifying the most relevant sources can provide insights into the journals and publications most frequently used by researchers to disseminate their findings. The data processed with Biblioshiny highlights the primary sources most frequently referenced in research related to AI in ELT.

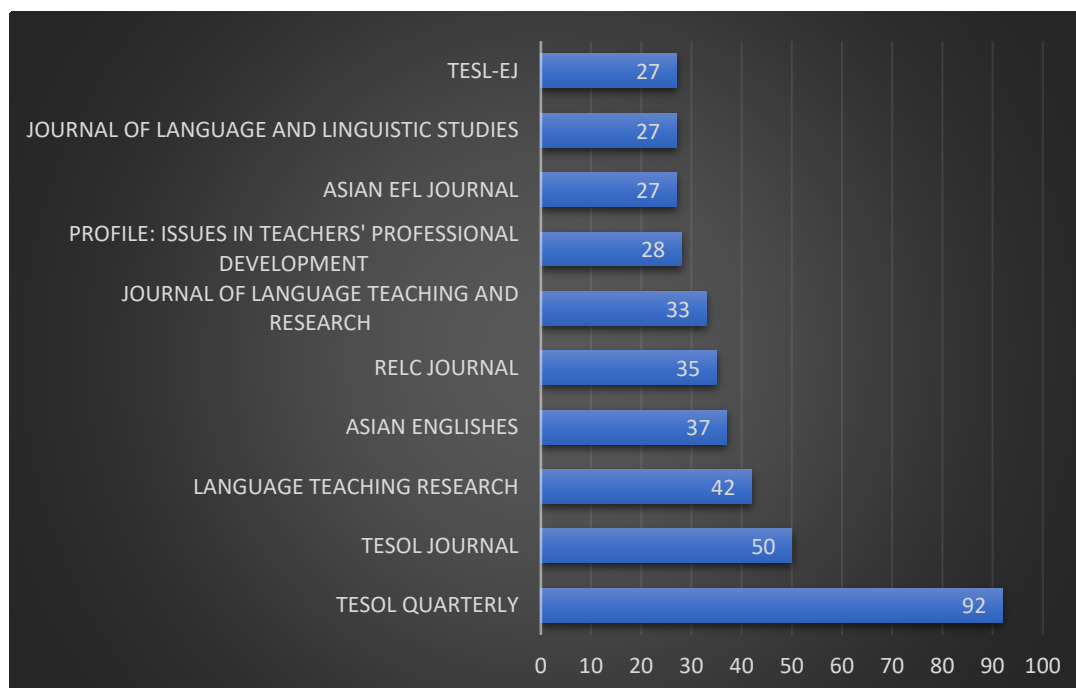


Figure 5. Most relevant sources.

Figure 5 shows the most relevant sources based on the number of publications they have released. TESOL Quarterly ranks at the top with 92 articles, indicating that this journal is a primary platform for researchers in this field. The data indicates that TESOL Quarterly is a highly influential source and the primary choice for researchers to publish their findings on AI in ELT. The dominance of TESOL Quarterly may be due to its strong reputation and broad coverage of English language teaching. Other journals with many publications also demonstrate their importance in supporting the dissemination of knowledge and the advancement of research in this field. The diversity of sources used by researchers reflects a broad and varied publication network, allowing for more effective dissemination of ideas and findings. This also indicates that research on AI in ELT receives widespread attention and is recognized by various reputable academic platforms.

3.5 Most Relevant Affiliation

Various academic institutions worldwide have supported research on the application of AI in ELT. Identifying the most relevant affiliations can provide insights into the institutions that significantly contribute to this research. The data processed with Biblioshiny highlights the primary affiliations most frequently appearing in AI-related publications in ELT.

Figure 6 shows the most relevant affiliations based on the number of publications. Islamic Azad University ranks at the top with 73 articles, indicating that this university is a major contributor in this field. The interpretation of this data indicates that Islamic Azad University is a highly influential institution and a major contributor to AI research in ELT. The dominance of Islamic Azad University may be due to strong support and intensive research focus in this field. Other affiliations with many publications also demonstrate their importance in supporting the dissemination of knowledge and the advancement of research in this area. The diversity of affiliations involved reflects a broad and varied collaborative network, allowing for more effective dissemination of ideas and findings. This also indicates that research on AI in ELT receives widespread attention and is recognized by various reputable academic institutions.

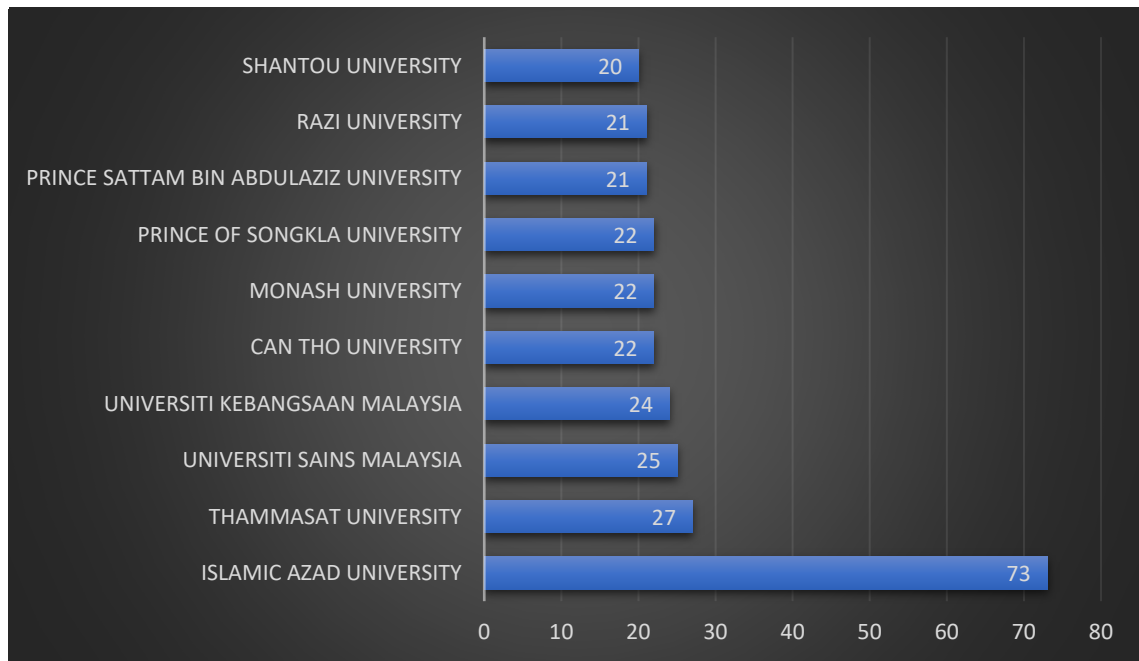


Figure 6. Most relevant affiliations.

3.6 Countries' Scientific Production

Research on the application of AI in ELT has garnered widespread attention from various countries around the world. Analyzing scientific production by country can provide insights into the contributions and research intensity across different regions. The data processed with Biblioshiny highlights the scientific production by country that most frequently appears in publications related to AI in ELT.

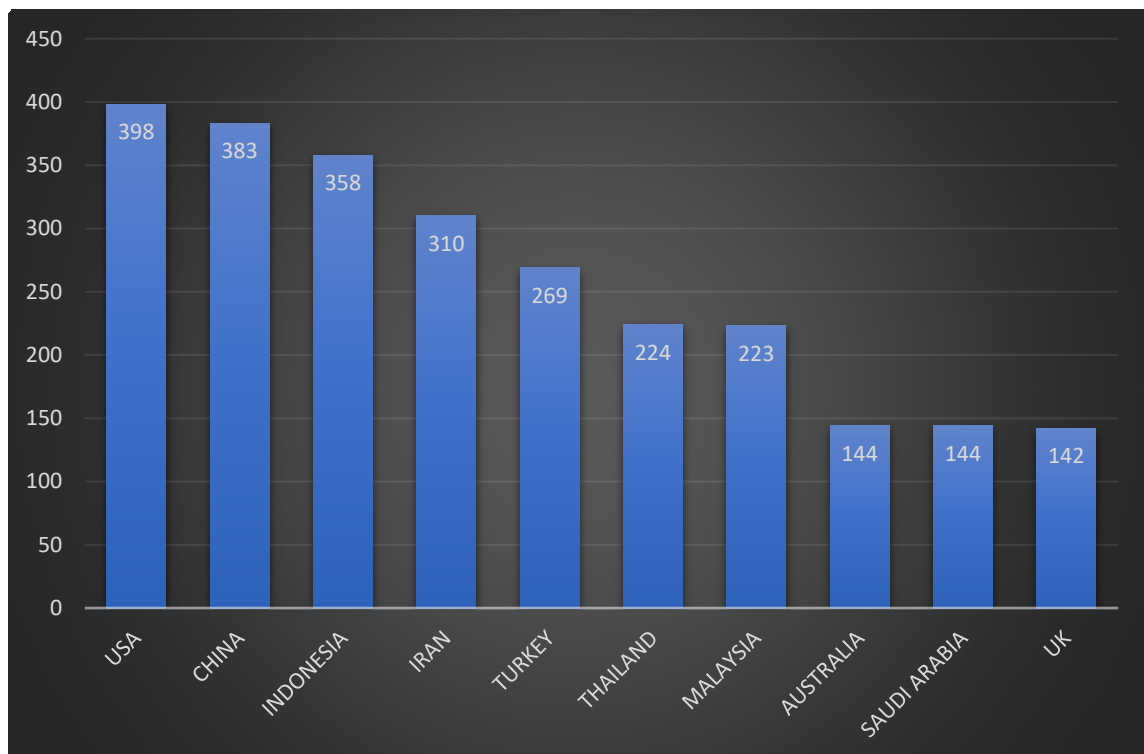


Figure 7. Countries' scientific production.

Figure 7 shows the scientific production from various countries based on the number of publications. This data indicates that the United States and China are the two most active countries in AI research in ELT. The dominance of these two countries may be due to strong support for research and technological development, as well as the availability of adequate resources. Indonesia, ranking third, shows a significant increase in research contributions, reflecting a high interest and potential in this field. Other countries such as Iran, Turkey, and Thailand also demonstrate significant contributions, indicating a strong interest and support for AI research in ELT within their regions. Malaysia, Australia, Saudi Arabia, and the United Kingdom, although having a lower number of publications, still play important roles in the development and dissemination of knowledge in this field.

3.7 Bibliographic coupling

Bibliographic coupling is a citation analysis technique in bibliometric research used to measure the similarity between two scientific documents based on the references they cite (Donthu et al., 2021; Guo et al., 2024). When two documents share the same references, they are considered bibliographically connected, and the more references they share, the stronger the connection. This technique aims to identify groups of documents with thematic similarity, helping to understand the research structure in a particular field and identify related research trends or clusters.

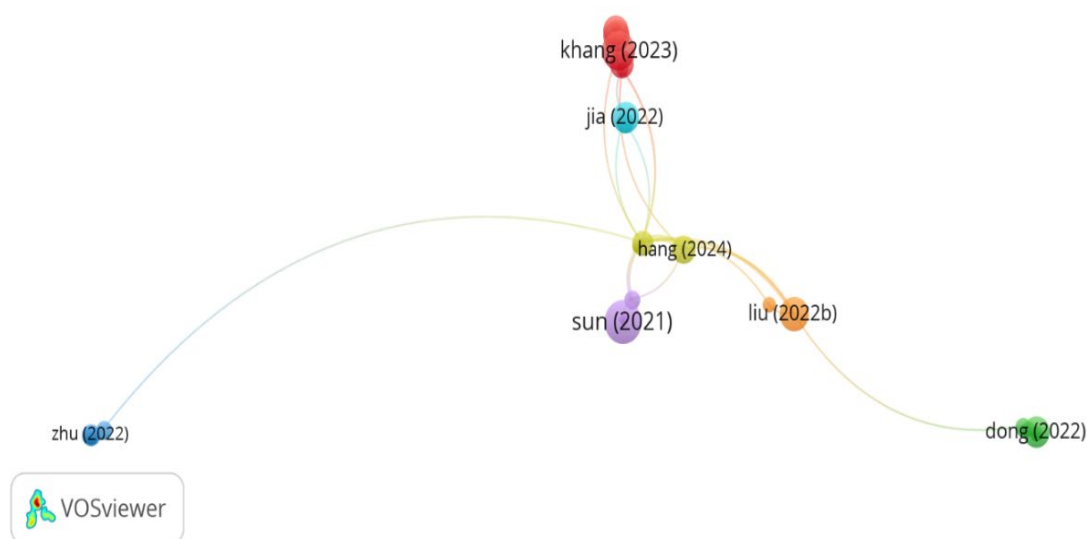


Figure 8. Bibliographic coupling.

3.7.1 Cluster 1: AI and contextual language learning

This cluster focuses on the use of AI in contextual and innovative language learning. The articles in this cluster appear to strongly focus on the latest developments in AI and its applications in ELT, emphasizing innovation and new teaching methods. The varying publication years indicate that this is a rapidly developing research area that continues to attract new interest. Research in this cluster includes various AI technology applications to enhance English language learning. Chien et al. (2022) investigated the influence of AI Markup Language-based chatbots in contextual English learning. Hapsari and Wu (2022) discussed an AI chatbot learning model that can alleviate speaking anxiety, boost enjoyment, and foster critical thinking. Khang et al. (2023) developed an AI-aided teaching model in Education 5.0. Wei (2023) evaluated the impact of AI on English learning achievement, L2 motivation, and self-regulated learning. Zhang (2021) proposed a new machine learning framework for effectively evaluating ELT, and Zou et al. (2019) explored how to help teachers select optimal content for students with the assistance of AI.

3.7.2 Cluster 2: AI and internet technology in ELT

This cluster highlights the applications of AI and internet technology in English language learning and teaching. [Dong and Wang \(2022\)](#) researched the application of AI software based on semantic web technology in English learning and teaching. [Liu \(2022\)](#) discussed constructing a teacher competency model using the K-Means clustering algorithm. [Qin \(2022\)](#) developed an intelligent writing score system for college English based on big data analysis and deep learning algorithms. [X. Wang \(2022\)](#) explored an AI-based personalized learning resource recommendation algorithm for smart ELT. [F. Wang \(2023\)](#) proposed smart classroom teaching strategies for English based on internet technology.

3.7.3 Cluster 3: AI in English teaching and digital literacy

This cluster focuses on the application of AI in English teaching modes and digital literacy. [M. Chen and Yuan \(2022\)](#) researched the teaching mode of English language and literature based on AI technology in the context of big data. [Guo et al. \(2024\)](#) studied informative English teaching strategies based on deep learning. [Zhou \(2019\)](#) developed an interactive oral English teaching platform based on AI. Finally, [Zhu and Andersen \(2022\)](#) analyzed the factors influencing the level of engineering ELT using AI technology.

3.7.4 Cluster 4: AI and ELT management

This cluster focuses on the application of AI algorithms in classroom management and the efficiency of English language learning. [Hang et al. \(2024\)](#) assessed English teaching and AI for efficient learning using the Analytical Hierarchy Process and the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS). [Y. Wang \(2021\)](#) developed an improved machine learning and AI algorithm for classroom management in English distance education. [Yu \(2021\)](#) researched AI technology in English teaching.

3.7.5 Cluster 5: AI in teacher competence and autonomous learning

This cluster focuses on developing teacher competence and AI-based autonomous English learning systems. [Liu \(2022\)](#) discussed the construction of a teacher competency model using the K-Means clustering algorithm. [Sun \(2021\)](#) evaluated the status quo of information technology-based English informatization education in colleges and universities.

3.7.6 Cluster 6: AI-based language learning systems

This cluster encompasses the development of AI-based English language learning systems that support authentic and ubiquitous learning. [Jia et al. \(2022\)](#) developed an AI-based learning system for L2 learners to support authentic and ubiquitous learning in English. [Lee et al. \(2024\)](#) researched the development of an AI English learning support system to facilitate learner-generated context-based learning.

3.7.7 Cluster 7: AI-based learning models and recommendations

This cluster focuses on AI-based learning models and recommendation systems in ELT. [Liu \(2022\)](#) discussed the construction of a teacher competency model using the K-Means clustering algorithm. [Xie \(2022\)](#) developed a linear regression training model for English reading recommendations in vocational colleges.

The categorization of articles into seven clusters demonstrates the diversity of topics and approaches in AI research for ELT. Each cluster reflects a specific research focus, ranging from innovation and teaching methods, learning evaluation, theoretical and methodological aspects, to case studies and experiments. The presence of several articles published in the same year within

certain clusters indicates specific trends or interests during those periods. Additionally, clusters with fewer articles may indicate more niche or emerging topics. This analysis helps us understand the current research landscape and identify developing areas and potential for further research.

3.8 Co-occurrence network

The Co-occurrence Network section provides information about the interrelationship between various research topics related to AI in ELT. The colors in the graph in Figure 10 indicate different clusters, each with closely related topics. Figure 9 provides an explanation for each cluster and the topics within cluster.

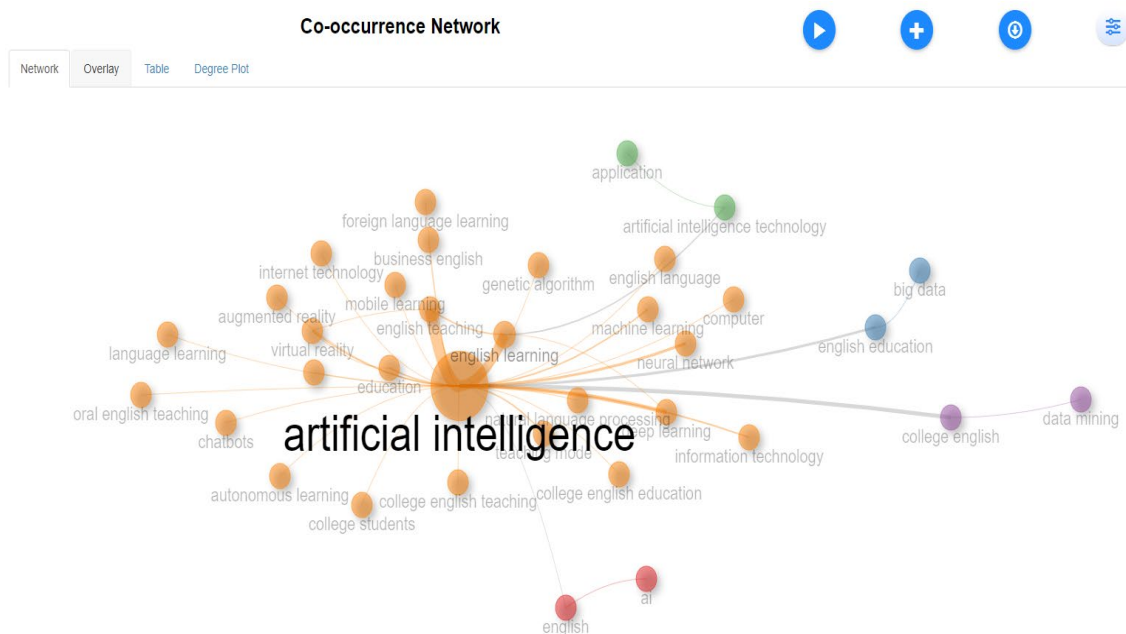


Figure 9. Co-occurrence network.

3.8.1 Orange cluster (Main topic: AI applications in language learning)

The orange cluster highlights various applications of AI in language learning. The main topic in this cluster is “artificial intelligence”, which is at the center of the interconnected network. Closely related topics in this cluster include English learning, machine learning, neural network, natural language processing, language learning, chatbots, autonomous learning, virtual reality, augmented technology, internet technology, mobile learning, foreign language learning, college students, and college English teaching. This cluster focuses on using AI technologies such as machine learning, neural networks, and natural language processing to support various aspects of English learning and teaching. Additionally, technologies like virtual reality and augmented technology are also applied to create more interactive and effective learning environments. The use of chatbots and autonomous learning systems enriches students’ learning experiences by providing more personalized support.

3.8.2 Green cluster (Main topic: AI technology and its applications)

The main topics in the green cluster are “artificial intelligence technology” and “application”. Closely related topics in this cluster include artificial intelligence technology and application. This cluster emphasizes AI technology and its general applications in education, not limited to English learning but also encompassing AI technology broadly. Research in this cluster focuses on the development and implementation of AI technology in various educational contexts,

emphasizing how these technologies can be used to enhance the effectiveness and efficiency of the overall learning process.

3.8.3 Blue cluster (Main topic: Big data and ELT)

The main topics in the blue cluster are “big data” and “ELT”. This cluster includes the use of big data in the context of ELT, including the analysis of large datasets to improve learning and teaching processes. Research in this cluster explores how big data can be used to understand student learning patterns, optimize curricula, and provide more targeted feedback to improve learning outcomes.

3.8.4 Purple cluster (Main topic: Data mining and college English)

The main topics in the purple cluster are “data mining” and “college English”. This cluster highlights data mining methods and their application in ELT at the college level. The primary focus is on data analysis to support teaching and learning. Research in this cluster aims to identify patterns and trends in educational data that can be used to enhance teaching strategies and student learning outcomes.

3.8.5 Pink cluster (Main topic: AI and English)

The main topics in the pink cluster are “AI” and “English”. This cluster covers more general topics related to AI and English, emphasizing the interconnection between these two fields broadly. Research in this cluster explores various ways AI can be applied in English teaching and learning, as well as how integrating AI can enrich and facilitate the educational process.

This co-occurrence network graph shows that research on AI in ELT covers various closely related topics and subtopics. Each cluster reflects a specific area of research, ranging from AI technology applications, the use of big data, teaching methods, to a focus on oral learning. This categorization helps understand the complexity and breadth of this research field and identify the areas that receive the most attention from the academic community.

4. DISCUSSION

The findings of this study reveal significant trends in AI research in ELT, highlighting the growing relevance of this topic within the academic community. Publication trends in this area have steadily increased over the years, with a notable rise in interest. In 2024, only 201 articles were recorded, as the metadata collected covered publications up to May 15, 2024, suggesting that the total number of publications for that year could still increase. These findings are consistent with previous studies that indicate an acceleration in AI adoption in education, particularly in language teaching, due to its ability to enhance personalization and learning efficiency ([Amonova et al., 2023](#); [Orden-Mejía et al., 2023](#)).

The distribution of productive authors and affiliations offers insights into key contributors in this field. The identification of Boonsuk Y, Fang F, and Tarrayo VN as the most prolific authors, alongside the dominance of TESOL Quarterly as the leading journal, underscores consistent contributions from influential actors shaping this research domain. These results align with prior reports emphasizing the pivotal role of prominent figures and publication platforms in guiding research directions ([Hamdan & Alsuaqih, 2024](#)). Furthermore, significant international collaborations from countries such as the United States, China, and Indonesia reflect this research’s global nature, as related studies highlight the importance of cross-national partnerships in advancing technology-driven research ([Barrett et al., 2011](#)).

The bibliographic coupling analysis identifies seven primary clusters, illustrating diverse topics and approaches in AI research for ELT. For example, the first cluster, which focuses on AI-driven contextual language learning, supports previous studies on the effectiveness of AI-

based chatbots in fostering autonomous English language learning (Ifelebuegu, 2023; Kooli, 2023). The use of big data and digital literacy technologies in other clusters further emphasizes the interdisciplinary nature of this research, a characteristic consistently highlighted in studies on AI in education (Amonova et al., 2023; Orden-Mejía et al., 2023).

The findings also underscore AI applications' significant potential in addressing language learning challenges, such as enhancing interactivity through augmented reality and virtual reality technologies. Previous studies similarly support the effectiveness of these technologies in creating more immersive and impactful learning experiences (Hsieh, 2023; Novak et al., 2023). However, it is crucial to note that the development of these technologies must consider educational ethics, as highlighted by F. Chen et al. (2023), to ensure responsible and inclusive implementation of AI in education. These findings provide a robust foundation for further integrating AI technologies into ELT. By understanding these trends, researchers, educators, and policymakers can formulate more effective strategies to leverage AI's potential to improve the quality of English language education.

5. CONCLUSION

This bibliometric study provides a comprehensive analysis of research trends in the application of artificial intelligence (AI) in ELT using data from the Scopus database from 2019 to 2024. The study identifies key patterns, themes, and collaborative networks in the existing literature, offering valuable insights for researchers, educators, and policymakers. The analysis reveals a significant volume of research output, with 1994 documents involving 522 sources and 3316 authors. Despite a slightly declining annual growth rate, the research activity peaked in 2023, indicating a robust and growing interest in this field. The contributions of prolific authors and the dominance of key journals like *TESOL Quarterly* highlight the central figures and platforms driving this research area. Islamic Azad University emerged as the most productive affiliation, with substantial contributions also coming from institutions in the United States, China, and other countries. The geographical distribution of research underscores the global nature of AI applications in ELT, with notable participation from Indonesia, Iran, and Turkey. The bibliographic coupling and co-occurrence network analyses identify diverse research clusters, ranging from AI applications in contextual language learning to big data and digital literacy in ELT. These clusters highlight the multifaceted nature of AI research and its various applications in enhancing teaching and learning processes.

The findings of this study have several important implications. Firstly, the growing body of research on AI in ELT suggests that AI technologies are increasingly being integrated into educational practices. This integration has the potential to transform traditional teaching methods, offering more personalized, efficient, and engaging learning experiences. Secondly, the high level of international collaboration indicates a shared global interest in advancing AI applications in education, which can lead to the exchange of best practices and innovations across borders.

Based on the findings, several recommendations are proposed. Researchers should continue to explore the intersections of AI, language learning, and education, fostering interdisciplinary collaborations to develop innovative teaching methods and tools. Policymakers and educational institutions should facilitate international research partnerships to share knowledge and resources, thereby enhancing the global impact of AI in ELT. Professional development programs should be designed to equip educators with the necessary skills and knowledge to integrate AI technologies into their teaching practices effectively. Additionally, researchers and practitioners should consider the ethical implications of AI in education, ensuring that AI applications are used responsibly and equitably. Future research should focus on emerging trends identified in the study, such as the use of AI for personalized learning and the development of digital literacy, to further advance the field. However, this study has several limitations. First, the data used is sourced solely from the Scopus database, so there may be relevant research published in other sources that are not covered in this analysis. Second, the analysis period covering only 2019-2024 may not fully reflect the latest trends as research developments can

occur rapidly. Lastly, the focus of this research is on academic publications, while many practical innovations and applications of AI in education may not be documented in academic literature but in industry or technology reports.

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