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Empowerment of English Academic Writing with Technology

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Abstract

Academic writing is an essential skill in higher education, yet English academic paper composition faces challenges such as expression difficulties, incomplete content, citation standardisation issues, and format non-compliance. Teachers often struggle to provide comprehensive feedback within traditional classroom settings. Leveraging digital technology presents a promising solution. It broadens academic horizons, helps select research topics, and aids in refining language proficiency. Additionally, digital tools facilitate typesetting and formatting adjustments, easing the burden of intricate details. Furthermore, it enriches academic writing by introducing visual presentation.

Keywords: English academic writing; Artificial technology; Research topic selection; Language expression; Academic writing standardisation

1. Introduction

Academic English writing plays a crucial role in college English education and is a key indicator of students' abilities. Writing academic papers in English is a significant aspect of this process. However, producing academic papers can be challenging for both native speakers and non-native learners of the language. Learners should be proficient in language use and capable of establishing strong logical connections and constructing solid arguments. Therefore, specialised instruction is necessary to guide and support them in enhancing their academic writing skills. (Chen Jing et al., 2024).

2. Literature Review

In the digital age, online learning is crucial in enhancing self-learning abilities. The essentials lie in effectively utilising these digital resources and selecting which specialised resources to use. Many scholars in China and internationally focus on environmental affordance and employ digital tools to address the limitations of traditional classrooms. This approach actively engages students and fosters

their independent learning skills. Wang and Li (2023) conducted a study involving 34 undergraduate students majoring in English. They used the I-write writing teaching and review system to investigate the effects of a multi-feedback approach, which included feedback from the AWE system, online teachers, and online peers, on English learners' academic English writing performance. The findings indicate that this online multi-feedback mode significantly aids English learners in enhancing their academic English writing skills. Wang (2020) employed a corpus-driven approach that utilised foreign language education technology to seamlessly integrate the academic English writing classroom with personalised writing feedback. Wang's study aimed to develop an online multi-feedback model suitable for academic English writing courses. The results demonstrated that this teaching method significantly enhances students' ability to write abstract content. Han et al. (2021) compared two technology-mediated modes: Icourse, a learning management system, and Icourse+ Correction Network, alongside a control group that did not use any technology. The study aimed to explore the perceptions of 280 Chinese undergraduate students majoring in English regarding their academic writing performance, lexical complexity, and strategies for self-regulating their academic writing. The results indicated that the self-regulation strategy supported by Icourse+ Correction is more effective in enhancing students' academic writing performance, as it promotes increased writing practice and provides valuable error correction feedback. He (2019) utilised the Perceptive online peer review system developed by the University of Pittsburgh as the initial component of a cooperative writing approach. The second component was personalised guidance from the teacher. This study examined the impact of the combined model of "online peer review and offline face-to-face counselling from the teacher" on students' academic English writing skills. The findings indicate that this approach enhances the revision of written texts, strengthens knowledge of academic discourse, and improves students' ability to solve problems independently.

International research is also quite extensive. Ahmed et al. (2021) conducted collaborative activities using Google Docs to explore their potential impact on English academic writing skills. The results revealed that students in a fully online English as a Foreign Language (EFL) academic writing course significantly improved their overall writing skills, particularly in task response and vocabulary usage. Li et al. (2020) explored the impact of digital writing software as a writing process method tool on the academic writing performance of Malaysian teacher trainees. The study found that using digital writing software as a writing process tool can improve teacher trainees' academic writing performance and help cultivate their academic writing understanding and practical ability. Saricaoglu and Bilki (2021) reported on the voluntary use of automatic writing evaluation (AWE) tools by English as a Foreign Language (EFL) students in Turkey. Their findings indicate that students who actively utilise this tool significantly reduce grammatical and pragmatic errors in their academic writing. Additionally, Taskiran and Goksel (2022) investigated the role of digital tools in the academic paper-writing processes of six Polish students. Their results suggest that digital tools are an essential intermediary between students' academic abilities and social material learning environments, highlighting their significance in the learning experience.

These studies provide practical evidence for the application and impact of digital technology in English academic writing, emphasising the potential influence of intelligent resources on writing skills. However, current research primarily focuses on intelligent academic writing tools, particularly automatic writing evaluation systems, that provide feedback on language use and grammatical correctness. While improving the correctness and standardisation of academic language is crucial for developing writing skills, academic English writing encompasses many other aspects, as noted by

Razi (2015).

Chinese scholars also argue that teaching academic English writing skills should involve cultivating students' research abilities, such as literature searching, summarisation, information integration, research methods, data collection, and analysis skills. Only by developing a comprehensive set of academic research skills can one truly master the writing techniques required for academic research papers (He, 2019). Zhang (2021) believes that the difficulty of English paper writing for Chinese graduate students mainly lies in the following aspects: language-related issues, research reporting methods, research topic and method positioning, academic publication cognition and practice. Li et al. (2022) believe that the difficulty of academic writing mainly lies in "expression difficulties, mainly vocabulary" (accounting for 52.94%), "writing materials are not rich enough" (accounting for 47.06%), and "when encountering difficulties, the primary way to rely on online consulting (92%). At the undergraduate stage, the fundamental problems of incomplete introduction content, unstandardised references and references, non-academic language expression, unclear statements of views, and poor paper format are still common.

Razi (2015) developed a set of standards for evaluating academic English writing based on the standards established by Campbell and Fiske (1959). These standards include essential guiding principles to ensure that papers meet high-quality requirements in both content and form.

Firstly, the standards highlight the significance of topic selection and encourage the citation of relevant materials to support arguments when necessary. The paper's format should also adhere to established guidelines, including appropriate titles, consistent paragraph structure, and correct punctuation. The standards also stress the importance of clearly stating the paper's goals in the introduction, using citations judiciously, balancing the use of passive voice, and maintaining appropriate paragraph length. Furthermore, they outline requirements for paper length, the number and reliability of reference sources, the proportion of secondary materials used, and the proper formatting of reference entries. This ensures that the paper is complete and credible, leading to meaningful conclusions and discussions. Razi posited that the writing process of academic papers begins with establishing research topics, followed by conveying academic ideas through practical language expression. Therefore, the continuous topic selection process, logical writing standards, and academic presentation are critical to successful academic writing.

Relying solely on individual teacher feedback is insufficient to meet the demands of contemporary education; new learning modes are urgently needed to address current challenges. However, there is a lack of domestic research in these areas, and relevant evidence for discussing various aspects of academic English writing abilities is still limited. This study explores the different stages of academic paper writing and the opportunities and challenges presented by advancements in intelligent technology.

3. Enhancing Academic English Writing through Intelligent Technology

The empowerment of intelligent technology in academic writing refers to the various capabilities and advantages provided by digital tools, which can improve the process and outcomes of academic writing. It is mainly about how digital technology enables researchers, scholars, and students to engage in academic writing more efficiently, effectively, and innovatively.

3.1 Digital Technology Empowerment for Topic Selection

Firstly, the role of big data in resource search is mainly reflected in improving search efficiency, discovering new information and relationships, promoting data sharing and open science, and supporting personalised and precise resource positioning. These roles are of great significance for improving academic research and educational practice. First, using digital technology can allow the acquisition of resources from online databases and digital libraries, completely changing the way of academic resource acquisition. Big data has promoted the development of open science and data sharing. Through open data-sharing policies, researchers can access more data resources, which not only enhances transparency and peer supervision but also encourages diverse analyses and opinions, accelerates the education of new researchers, and stimulates the exploration of new topics that the original researchers did not anticipate. In addition, big data helps scholars discover new relationships and information. Big data allows researchers to discover new information, facts, relationships, indicators, and directions previously impossible. This ability enables researchers to search and identify valuable patterns and connections in massive data. It is essential for resource search because it can help discover resources and knowledge that were not noticed before.

At the same time, by using extensive data analysis, researchers can predict future research trends and patterns, an essential advantage of resource search (Janvrin & Watson, 2017).

The characteristics of big data in resource search provide unprecedented support and convenience for student topic selection. First, students can quickly identify current research hotspots and trends by analysing academic documents, research data, and social media content, thereby selecting topics with contemporary significance and research value. Secondly, big data technology can reveal potential connections between different disciplines, stimulate students' interdisciplinary thinking, and promote the formation of innovative thinking, which is of great importance for expanding research horizons and determining research topics. In addition, by using data mining and text analysis tools, students can deeply mine relevant information about specific topics, discover research gaps and issues that have not been fully explored, and provide data support for topic selection. At the same time, big data can also help students assess the research potential and practical application value of different topics, ensuring that the selected topics have both theoretical depth and practical significance. Finally, sharing and utilising open data resources provide students with rich first-hand materials and research backgrounds, helping them comprehensively understand the topic background and position the research problem more accurately. Therefore, big data not only changes the way of resource search but also provides strong support for student topic selection, enabling them to determine research directions and topics more scientifically and efficiently.

3.2 Technology Empowerment for Academic Writing

The impact of technology on English academic paper writing is primarily seen in the enhancement of accuracy and fluency in academic language. Various institutions have developed proofreading tools and platforms, such as I-write, Pigai Network, and Grammarly. These tools offer features like spell checkers and grammar checkers, allowing students to quickly identify and correct errors in their manuscripts and thereby ensure the accuracy of their academic writing.

By providing real-time feedback and suggestions, these tools simplify the proofreading process and significantly improve the overall quality of written work. In addition to detecting basic grammatical and spelling errors, these applications can identify inappropriate word choices and complex or incorrect grammatical structures and offer suitable replacement suggestions.

Digital technologies offer valuable tools for enhancing writing style and structure. For example, they can evaluate the smoothness of transitions between paragraphs, the complexity of sentence

structures, and the clarity of logic. This feedback helps learners improve the overall organisation and readability of their articles. Additionally, intelligent digital technology can assist in structuring academic content to ensure a logical flow and consistency. This includes adjusting the tone of the writing through emotional tone analysis (Khalifa & Albadawy, 2024). Such features aid learners in enhancing the accuracy and fluency of their academic English writing, aligning it more closely with academic standards and norms.

Various editing software, such as Overleaf, offers convenient typesetting and formatting features that simplify preparing academic documents. This allows users to concentrate more on content creation instead of getting bogged down by tedious formatting details. With tools like automatic citation formatting, style templates, and customisable layouts, learners can maintain consistency and adhere to academic standards without needing manual adjustments. This saves time and effort and reduces the risk of formatting errors, ultimately enhancing the efficiency of academic writing. Additionally, digital editing software streamlines the typesetting and formatting process, enabling learners to focus on their content and improve their overall expression in academic language.

Digital tools for managing literature help standardise citation processes. Software such as Endnote, Zotero, and Mendeley offer formatting and literature management functions, making it easier to handle citations and generate reference lists. This standardisation enhances the accuracy and consistency of literature citations, thereby improving the credibility and readability of academic articles.

These tools enable users to easily collect, organise and manage various literature resources, including journal articles, books, reports, and web pages. Users can create their literature library by directly importing references or manually adding literature information. They can also classify and label these resources by specific topics or projects.

Moreover, these software programs can automatically generate standardised citations and reference lists based on the information provided by users. By inserting a citation mark in a document (for instance, using the insert citation function in a Word document), users can have the software automatically create citations and reference lists that conform to the chosen citation style, such as APA, MLA, or Chicago. Users can select different citation styles as needed, and the software will adjust the formatting of citations and reference lists accordingly to meet the requirements of specific journals or publications.

Digital literature management tools can significantly enhance students' academic writing and research efficiency. These powerful tools ensure the accuracy and consistency of literature citations, improving academic articles' professionalism and credibility. Students can easily collect and organise various literature resources, create personalised libraries, and classify and label them according to their research topics or project requirements.

When writing a paper, students can insert a citation mark, and these tools will automatically generate citations and reference lists that conform to specific academic format requirements, significantly simplifying the often tedious task of citation formatting. Additionally, students can easily switch between different citation styles based on the requirements of their target journal or publication, ensuring that their submitted papers or reports comply with the necessary format specifications. This saves valuable time and energy and allows students to focus more on enriching their research content and fostering academic innovation.

3.3 Digital Empowerment for Enriching Result Presentation

The intelligent era has created numerous opportunities for diversifying academic writing through various expression and presentation methods. For instance, tools like Tableau and Plotly enable researchers to present data in chart form. This data visualisation helps students clearly express their research findings while enhancing the readability and persuasiveness of their papers. By transforming complex data into intuitive charts and graphics, academic writing becomes more engaging and accessible. With these tools, students can create dynamic presentations, digital posters, and multimedia papers, enriching the narrative of their academic articles and improving reader comprehension and retention. Additionally, integrating data visualisation into academic papers provides visual support for explaining intricate concepts or datasets, making students' research more visually appealing and helping them gain recognition within the academic community and beyond. This diverse presentation approach enhances students' ability to express their ideas academically and lays a solid foundation for their future academic and career development.

In summary, these comprehensive applications showcase the significant potential of intelligent technology in providing feedback for academic writing. Such technology can enhance the efficiency of the educational process and improve students' learning experiences and outcomes. As students utilise these tools, they can gradually develop their writing skills and grow in confidence, which boosts their self-efficacy.

However, the use of intelligent technology also raises important ethical considerations. Researchers must carefully address the ethical challenges associated with technology-assisted research. This can be accomplished through transparent research methods, clear policies regarding the use of intelligent tools, and ongoing ethical review and oversight of these systems. Ensuring that the application of technology adheres to ethical standards and academic norms is essential.**4.**

Conclusion

Academic writing is a vital skill in higher education for students' success and career development. Despite its importance, many students struggle with organisational structure, language use, and conducting literature reviews. Utilising digital technology can significantly enhance academic writing skills. Digital tools improve information retrieval, broaden knowledge, and assist in topic selection. They offer effective editing and proofreading capabilities, making language expression more accurate. Additionally, digital solutions simplify typesetting, facilitate cooperative writing, and streamline literature management and citations. In summary, digital tools enable accurate paraphrasing and citation while enhancing research writing efficiency. However, users should remain aware of the ethical challenges associated with these technologies to maintain academic integrity.

References

Ahmed, M. M. H., McGahan, P. S., Indurkhya, B., Kaneko, K., & Nakagawa, M. (2021). Effects of synchronised and synchronised e-feedback interactions on academic writing, achievement motivation and critical thinking. Knowledge Management & E-Learning-an International Journal, 13(3), 290–315. https://doi.org/10.34105/j.kmel.2021.13.016

Colas-Bravo, P., & de la Rosa, M. A. H. (2023). Scientific-academic writing in university education: Effectiveness of the design and implementation of software (SWS) for improvement. REVISTA FUENTES, 25(1), 37–47. https://doi.org/10.12795/revistafuentes.2023.20365

Han, Y., Zhao, S., & Ng, L.-L. (2021). How Technology Tools Impact Writing Performance, Lexical Complexity, and Perceived Self-Regulated Learning Strategies in EFL Academic Writing: A Comparative Study. Frontiers In Psychology, p. 12, 752793. https://doi.org/10.3389/fpsyg.2021.752793

Janvrin, D. J., & Watson, M. W. (2017). "Big Data": A new twist to accounting. Journal of Accounting Education, 38, 3–8.

Khalifa, M., & Albadawy, M. (2024). Using artificial intelligence in academic writing and research: An essential productivity tool. Computer Methods and Programs in Biomedicine Update, 100145.

Li, K. L., Razali, A. B., Abd Samad, A., & Noordin, N. (2020). Effects of Digital Writing Software as a Tool for Process Approach to Writing on Teacher Trainees' Academic Writing Performance. Journal of Asia TEFL, 17(4), 1346–1362. https://doi.org/10.18823/asiatefl.2020.17.4.12.1346

Saricaoglu, A., & Bilki, Z. (2021). Voluntary use of automated writing evaluation by content course students. RECALL, 33(3), 265–277. https://doi.org/10.1017/S0958344021000021

Taskiran, A., & Goksel, N. (2022). Automated Feedback and Teacher Feedback: Writing Achievement in Learning English as a Foreign Language at a Distance. Turkish Online Journal Of Distance Education, 23(2), 120–139. https://doi.org/10.17718/tojde.1096260

Chen, J., Huang, K. Y., Wu, Q., et al. (2024). Exploration of mixed-mode academic English writing teaching model from the perspective of classroom ecology. China Foreign Languages, 21(01), 68-77. DOI:10.13564/j.cnki.issn.1672-9382.2024.01.003.

He, J. J. (2019). Research on the personalised guidance mode of academic English writing based on the Peerceptiv online peer review system. Foreign Language Audio-Visual Teaching, (02), 25-33.

Li, J., Wen, L., & Zhao, B. (2022). Case investigation and analysis of academic English writing of graduate students in high-level projects. Journal of Jiangxi Normal University (Philosophy and Social Science Edition), 55(02), 135–144.

Wang, H. (2020). Exploration of corpus-driven academic English writing teaching model - taking abstract writing as an example. Foreign Language Journal, (01), pp. 49–55.

Zhang, L., Bi, J., & Qin, X. Q. (2021). The predicament of English non-native doctoral students in English academic publication: Review and countermeasures. Foreign Languages, (03), pp. 64–72.