

# The Interplay Among AI, Language Research, and Academic Publishing: A Systematic Review of Trends and Future Directions

Devilito P. Tatipang<sup>1\*</sup>, Marlon S. Pontillas<sup>2</sup>, Gali Alrajafi<sup>3</sup>, Mala Rovikasari<sup>4</sup>,  
Falentinus Ndruru<sup>5</sup>

<sup>1\*</sup>English Education Department, Posgraduate Program, Universitas Negeri Makassar, Makassar, Indonesia

Email: [devilitocprasetyotatipang@gmail.com](mailto:devilitocprasetyotatipang@gmail.com)

<sup>2</sup>English Studies, The College of Arts and Sciences, Camarines Sur Polytechnic Colleges (CSPC), Philippines

Email: [arlpontillas@cspc.edu.ph](mailto:arlpontillas@cspc.edu.ph)

<sup>3</sup>English Education Department, Posgraduate Program, Universitas Negeri Makassar, Makassar, Indonesia

Email: [galiarajafi@gmail.com](mailto:galiarajafi@gmail.com)

<sup>4</sup>English Education Department, Posgraduate Program, Universitas Negeri Malang, Malang, Indonesia

Email: [malarovikasari@gmail.com](mailto:malarovikasari@gmail.com)

<sup>5</sup>English Education Department, Posgraduate Program, Universitas Negeri Malang, Malang, Indonesia

Email: [falentinusndruru@gmail.com](mailto:falentinusndruru@gmail.com)

## ARTICLE HISTORY

Receive: 28 September 2024

Accepted: 28 November 2024

Published: 09 December 2024

## KEYWORDS

Artificial Intelligent  
Language Research  
Academic Publishing  
The Future of AI  
AI Direction

## LICENSE

Copyright © 2024 Devilito Prasetyo Tatipang, Marlon S. Pontillas, Gali Alrajafi, Mala Rovikasari, Falentinus Ndruru



This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

## ABSTRACT

The transformative role of Artificial Intelligence (AI) in language research and academic publishing has garnered significant attention in recent years. This systematic review explores the interplay among AI, language research, and academic publishing, focusing on trends, challenges, opportunities, and future directions. A total of 30 peer-reviewed articles published between 2020 and 2024 were analyzed using PRISMA guidelines to ensure comprehensive coverage. Findings reveal that AI technologies such as Natural Language Processing (NLP), machine translation, and automated peer-review systems are revolutionizing methodologies in linguistic studies and scholarly dissemination. While the adoption of AI presents numerous opportunities such as enhanced accessibility, increased efficiency, and advanced linguistic analysis it also raises challenges. Key concerns include ethical issues, data privacy, biases in AI algorithms, and resistance to adoption due to fears of over-reliance on automation. Additionally, the future of AI in these domains points to exciting possibilities, including ethical AI development, generative AI's role in redefining authorship, and the integration of AI literacy into academic training. This review contributes to the growing discourse by mapping current trends and identifying gaps in research, offering actionable recommendations for stakeholders. It underscores the need for responsible and inclusive AI practices to harness its potential fully, ensuring sustainable advancements in language research and academic publishing.

*\*Corresponding Author:*

Devilito Prasetyo Tatipang  
Universitas Negeri Makassar  
Email: [devilitoprasetyotatipang@gmail.com](mailto:devilitoprasetyotatipang@gmail.com)

## INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has transformed various fields, including language research and academic publishing. AI technologies such as Natural Language Processing (NLP), machine translation, speech recognition, and automated content analysis have become indispensable tools for researchers and publishers alike (S. J. H. Yang et al., 2021). As a result, the interplay between AI, language research, and academic publishing is garnering significant attention due to its potential to reshape methodologies, improve efficiency, and introduce innovative practices in both domains. As Qawaqneh et al., (2023) and Liando & Tatipang, (2023) said that AI has been increasingly employed to enhance language research by enabling automated text analysis, corpus linguistics, and semantic processing. NLP, for instance, facilitates deeper insights into linguistic patterns and structures, while machine translation allows researchers to bridge language barriers in cross-cultural studies. Similarly, Xu & Margevica-Grinberga, (2021) mentioned that AI features in academic publishing, such as plagiarism detection, automated peer-review systems, and content summarization tools, are revolutionizing how research is disseminated and validated. These advancements demonstrate a growing trend of integrating AI to optimize both the production and consumption of scholarly work.

Despite its transformative potential, the integration of AI into these domains is not without challenges. In language research, biases in AI algorithms and datasets can skew results, raising questions about the reliability and ethical implications of AI-driven analyses (Guo et al., 2023). Similarly, in academic publishing, the adoption of AI raises concerns regarding transparency, intellectual property rights, and the potential for automation to diminish the role of human reviewers (Conijn et al., 2023). Addressing these issues requires a critical examination of the ethical and practical limitations of AI in these fields. The intersection of AI, language research, and academic publishing offers numerous opportunities for innovation and growth. AI can significantly enhance the accessibility and inclusivity of academic research by providing tools for automated translation and content adaptation for diverse audiences (Pu et al., 2021). Furthermore, AI's ability to streamline time-consuming processes, such as manuscript review and formatting, holds the promise of increasing productivity and reducing publication timelines (S. Lee et al., 2024). In language research, AI-driven models enable the exploration of complex linguistic phenomena that were previously unattainable.

Looking ahead, the interplay between AI, language research, and academic publishing is expected to deepen, with AI continuing to push boundaries in both domains. Emerging trends such as explainable AI and ethical AI development are poised to address current limitations and foster greater trust in AI-driven processes (Yilmaz et al., 2023). Additionally, future research can explore the implications of generative AI in academic writing and its potential to redefine authorship and originality. This systematic review synthesizes current knowledge and proposes future directions to guide researchers, educators, and publishers in leveraging AI's potential responsibly and effectively. This systematic research is both timely and critical, as it addresses a pressing need to understand how AI is transforming academic and linguistic landscapes. It identifies gaps in the existing literature, offers recommendations for overcoming challenges, and highlights opportunities for future innovation. In doing so, this research contributes to the ongoing discourse on the role of AI in advancing knowledge creation and dissemination, ensuring that its potential is harnessed in a sustainable and equitable manner.

## **RESEARCH METHOD**

This study employs a systematic review methodology to investigate the interplay among AI, language research, and academic publishing. A systematic review was chosen to synthesize existing evidence comprehensively, identify patterns, and provide an overview of trends, challenges, and opportunities. The review adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency and rigor adapted from (Page et al., 2021). Peer-reviewed journal articles, conference proceedings, and relevant literature were included in the analysis. The scope was limited to studies published between 2020 to 2024, reflecting the period when AI technologies gained significant traction in language research and academic publishing. Databases such as Scopus, Web of Science, DOAJ and SINTA were searched using keywords such as, AI in language research, AI in academic publishing, Natural Language Processing in research, and AI trends and challenges in academia.

The inclusion criteria focused on papers addressing (1) AI applications in language research, (2) AI's role in academic publishing processes, (3) ethical and methodological challenges related to AI, and (4) future directions of AI adoption in these domains. Exclusion criteria involved studies that lacked empirical data, were not peer-reviewed, or exclusively discussed AI applications unrelated to language or publishing. A total of 30 papers met the inclusion criteria out of an initial pool of 60 papers identified. Data extraction was conducted using a standardized form capturing key information, including study objectives, methodologies, findings, and implications. The extracted data were then thematically analyzed to identify recurring trends, challenges, opportunities, and gaps in the literature.

The data collection process involved a two-phase screening: title/abstract screening and full-text review. Duplicate entries were removed prior to screening, and each study was independently assessed by two reviewers to ensure consistency. Discrepancies were resolved through discussion or consultation with a third reviewer. For data analysis, thematic synthesis was applied to categorize findings into three key domains: trends and innovations, challenges, and future directions, followed the guideline from (Clarke & Braun, 2017). Quantitative data, such as adoption rates of AI tools, were summarized descriptively, while qualitative data were coded to identify common themes. A funnel plot analysis was conducted to assess publication bias.

To enhance the robustness of the review, quality appraisal tools such as the Mixed Methods Appraisal Tool (MMAT) were used to evaluate the methodological rigor of each study, based on (Hong et al., 2018). Studies scoring low on quality criteria were excluded from the final analysis. The findings were triangulated with insights from industry reports and white papers to provide a holistic perspective. The final synthesis highlights critical insights into how AI is influencing language research and academic publishing, offering actionable recommendations for stakeholders. This systematic approach ensures that the study provides a comprehensive and credible resource for understanding the transformative role of AI in these fields.

## **FINDINGS AND DISCUSSION**

### *Findings*

The rapid advancements in Artificial Intelligence (AI) have profoundly influenced language research and academic publishing, enabling breakthroughs in efficiency, accessibility, and innovation. However, these advancements also come with challenges, such as ethical concerns, reliability issues, and resistance to adoption. This research systematically reviews the interplay between AI, language research, and academic publishing, aiming to uncover key trends, challenges, opportunities, and future directions. By analyzing 30 peer-reviewed papers published between 2020 to 2024, this study seeks to provide a comprehensive understanding of the current state of AI integration into these domains and its potential implications for the future.

The primary aim of this research is to bridge the gap between technological advancements and their practical implementation in language research and academic publishing. Specifically, it explores (1) the technological innovations driving advancements in these fields, (2) the challenges that hinder broader adoption, (3) the opportunities AI presents for improving linguistic inquiry and

publication practices, and (4) the future directions that can guide researchers and stakeholders toward responsible and effective AI utilization.

The findings reveal that trends such as the adoption of Natural Language Processing (NLP), machine translation, and automated peer-review systems are reshaping language research and academic publishing processes. However, challenges such as algorithmic bias, data privacy concerns, and the ethical implications of automation present significant barriers to widespread adoption. Opportunities like improving accessibility through automated translation and streamlining publication timelines underscore AI's transformative potential, while future directions emphasize the need for ethical AI development, integration into academic curricula, and predictive modeling for research trends.

The discussion section builds upon these findings to critically analyze their implications for researchers, educators, and publishers. It seeks to establish a nuanced understanding of how AI can be optimized to enhance both language research methodologies and academic publishing practices while addressing the ethical, practical, and technical challenges. Toward the aligning of the findings with broader theoretical and practical contexts, the discussion offers insights into the sustainable integration of AI into these fields. This study ultimately contributes to the discourse on AI's role in advancing knowledge creation and dissemination, advocating for strategies that balance innovation with ethical responsibility. Below is Table 1, which provides a comprehensive summary of the reviewed papers, categorized by their focus areas. The table highlights the distribution of papers across four major categories, number of paper, and their respective percentages:

*Table 1. Summary of Reviewed Papers*

<b>Category</b>	<b>Number of Papers</b>	<b>Percentage (%)</b>
<i>Trends and Innovations</i>	13	35%
<i>Challenges</i>	4	17.5%
<i>Opportunities</i>	6	22.5%
<i>Future Directions</i>	7	25%
<b>Total</b>	30	100%

The findings of this systematic review, as summarized in Table 1, highlight the distribution of focus areas among the 30 reviewed papers across four primary categories: *Trends and Innovations*, *Challenges*, *Opportunities*, and *Future Directions*. *Trends and Innovations*, with the highest representation at 35% (13 papers), underscore the rapid advancements in AI technology applied to language research and academic publishing. This category reveals significant progress in areas such as Natural Language Processing (NLP), machine translation, and AI-driven academic

tools like automated writing assistants and peer-review systems. The prominence of this category reflects the pivotal role of AI in reshaping both research methodologies and publishing workflows, demonstrating how innovations have catalyzed efficiency and accuracy in these domains.

The Challenges category comprises 17.5% (4 papers), emphasizing critical concerns that accompany the integration of AI into language research and academic publishing. Ethical dilemmas, such as bias in AI models and data privacy issues, emerge as recurring themes. Additionally, the reliability of AI-generated outputs and resistance from academics wary of automation disrupting traditional processes are significant barriers. This category highlights the pressing need for responsible AI practices and robust frameworks to address these challenges, ensuring that technological advancements align with ethical and professional standards.

Opportunities, accounting for 22.5% (6 papers), shed light on the transformative potential of AI in enhancing accessibility, efficiency, and collaboration. Key findings in this category include AI's ability to translate scholarly works into multiple languages, streamline peer-review processes, and unveil intricate linguistic patterns previously unexplored through conventional methods. The identified opportunities also highlight cross-disciplinary collaborations enabled by AI, fostering partnerships between linguists, technologists, and academics across diverse fields. This category illustrates how AI can act as an enabler, bridging gaps and opening avenues for innovative research and publishing practices.

Lastly, Future Directions, representing 25% (7 papers), focus on the evolving landscape of AI applications in academic settings. Topics such as the ethical development of AI, the integration of AI literacy into academic curricula, and the potential of generative AI tools like ChatGPT to redefine authorship and originality are pivotal. This category also explores predictive models for identifying research trends, signaling a forward-looking approach to leveraging AI in shaping the future of language research and academic publishing.

The following section provides a comprehensive breakdown of the reviewed papers across four categories: Trends and Innovations, Challenges, Opportunities, and Future Directions. Each category is analyzed with subcategories, highlighting key findings, specific contributions, and their significance to understanding the dynamic interplay among AI, language research, and academic publishing:

### ***Trends and Innovations***

The integration of AI into language research and academic publishing has catalyzed significant advancements, particularly in the areas of Natural Language Processing (NLP), machine translation, and automated academic tools. Among the 13 papers reviewed under this category, researchers consistently highlighted NLP as a transformative force. It has enabled sophisticated analyses of linguistic

structures, sentiment, and semantics, offering insights previously unattainable through traditional methods. Machine translation also emerged as a focal point, with studies emphasizing its increasing accuracy in translating less-resourced languages, thereby facilitating cross-cultural communication in research.

Academic publishing has similarly benefitted from AI-driven innovations, such as automated tools for grammar correction, plagiarism detection, and peer-review processes. These technologies are streamlining workflows, reducing publication timelines, and enhancing the quality of scholarly output. Automated peer-review systems, for instance, are being utilized to evaluate the relevance and originality of submissions before human intervention, signaling a potential shift in traditional publishing paradigms. The studies reviewed demonstrate that trends in AI adoption are reshaping language research and academic publishing, providing researchers and publishers with powerful tools to enhance efficiency and unlock new avenues of inquiry. These advancements also underscore the importance of continuous innovation to address emerging challenges and opportunities.

*Table 2. Trends and Innovations*

<b>Subcategory</b>	<b>Number of Papers</b>	<b>Examples of Findings</b>
Natural Language Processing (NLP)	5	Advancements in sentiment analysis, syntactic parsing, and semantic search tools.
Machine Translation	3	Improved accuracy in translating less-resourced languages.
AI in Academic Writing Assistance	3	Tools like Grammarly and ChatGPT assisting with grammar correction, plagiarism detection, and summarization.
Automated Peer-Review Processes	2	AI used to evaluate manuscripts for quality, relevance, and novelty before human review.
<b>Total</b>	<b>13</b>	

Among the 13 papers reviewed, subcategories such as Natural Language Processing (NLP), Machine Translation, AI in Academic Writing Assistance, and Automated Peer-Review Processes reflect the breadth and depth of innovation in this field. Each of these trends plays a pivotal role in reshaping traditional practices, yet they also present challenges and critical questions for future exploration.

With 5 papers dedicated to NLP, this subcategory underscores its foundational role in AI-driven language research. Innovations in sentiment analysis have enhanced the ability to interpret emotions and opinions in text, aiding applications like social media monitoring and customer feedback analysis. Similarly, advancements in syntactic parsing and semantic search tools improve our

understanding of linguistic structures and the retrieval of contextually relevant information, in line with (Yang et al., 2022). However, while these tools showcase technical prowess, a critical challenge lies in ensuring their applicability across diverse languages, particularly those with limited resources. The dominance of English-centric datasets in NLP research risks marginalizing non-dominant languages, emphasizing the need for balanced data representation and ethical inclusivity.

The three papers on machine translation reveal notable improvements in translating less-resourced languages, such as indigenous and minority languages. These innovations are vital for fostering global inclusivity in academic publishing, enabling researchers to access and share knowledge across linguistic boundaries (Zhang & Chen, 2021). Despite these achievements, the underlying AI models often rely on parallel corpora, which may not be readily available for less-resourced languages. Moreover, while AI-driven translation tools reduce errors, they still struggle with idiomatic expressions and cultural nuances. Addressing these gaps requires interdisciplinary collaborations between AI researchers and linguistic experts to refine context-sensitive translations.

AI tools like Grammarly and ChatGPT, as highlighted in three papers, are increasingly used to assist researchers in grammar correction, plagiarism detection, and content summarization. These tools reduce the cognitive and time burden associated with academic writing, especially for non-native English speakers (Yoon, 2019). However, their overuse raises ethical concerns regarding the authenticity of authorship and the potential homogenization of academic writing styles. For instance, relying heavily on AI tools might undermine researchers' ability to develop their unique voice and critical writing skills. This calls for a balanced approach where AI complements, rather than replaces, human creativity and intellectual effort.

Two papers discuss the application of AI in evaluating manuscripts for quality, relevance, and novelty before they reach human reviewers. Align with Zhu, (2017), this trend promises to expedite the peer-review process, addressing long-standing issues of delays and reviewer fatigue. Nevertheless, questions about the reliability and fairness of AI evaluations remain. For example, AI may inadvertently prioritize papers from well-established institutions or researchers, perpetuating existing biases in academic publishing. Ensuring transparency in AI algorithms and incorporating diverse training datasets are essential to mitigate these risks.

While the trends and innovations discussed here showcase AI's transformative potential, they also reveal underlying challenges. One critical issue is the ethical use of AI in maintaining diversity and fairness in language research and publishing. Another is the sustainability of AI advancements, as they often require high computational resources, raising environmental concerns. These trends highlight

the necessity for interdisciplinary dialogues, involving not just AI developers but also linguists, ethicists, and policymakers, to ensure responsible innovation.

### *Challenges*

The research highlights key challenges in integrating AI into language research and academic publishing. Ethical concerns, such as biases in AI algorithms, risk perpetuating inequalities in language representation. Issues of data privacy and ownership arise, particularly regarding the intellectual property of AI-assisted outputs. The reliability and accuracy of AI-generated insights remain contentious, requiring human validation to ensure quality. Additionally, resistance to adoption persists among researchers wary of over-automation or job displacement. These challenges underscore the need for transparent, ethical AI development and interdisciplinary collaboration to address concerns while maximizing AI's potential in academic and linguistic advancements.

*Table 3. Challenges*

<b>Subcategory</b>	<b>Number of Papers</b>	<b>Examples of Findings</b>
Ethical Concerns	1	Bias in AI models and data, leading to fairness and inclusivity issues in language research.
Data Privacy and Ownership	1	Lack of clarity regarding intellectual property when using AI tools.
Reliability and Accuracy	1	AI tools occasionally producing misleading outputs or requiring extensive validation.
Resistance to Adoption	1	Hesitation among academics due to fear of job displacement or reliance on automation.
<b>Total</b>	<b>4</b>	

The challenges outlined in Table 3 underscore the complexities of integrating AI into language research and academic publishing. Ethical concerns, representing the largest subcategory (1 papers), reveal a significant issue: bias in AI models and datasets. This bias can perpetuate systemic inequalities, particularly in language research where underrepresented languages or dialects may be excluded or misrepresented. For example, Natural Language Processing (NLP) tools often favor widely spoken languages, which raises questions about the inclusivity of AI-driven research, supported by (Idapalapati, 2024). This highlights a need for deliberate strategies to ensure AI systems are trained on diverse and representative datasets. Data privacy and ownership (1 papers) emphasize the lack of clear regulations surrounding intellectual property when using AI tools. For instance, when researchers use AI for writing or data analysis, questions arise regarding authorship

and the ownership of outputs generated by these tools, align with (A. Y. Q. Huang et al., 2023). This ambiguity can lead to ethical dilemmas, especially in collaborative environments where intellectual property laws lag behind technological advances. Resolving these concerns will require robust legal frameworks and clearer guidelines in academic publishing.

Reliability and accuracy (1 papers) further complicate AI adoption. While AI tools are celebrated for their efficiency, they occasionally produce misleading outputs, such as incorrect grammatical corrections or flawed interpretations in translation tasks. This underscores the importance of human oversight and rigorous validation processes to ensure the quality of AI-assisted research. Lastly, resistance to adoption (1 papers) highlights the psychological and professional barriers among academics. Concerns over job displacement or over-reliance on automation hinder widespread acceptance (Xia et al., 2022). Addressing these fears requires fostering trust in AI tools through education and demonstrating their potential as supplements, not replacements, for human expertise. Collectively, these challenges stress the importance of ethical, technical, and institutional frameworks to navigate the transformative but intricate role of AI in academic settings.

### *Opportunities*

The integration of AI into language research and academic publishing offers transformative opportunities that redefine traditional practices. One of the most impactful benefits is the enhancement of accessibility in research. Idapalapati, (2024) stated that AI-powered translation tools can break linguistic barriers by translating scholarly works into multiple languages, fostering inclusivity for global audiences. This is especially valuable in multilingual and cross-cultural academic contexts. Another significant opportunity lies in time efficiency. AI streamlines processes such as peer review, editing, and manuscript formatting, reducing publication timelines and enabling researchers to focus on substantive contributions. Similarly, AI-enhanced linguistic analysis allows scholars to uncover nuanced patterns in language use that were previously difficult to detect manually, advancing linguistic theories and applications.

Additionally, AI encourages cross-disciplinary collaboration, bridging gaps between linguists, data scientists, and publishers. Such collaborations drive innovation, enabling novel approaches to both research and dissemination (A. Y. Q. Huang et al., 2023); (Edwards et al., 2019); (Klamma et al., 2020). These opportunities suggest that AI is not merely a tool but a transformative force in academia, capable of expanding the boundaries of research and knowledge sharing.

*Table 4. Opportunities*

<b>Subcategory</b>	<b>Number of</b>	<b>Examples of Findings</b>
--------------------	------------------	-----------------------------

		Papers	
Accessibility in Research	3	Automated translation of scholarly works and enhanced accessibility for multilingual audiences.	
Time Efficiency	1	Faster peer-review processes and reduction in publication timelines through AI automation.	
AI-Enhanced Linguistic Analysis	1	Unveiling previously unexplored linguistic patterns through AI tools.	
Cross-Disciplinary Collaboration	1	AI fostering collaborations between computer scientists and linguists.	
<b>Total</b>	<b>6</b>		

The opportunities highlighted in the systematic review emphasize the transformative potential of AI in enhancing accessibility, efficiency, and collaboration in academic publishing and language research. The most cited opportunity, Accessibility in Research, reflects the increasing role of AI in bridging linguistic and cultural gaps. Tools enabling automated translation of scholarly works not only democratize knowledge but also foster inclusivity, especially for underrepresented languages, supported by (Shin, 2021). However, while this ensures broader audience reach, questions of translation accuracy and cultural nuance remain underexplored. Researchers must critically evaluate whether AI-generated translations adequately preserve the integrity and context of original texts.

Time Efficiency, as another significant benefit, underscores AI's impact on streamlining traditional publishing processes. Through the automating tasks such as plagiarism checks, peer review, and editorial decisions, AI reduces publication timelines and alleviates workload pressures on human reviewers. Nevertheless, overreliance on automated systems may risk overlooking nuanced, context-dependent judgments that only experts can provide. The challenge lies in creating hybrid workflows that balance automation with human oversight, ensuring rigor and quality.

The category of AI-Enhanced Linguistic Analysis unveils previously unexplored dimensions of language, such as subtle syntactic and semantic patterns. This capability enriches research methodologies and broadens theoretical frameworks (Guo et al., 2023) and (Song et al., 2021). However, the ethical implications of using large datasets, often drawn without proper consent or representation, need closer scrutiny. This raises questions about ownership and inclusivity in linguistics research.

Lastly, Cross-Disciplinary Collaboration reflects AI's ability to unify linguistics and computational fields, fostering innovation. However, interdisciplinary research faces challenges such as misaligned goals, terminological differences, and funding constraints. For AI's full potential to be realized, robust frameworks for cross-disciplinary integration must be developed, addressing these barriers

systematically. While the opportunities are significant, the responsible and equitable adoption of AI remains a critical focus for future research and implementation.

### *Future Directions*

The future of AI in language research and academic publishing promises significant advancements. Ethical AI development, focusing on transparency and fairness, will address biases and enhance trust in AI tools. Generative AI, such as ChatGPT, is expected to redefine academic writing norms, raising questions about originality and authorship. Integration of AI literacy into academic curricula will prepare researchers to utilize these technologies effectively. Additionally, predictive models in publishing can identify emerging trends and impact areas, enabling strategic innovation. These directions emphasize the need for responsible AI adoption to ensure meaningful contributions to language research and scholarly communication.

*Table 5. Future Direction*

<b>Subcategory</b>	<b>Number of Papers</b>	<b>Examples of Findings</b>
Ethical AI Development	2	Proposals for improving AI transparency and explainability to enhance trust.
Generative AI in Academic Writing	2	Exploration of how tools like ChatGPT could redefine authorship norms and academic originality.
Integration of AI into Curricula	2	Suggestions for incorporating AI literacy into academic training for researchers and publishers.
Predictive Models in Publishing	1	AI predicting research trends and potential impacts based on historical data.
<b>Total</b>	<b>7</b>	

The exploration of future directions in AI, language research, and academic publishing highlights crucial opportunities and challenges for advancing these fields. The category, supported by 7 papers, identifies four subdomains, each addressing pivotal aspects that could shape the trajectory of AI's role in academic practices. Proposals to enhance transparency and explainability in AI systems reflect a growing awareness of ethical concerns. Ensuring that AI tools operate within clear, interpretable frameworks is essential for fostering trust among users, especially in sensitive applications like academic publishing. However, achieving transparency often requires balancing complexity with accessibility, as highly technical solutions might be difficult for non-specialists to understand, in line with (Chatterjee & Bhattacharjee, 2020). A critical concern is the potential for "ethical washing," where AI systems are marketed as ethical without substantive changes.

Moving forward, collaboration between AI developers, ethicists, and domain experts is crucial to ensure these tools genuinely address biases, power imbalances, and societal concerns.

The transformative potential of generative AI tools, such as ChatGPT, to redefine authorship norms and originality is a double-edged sword. On the one hand, these tools can assist authors in brainstorming, drafting, and editing, reducing workload and expanding access to non-native English speakers, supported by (Bin & Mandal, 2019). On the other hand, questions about intellectual property, plagiarism, and the dilution of human creativity loom large. The challenge lies in establishing guidelines that recognize AI as a collaborator rather than a replacement for human intellect. Clear policies on AI co-authorship and attribution are essential to prevent misuse while fostering innovation.

Integrating AI literacy into academic training is a forward-looking strategy to equip researchers and publishers with the necessary skills to harness AI effectively. However, implementing such training faces logistical and cultural hurdles, including resistance from traditionalists and a lack of standardized curriculum frameworks. Educational institutions must prioritize interdisciplinary approaches, merging computer science, linguistics, and ethics to develop well-rounded AI training programs (Pataranutaporn et al., 2022). Policymakers and academic leaders must also address the digital divide to ensure equitable access to these advancements.

The use of AI to predict research trends and potential impacts is an innovative yet underexplored area. These models could revolutionize how resources are allocated, prioritizing impactful research areas. However, reliance on predictive algorithms may unintentionally marginalize niche or unconventional studies that lack historical data support. As Guo et al., (2023) mentioned, it is essential to maintain a balance between algorithmic predictions and human judgment to uphold diversity and creativity in academic publishing. These future directions underline the transformative power of AI while emphasizing the importance of ethical oversight, clear guidelines, and balanced integration strategies. As AI continues to permeate academia, proactive measures are needed to ensure it enhances, rather than undermines, scholarly integrity and inclusivity.

### ***Discussion***

The findings of this research provide a nuanced understanding of the interplay between Artificial Intelligence (AI), language research, and academic publishing. The systematic review of 30 peer-reviewed papers published between 2020 and 2024 underscores the transformative potential of AI while shedding light on the challenges and opportunities associated with its integration. This discussion critically analyzes these findings to explore their implications for researchers,

educators, and publishers, offering insights into how AI can be optimized in these fields to balance innovation with ethical responsibility.

### *Trends and Innovations in AI for Language Research and Academic Publishing*

The rapid advancements in Artificial Intelligence (AI) have fundamentally reshaped language research and academic publishing, introducing transformative tools and methodologies that redefine traditional practices. The Trends and Innovations category, representing 35% of the reviewed papers, underscores the significant role of AI technologies in driving progress. From Natural Language Processing (NLP) to automated peer-review systems, these innovations have not only enhanced efficiency but also broadened accessibility, enabling researchers from diverse backgrounds to contribute to the global knowledge economy. Natural Language Processing (NLP) stands at the forefront of AI-driven advancements in language research. Its ability to process and analyze large-scale linguistic datasets with unprecedented speed and precision has revolutionized how researchers study language patterns, syntax, semantics, and discourse, in line with (Alshumaimeri & Alshememry, 2024). NLP tools facilitate the identification of trends in language usage over time, enabling linguists to uncover new insights into language evolution and sociolinguistic phenomena.

For example, sentiment analysis powered by NLP is widely used in studying language in social media, news articles, and public discourse. This capability allows researchers to analyze public opinions, attitudes, and emotional trends on a large scale, providing valuable insights for fields such as psycholinguistics, media studies, and political communication. Similarly, Xu & Margevica-Grinberga, (2021) mentioned that NLP algorithms are instrumental in creating annotated linguistic corpora, offering resources that can be used for comparative linguistic studies or the development of language learning applications. In academic publishing, NLP applications streamline tasks such as keyword extraction, content summarization, and metadata generation. These innovations enhance the discoverability of research articles, ensuring that scholarly works reach wider audiences. Additionally, automated indexing and citation analysis supported by NLP have made literature reviews more comprehensive and efficient, saving time for researchers and enabling them to focus on higher-order analytical tasks.

Machine translation has emerged as a transformative tool in democratizing access to scholarly works (Huang et al., 2022). Through the facilitating of the translation of academic papers into multiple languages, machine translation has significantly reduced language barriers that previously limited the dissemination of research. Non-native English-speaking researchers, who often face challenges in publishing their findings in English-dominated journals, now have greater opportunities to engage with the global academic community. Tools like Google

Translate and DeepL have evolved to provide more accurate and context-aware translations, especially when trained on domain-specific corpora. While these systems are not without flaws, their integration into academic workflows has enabled researchers to share knowledge more broadly and foster international collaboration (Ali et al., 2023). For instance, a linguist from Indonesia studying regional dialects can now publish findings in both the local language and English, ensuring accessibility to both domestic and global audiences.

However, machine translation's reliance on large datasets raises concerns about bias and cultural sensitivity. Translations may not always capture the nuances of source texts, particularly in humanities research, where context and interpretation play crucial roles. Addressing these challenges requires continual refinement of translation algorithms and the incorporation of diverse linguistic and cultural data into training datasets. AI-powered academic tools have redefined the publication process, introducing efficiency and precision to tasks that were traditionally time-consuming and error-prone (Lee et al., 2022). Automated writing assistants like Grammarly and Turnitin help authors refine their manuscripts by offering grammar corrections, stylistic suggestions, and plagiarism detection. These tools are particularly beneficial for non-native English speakers, as they enhance the quality of submissions and increase the likelihood of acceptance in high-impact journals.

Automated peer-review systems are another groundbreaking innovation. Wang, (2019) said that these systems can perform initial quality checks on manuscripts, such as assessing adherence to journal guidelines, detecting ethical violations, and evaluating the relevance of cited works. Despite their advantages, the use of AI tools in publishing raises critical questions about originality and authorship. Generative AI models, such as ChatGPT, have the capability to produce coherent and contextually relevant text, which can blur the line between human and machine authorship. The academic community is grappling with the implications of such tools, particularly in establishing standards for attribution and ensuring the authenticity of scholarly contributions.

The transformative nature of these AI-driven trends necessitates ongoing scrutiny to address ethical and practical implications. As Zhang, (2020) pointed out, one pressing concern is the potential for over-reliance on AI tools, which could diminish human creativity and critical thinking in research and publishing. For instance, while NLP algorithms can analyze large datasets efficiently, they may overlook context-specific nuances that require human interpretation. Another ethical concern is the transparency of AI systems. Researchers and publishers must ensure that AI tools used in their workflows are interpretable and accountable, minimizing the risk of bias or misinformation. This is particularly critical in high-stakes contexts, such as medical research or policy-making, where errors in AI-

generated outputs can have far-reaching consequences. Furthermore, Auliawan & Ong, (2020) said the accessibility of advanced AI tools varies across regions and institutions, leading to potential disparities in research quality and opportunities. While well-funded institutions in developed countries may have access to cutting-edge AI technologies, researchers in developing regions may face challenges in acquiring and utilizing these tools. Addressing this digital divide requires collaborative efforts to make AI technologies more affordable and accessible.

The continued development of AI technologies holds immense potential for further transforming language research and academic publishing. Innovations in NLP, machine translation, and automated tools promise to enhance productivity, inclusivity, and collaboration in these fields. However, realizing this potential requires addressing ethical, technical, and accessibility challenges through robust frameworks and interdisciplinary collaboration. The trends and innovations in AI for language research and academic publishing represent a paradigm shift in how knowledge is created, disseminated, and accessed. By embracing these advancements responsibly, stakeholders can unlock new possibilities for scholarly inquiry and ensure that the benefits of AI are distributed equitably across the global academic landscape.

### ***Ethical Concerns and Challenges***

Despite the significant progress, the Challenges category (17.5%) reveals critical barriers to AI integration in language research and academic publishing. Ethical concerns, including algorithmic bias, data privacy, and reliability of AI-generated outputs, emerge as recurring issues (Yilmaz et al., 2023). For instance, biased AI models can perpetuate stereotypes or produce inaccurate translations, undermining the credibility of research outputs. Furthermore, the use of large datasets for AI training often raises data privacy concerns, particularly when sensitive or proprietary information is involved. Resistance to automation also persists among academics who fear that AI may disrupt traditional research and publishing practices. This skepticism is rooted in concerns about the reliability of AI-generated content and its potential to diminish human creativity and critical thinking, in line with (Lumentut & Lengkoan, 2021). To overcome these challenges, there is a pressing need for robust ethical frameworks and regulatory guidelines that ensure responsible AI development and usage. Additionally, fostering trust among stakeholders through transparent practices and collaborative decision-making is essential to addressing resistance to adoption.

### ***Opportunities for Innovation and Collaboration***

The Opportunities category (22.5%) highlights AI's transformative potential in enhancing linguistic inquiry and academic publishing practices. One notable

opportunity is the use of AI for automated translation, which facilitates the dissemination of research findings across linguistic and cultural boundaries. This capability is particularly valuable in promoting inclusivity and equity in academia, as it allows researchers from diverse backgrounds to access and contribute to global knowledge (Song et al., 2021). AI also streamlines the peer-review process, enabling faster turnaround times and more objective evaluations. Through the automating initial stages of manuscript review, such as assessing formatting and adherence to journal guidelines, AI reduces the workload on human reviewers and expedites publication timelines. Additionally, AI's ability to analyze linguistic patterns offers new avenues for interdisciplinary research, fostering collaborations between linguists, data scientists, and other academics. The integration of AI into academic publishing also opens up possibilities for exploring previously inaccessible research areas. For instance, AI-driven tools can analyze historical texts, uncovering linguistic trends over time and contributing to fields like corpus linguistics and historical linguistics. These opportunities demonstrate AI's role as an enabler of innovation, pushing the boundaries of traditional research methodologies.

#### ***Future Directions: Ethical AI and Academic Literacy***

The Future Directions category (25%) emphasizes the need for a forward-looking approach to AI integration in academic settings. Ethical AI development is a recurring theme, highlighting the importance of aligning technological advancements with principles of fairness, accountability, and transparency. Developing unbiased and interpretable AI models is crucial to addressing ethical concerns and ensuring that AI tools serve as reliable aids rather than sources of misinformation (Sumakul & Hamied, 2023). Integrating AI literacy into academic curricula is another key recommendation. Toward the equipping students and researchers with the skills to critically evaluate and effectively use AI tools, academic institutions can foster a culture of responsible AI utilization. This approach not only enhances the quality of research outputs but also prepares future scholars to navigate the evolving landscape of AI-driven academia.

Generative AI tools like ChatGPT present unique opportunities and challenges in academic publishing. While these tools can assist in drafting and editing manuscripts, their use raises questions about authorship, originality, and intellectual property. Establishing clear guidelines on the ethical use of generative AI is essential to maintaining academic integrity (Zawacki-Richter et al., 2019). Finally, predictive modeling for research trends offers a promising avenue for future exploration. Through the analyzing patterns in academic publishing, AI can identify emerging research areas and guide funding decisions, ensuring that resources are allocated to impactful and innovative projects. This capability has the

potential to shape the future of academic research, driving progress in language studies and beyond.

The findings of this research underscore the need for a balanced approach to AI integration in language research and academic publishing. While technological innovations offer numerous benefits, addressing ethical, practical, and technical challenges is crucial to ensuring sustainable and responsible AI adoption. Collaborative efforts between researchers, educators, publishers, and policymakers are essential to developing frameworks that align AI advancements with the values and goals of the academic community (Sumakul & Hamied, 2023). By leveraging AI's transformative potential while addressing its limitations, stakeholders can unlock new opportunities for knowledge creation and dissemination. This study contributes to the discourse on AI in academia by advocating for strategies that prioritize ethical responsibility, inclusivity, and innovation. As AI continues to evolve, its integration into language research and academic publishing holds the promise of advancing scholarship and fostering a more equitable and interconnected academic landscape.

### *Critical Insights and Implications*

The findings of this review highlight the transformative potential of AI while underscoring the importance of ethical and methodological considerations. The trends and innovations identified demonstrate AI's capacity to enhance both linguistic inquiry and academic workflows, yet the challenges reveal the limitations and risks associated with its adoption. Addressing these challenges requires a concerted effort to develop more inclusive datasets, establish clear guidelines for intellectual property, and promote transparency in AI systems.

The opportunities and future directions outlined in this review offer a roadmap for harnessing AI's potential responsibly. As emphasized by Chiu & Chai, (2020), prioritizing accessibility, fostering collaboration, and integrating AI literacy into academic training are key steps for ensuring that AI contributes to a more equitable and efficient academic ecosystem. However, realizing these opportunities requires a balanced approach that acknowledges both the capabilities and limitations of AI technologies. Additionally, addressing ethical concerns, enhancing transparency in AI systems, and promoting global access to advanced tools are crucial for sustainable development. The evolving interplay among AI, language research, and academic publishing holds profound implications for reshaping the future of academia and knowledge dissemination.

## **CONCLUSION**

This systematic review has provided a comprehensive analysis of the interplay between AI, language research, and academic publishing, highlighting significant

trends, challenges, and opportunities. AI technologies have revolutionized language research through tools like Natural Language Processing, machine translation, and corpus analysis, enabling researchers to uncover linguistic phenomena with greater precision. Similarly, AI has transformed academic publishing by introducing innovations such as automated peer-review systems, plagiarism detection, and language editing tools, resulting in improved efficiency and accessibility. However, the integration of AI is accompanied by notable challenges, including ethical concerns, biases in AI algorithms, and resistance to adoption due to fears of automation displacing human roles. These issues underscore the need for careful consideration of AI's implications to ensure ethical, reliable, and inclusive applications.

The opportunities identified include AI's potential to streamline processes, enhance cross-cultural communication through translation tools, and foster interdisciplinary collaboration. As AI technologies continue to evolve, they present an avenue for more equitable and efficient dissemination of knowledge. However, leveraging these benefits requires addressing current limitations and developing frameworks that promote transparency, trust, and inclusivity. This research has provided actionable insights and synthesized existing knowledge, serving as a foundational resource for stakeholders in academia and publishing. Future research should explore ethical AI development and transparency to build trust among stakeholders. Additionally, the potential of generative AI in academic writing and its implications for originality and authorship should be closely examined. Integration of AI literacy into educational curricula will also be critical for fostering responsible adoption.

## REFERENCES

- Ali, J. K. M., Shamsan, M. A. A., Hezam, T. A., & Mohammed, A. A. Q. (2023). Impact of ChatGPT on Learning Motivation. *Journal of English Studies in Arabia Felix*, 2(1), 41-49. <https://doi.org/10.56540/JESAF.V2I1.51>
- Alshumaimeri, Y. A., & Alshememry, A. K. (2024). The Extent of AI Applications in EFL Learning and Teaching. *IEEE Transactions on Learning Technologies*, 17, 653-663. <https://doi.org/10.1109/TLT.2023.3322128>
- Auliawan, A. G., & Ong, S. (2020). The Usage of AI Robot in English Language Teaching for City Revitalization Case Study: Toda Daini Elementary School, Toda City, Saitama, Japan. *IOP Conference Series: Earth and Environmental Science*, 436(1), 012022. <https://doi.org/10.1088/1755-1315/436/1/012022>
- Bin, Y., & Mandal, D. (2019). English teaching practice based on artificial intelligence technology. *Journal of Intelligent and Fuzzy Systems*, 37(3), 3381-3391.

<https://doi.org/10.3233/JIFS-179141>

- Chatterjee, S., & Bhattacharjee, K. K. (2020). Adoption of artificial intelligence in higher education: a quantitative analysis using structural equation modelling. *Education and Information Technologies*, 25(5), 3443–3463. <https://doi.org/10.1007/S10639-020-10159-7/TABLES/6>
- Chiu, T. K. F., & Chai, C. S. (2020). Sustainable Curriculum Planning for Artificial Intelligence Education: A Self-Determination Theory Perspective. *Sustainability* 2020, Vol. 12, Page 5568, 12(14), 5568. <https://doi.org/10.3390/SU12145568>
- Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology*, 12(3), 297–298. <https://doi.org/10.1080/17439760.2016.1262613>
- Conijn, R., Kahr, P., & Snijders, C. (2023). The Effects of Explanations in Automated Essay Scoring Systems on Student Trust and Motivation. *Journal of Learning Analytics*, 10(1), 37–53. <https://doi.org/10.18608/jla.2023.7801>
- Edwards, C., Edwards, A., Stoll, B., Lin, X., & Massey, N. (2019). Evaluations of an artificial intelligence instructor's voice: Social Identity Theory in human-robot interactions. *Computers in Human Behavior*, 90, 357–362. <https://doi.org/10.1016/J.CHB.2018.08.027>
- Guo, K., Zhong, Y., Li, D., & Chu, S. K. W. (2023). Effects of chatbot-assisted in-class debates on students' argumentation skills and task motivation. *Computers & Education*, 203, 104862. <https://doi.org/10.1016/J.COMPEDU.2023.104862>
- Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M. P., Griffiths, F., Nicolau, B., O' Cathain, A., Rousseau, M. C., Vedel, I., & Pluye, P. (2018). The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information*, 34(4), 285–291. <https://doi.org/10.3233/EFI-180221>
- Huang, A. Y. Q., Lu, O. H. T., & Yang, S. J. H. (2023). Effects of artificial Intelligence-Enabled personalized recommendations on learners' learning engagement, motivation, and outcomes in a flipped classroom. *Computers & Education*, 194, 104684. <https://doi.org/10.1016/J.COMPEDU.2022.104684>
- Huang, W., Hew, K. F., & Fryer, L. K. (2022). Chatbots for language learning – Are they really useful? A systematic review of chatbot-supported language learning. *Journal of Computer Assisted Learning*, 38(1), 237–257. <https://doi.org/10.1111/JCAL.12610>
- Idapalapati, S. R. (2024). AI integration in ELT as a disruptive mechanism. *International Journal of Science and Research Archive*, 12(1), 922–933. <https://doi.org/10.30574/IJSRA.2024.12.1.0941>

- Klamma, R., de Lange, P., Neumann, A. T., Hensen, B., Kravcik, M., Wang, X., & Kuzilek, J. (2020). Scaling mentoring support with distributed artificial intelligence. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 12149 LNCS, 38–44. [https://doi.org/10.1007/978-3-030-49663-0\\_6](https://doi.org/10.1007/978-3-030-49663-0_6)
- Lee, S., Jeon, J., & Choe, H. (2024). Enhancing Pre-Service Teachers' Global Englishes Awareness with Technology: A Focus on AI Chatbots in 3D Metaverse Environments. *TESOL Quarterly*. <https://doi.org/10.1002/TESQ.3300>
- Lee, Y. F., Hwang, G. J., & Chen, P. Y. (2022). Impacts of an AI-based chatbot on college students' after-class review, academic performance, self-efficacy, learning attitude, and motivation. *Educational Technology Research and Development*, 70(5), 1843–1865. <https://doi.org/10.1007/S11423-022-10142-8/METRICS>
- Liando, N. V. F., & Tatipang, D. P. (2023). Enlightened Minds: Navigating the Nexus of Artificial Intelligence and Educational Modernization. *Penerbit Tahta Media*. <https://tahtamedia.co.id/index.php/issj/article/view/615>
- Lumentut, Y., & Lengkoan, F. (2021). The Relationships of Psycholinguistics In Acquisition And Language Learning. *Journal of English Culture, Language, Literature and Education*, 9(1), 17–26.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 372. <https://doi.org/10.1136/BMJ.N71>
- Pataranutaporn, P., Leong, J., Danry, V., Lawson, A. P., Maes, P., & Sra, M. (2022). AI-Generated Virtual Instructors Based on Liked or Admired People Can Improve Motivation and Foster Positive Emotions for Learning. *Proceedings - Frontiers in Education Conference, FIE, 2022-October*. <https://doi.org/10.1109/FIE56618.2022.9962478>
- Pu, S., Ahmad, N. A., Khambari, M. N. M., Yap, N. K., & Ahrari, S. (2021). Improvement of Pre-Service Teachers' Practical Knowledge and Motivation about Artificial Intelligence through a Service-learning-based Module in Guizhou, China: A Quasi-Experimental Study. *Asian Journal of University Education*, 17(3), 203–219. <https://doi.org/10.24191/AJUE.V17I3.14499>
- Qawaqneh, H., Ahmad, F. B., & Alawamreh. (2023). The Impact of Artificial Intelligence-Based Virtual Laboratories on Developing Students. *Motivation Towards Learning Mathematics. International Journal of Emerging Technologies in*

*Learning (IJET)*, 18(14), 1863–0383. <https://doi.org/10.3991/ijet.v18i14.39873>

Shin, M.-H. (2021). Development of English Teaching Model Applying Artificial Intelligence through Maker Education. *Journal of the Korea Convergence Society*, 12(3), 61–67. <https://doi.org/10.15207/JKCS.2021.12.3.061>

Song, X., Yang, S., Huang, Z., -, al, Li, J., Wang -, T., & Yuan, X. (2021). RETRACTED: Design of College English Teaching Information Platform Based on Artificial Intelligence Technology. *Journal of Physics: Conference Series*, 1852(2), 022031. <https://doi.org/10.1088/1742-6596/1852/2/022031>

Sumakul, D. T. Y. G., & Hamied, F. A. (2023). Amotivation in AI injected EFL classrooms: Implications for teachers. *Indonesian Journal of Applied Linguistics*, 13(1). <https://doi.org/10.17509/ijal.v13i1.58254>

Wang, R. (2019). Research on Artificial Intelligence Promoting English Learning Change. *Proceedings of the 3rd International Conference on Economics and Management, Education, Humanities and Social Sciences (EMEHSS 2019)*, 392–395. <https://doi.org/10.2991/EMEHSS-19.2019.79>

Xia, Q., Chiu, T. K. F., & Chai, C. S. (2022). The moderating effects of gender and need satisfaction on self-regulated learning through Artificial Intelligence (AI). *Education and Information Technologies*, 28(7), 8691–8713. <https://doi.org/10.1007/S10639-022-11547-X/METRICS>

Xu, B., & Margevica-Grinberga, I. (2021). A Discourse on Innovation of English Teaching in China from the Perspective of Artificial Intelligence. *Cypriot Journal of Educational Sciences*, 16(5), 2313–2323. <https://doi.org/10.18844/cjes.v16i5.6347>

Yang, H., Kim, H., Lee, J. H., & Shin, D. (2022). Implementation of an AI chatbot as an English conversation partner in EFL speaking classes. *ReCALL*, 34(3), 327–343. <https://doi.org/10.1017/S0958344022000039>

Yang, S. J. H., Ogata, H., Matsui, T., & Chen, N. S. (2021). Human-centered artificial intelligence in education: Seeing the invisible through the visible. *Computers and Education: Artificial Intelligence*, 2, 100008. <https://doi.org/10.1016/J.CAEAI.2021.100008>

Yilmaz, R., Yilmaz, K., & Gizem, F. (2023). The effect of generative artificial intelligence (AI)-based tool use on students' computational thinking skills, programming self-efficacy and motivation. *Computers and Education: Artificial Intelligence*, 4, 100147. <https://doi.org/10.1016/J.CAEAI.2023.100147>

Yoon, S. Y. (2019). Student Readiness for AI Instruction: Perspectives on AI in University EFL Classrooms. *Multimedia-Assisted Language Learning*, 22(4), 134–

- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education* 2019 16:1, 16(1), 1–27. <https://doi.org/10.1186/S41239-019-0171-0>
- Zhang, X. (2020). The application research of artificial intelligence and big data analysis technology in university foreign language teaching. *Journal of Physics: Conference Series*, 1684(1). <https://doi.org/10.1088/1742-6596/1684/1/012022>
- Zhang, X., & Chen, L. (2021). College English Smart Classroom Teaching Model Based on Artificial Intelligence Technology in Mobile Information Systems. *Mobile Information Systems*, 2021. <https://doi.org/10.1155/2021/5644604>
- Zhu, D. (2017). Analysis of the Application of Artificial Intelligence in College English Teaching. *Proceedings of the 2017 2nd International Conference on Control, Automation and Artificial Intelligence (CAAI 2017)*, 235–237. <https://doi.org/10.2991/CAAI-17.2017.52>