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Bibliometric Research on Academic Writing Performance

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Introduction

Academic writing performance refers to the proficiency and effectiveness of scholars in communicating research results, viewpoints, and arguments through written texts (Wette, 2020). This concept encompasses various aspects, including clarity, coherence, argumentation, adherence to disciplinary conventions, and the ability to interact with existing literature. The importance of writing in academia cannot be overemphasized, as it directly affects the dissemination and acceptance of research results. According to Hyland (2023), effective academic writing is crucial for researchers committed to contributing to their field and gaining recognition in the academic community. In addition, Hyland (2020) emphasizes that academic writing is about presenting information and constructing a persuasive narrative consistent with the expectations and norms of the scholarly discourse community.

Writing performance in academic environments is influenced by various factors, including language proficiency, familiarity with disciplinary conventions, and opportunities to access writing support resources (Challob et al., 2016). For non-native English speakers, language and cultural differences often exacerbate the challenges of academic writing (Hultgren, 2019). Nesi and Gardner's (2018) study emphasizes the importance of genre knowledge in academic writing, indicating that understanding the specific requirements and rhetorical structures of different academic genres is crucial for writing success.

The evolving nature of academic writing standards and practices also plays an important role in shaping writing performance. With the intensification of academic publishing competition, scholars not only need to produce high-quality research results but also need to present these results in a way that meets the strict standards of academic journals (Flowerdew & Wang, 2016). It has led to an increasing emphasis on writing support programs and resources aimed at improving the writing skills of researchers, especially those in the early stages of their careers (Bitchener & Storch, 2016). In short, academic writing performance is a multifaceted structure that is crucial for academic success and knowledge advancement. Understanding and improving writing performance remains a key concern for educators, researchers, and academic institutions.

Despite the acknowledged importance of academic writing performance, many researchers, particularly early-career scholars, struggle with critical thinking and problem-solving abilities in their writing. Critical thinking is essential in academic writing as it involves analysing, evaluating, and synthesising information to form well-founded arguments (Nosich, 2021). However, research indicates that many students and novice researchers often lack these skills, leading to superficial analysis and weak argumentation in their writing (Bean & Melzer, 2021). According to Cottrell (2023), fostering critical thinking requires systematic instruction and practice, which is often insufficient in many academic programs.

Problem-solving ability is another critical component of effective academic writing. It involves identifying gaps, formulating research questions, and developing coherent methodologies to address them (Sari et al., 2021). Scholars must navigate complex problems and present their solutions persuasively, yet many find this challenging due to a lack of structured training in problem-solving techniques (Palupi et al., 2020). This deficiency not only hampers the quality of academic writing but also affects the overall research process, as poorly defined problems and methodologies can lead to inconclusive or invalid results (Güner & Erbay, 2021).

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Integrating critical thinking and problem-solving skills into academic writing curricula is crucial for enhancing writing performance. Yet, studies by Sari and Sumarmi (2021) reveal that many higher education institutions fail to adequately develop these skills among their students. This gap highlights a significant problem in academic training, where the focus remains on content knowledge rather than on developing essential cognitive skills. The lack of critical thinking and problem-solving skills impacts not only academic writing quality but also researchers' ability to contribute meaningfully to their fields (Bean & Melzer, 2021; Silalahi et al., 2021).

Generally, the problem of inadequate critical thinking and problem-solving abilities in academic writing represents a significant barrier to effective research communication (Yu & Zin, 2023). Addressing this issue requires a concerted effort from educational institutions to integrate these skills into their teaching practices, thereby equipping researchers with the necessary tools to excel in academic writing.

These studies have significantly contributed to writing performance in academic contexts and serve as the cornerstone for developing writing support programs. However, in-depth research on these studies has revealed certain inconsistencies and gaps. For example, although some studies focus on specific aspects, such as language proficiency or critical thinking, they often overlook other important components, such as problem-solving skills and particular conventions (Paltridge, 2020). In addition, many studies provide lists of writing skills but do not fully address their interrelationships or the comprehensive strategies needed to improve writing performance. This lack of a holistic approach leaves a huge research gap in understanding how various factors interact to affect academic writing performance comprehensively (Manchón, 2020). Given these issues, our goal is to explore the multidimensionality of writing performance, integrating critical thinking, problem-solving, and adherence to disciplinary conventions into a cohesive framework. This framework will provide a more solid foundation for academic writing development programs, ensuring that all fundamental skills are addressed in a balanced and interconnected manner (Wingate, 2018).

Bibliometric tools are increasingly used to map research fields, understand trends, and identify influential works and authors. These tools provide valuable insights by analysing large datasets of academic publications, thus helping researchers navigate the knowledge structure of a specific domain (Donthu et al., 2021). It is worth noting that recent bibliometric analysis has not fully explored the importance of writing performance in academic writing, leaving a gap worthy of further research. Therefore, this study aims to conduct a comprehensive academic writing performance bibliometric analysis. Our main goals are as follows: a) Analysing the co-occurrence of author keywords, revealing the main research topics and their interrelationships, and providing insights into the knowledge structure of the field; b) identify top publications, authors, sources, affiliations, and countries in the field of academic writing performance; c) Examining the evolution of research themes, highlighting emerging trends and focus shifts in the field of academic writing performance. These objectives aim to provide valuable insights and better understand the current situation and future research directions in academic writing performance.

Methodology

The latest advances in online databases and analysis tools have increased people's interest in systematically studying scientific literature in specific fields. We adopted a structured and comprehensive research approach following the scientific mapping workflow with bibliometric methods introduced by Zupic and Č ater (2015), we adopted a structured and comprehensive research approach. Influenced by the work of Moral-Muñoz et al. (2020), our approach focuses on performance analysis and scientific mapping to evaluate research and publishing performance in academic writing. Using the Scopus database, renowned for its extensive global coverage and powerful citation data, we created a query for academic writing performance publications, including terms such as "writing performance," "academic writing," and "thesis writing," excluding non-research publications such as letters and editorials, to retrieve 187 relevant publications between 1968 and July 2024. The searching queries are as follows:

(TITLE-ABS-KEY-AUTH (" writing performance ") AND TITLE-ABS-KEY-AUTH ("paper writing ") OR TITLE-ABS-KEY-AUTH ("article writing ") OR TITLE-ABS-KEY-AUTH ("academic writing

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") OR TITLE-ABS-KEY-AUTH ("essay writing ") OR TITLE-ABS-KEY-AUTH ("thesis writing ") OR TITLE-ABS-KEY-AUTH ("thesis writing")) AND (LIMIT-TO (LANGUAGE, "english")) AND (EXCLUDE (DOCTYPE, "cp") OR EXCLUDE (DOCTYPE, "re"))

After searching for keywords, the researcher screened 191 initial articles. Then, through screening data, the document set was reduced to 187, excluding conference papers, reviews, book series, and other types of documents, and only English journal articles were retained in language.

On this basis, we used Open Refine 3.8.2 (Ham, 2013) to clean the data to ensure its integrity and consistency. After data cleaning, import the data into VOS viewer 1.6.20 (van Eck & Waltman, 2014) and Biblioshiny UI (for Bibliometrix 4.3.0 R package) (Aria & Cuccurullo, 2017) for further analysis. VOS viewer is used to visualise the literature relationship network, while Biblioshiny is used to perform a more comprehensive bibliometric analysis. In the Biblioshiny platform, the following specific analyses were carried out: Basic analysis, author keyword analysis, top publications, authors, sources, institutions and countries analysis, and theme evolution analysis. The researchers formed a complete bibliometric analysis process through the integrated analysis of the above steps, providing data support for the current situation analysis and future trend prediction of the research field.

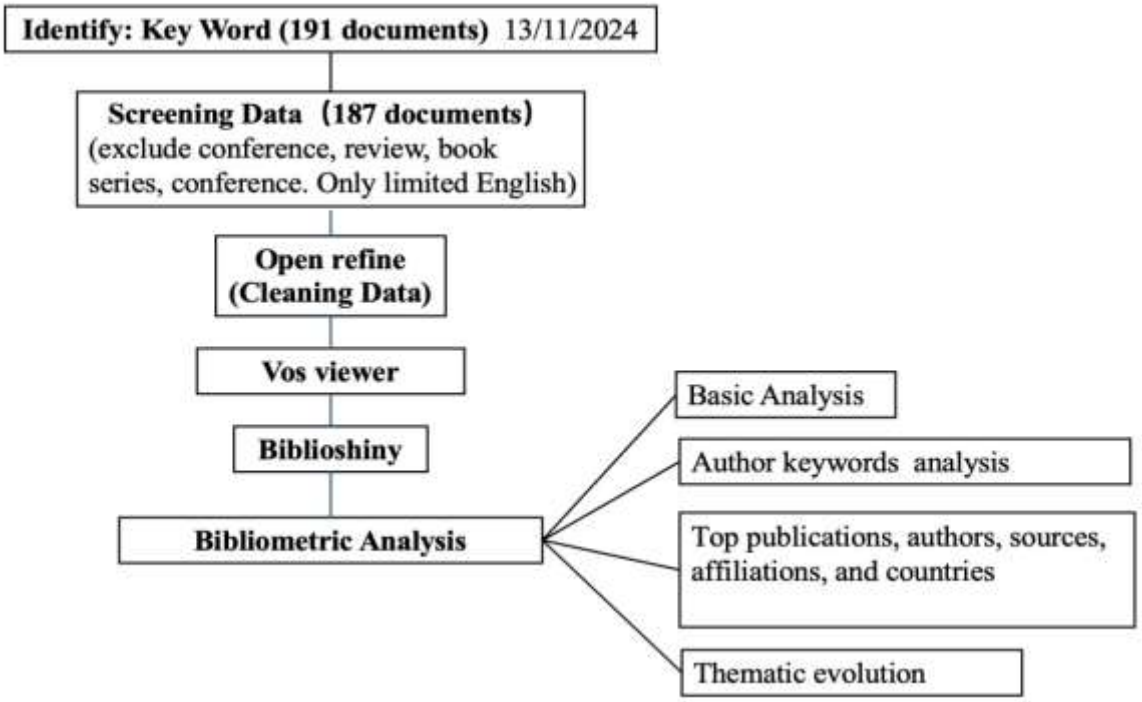

Figure 1. PRISMA

The PRISMA in Figure 1 indicates the procedures and content that we conduct this research.

Basic Information

After a preliminary examination of the retrieved publications, it was found that there was a total of 187 publications. We conducted extensive analysis and found that the retrieved publications came from 125 different sources. These publications were written by 422 individuals (2.51 co-authors per publication) over 56 years, from 1968 to mid-July 2024, with an annual growth rate of 5.59%. On average, each publication is cited 17.84 times. The co-authorship rate is 2.51%. After using Open Refine 3.8.2 to filter and refine author keywords (such as combining "Academic," "Article," and "Essay"), we noticed that these publications generated 368 different author keywords across a wide range of topics.

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Figure 2 shows the distribution of publication types in academic writing performance, with 187 publications analysed. Among them, journals are the main publishing medium, accounting for 177 articles, about 94.7% of the total. This dominant position highlights the central role of journal articles in disseminating research results in this field. In contrast, other publications have a lower proportion: Books and industry journals only record five entries each. The limited diversity of publication types means that the field heavily relies on journal articles for academic exchange.

Figure 3 provides an overview of the publication frequency of the most renowned journals in academic writing performance research. Assessing writing ranks the highest with nine publications, highlighting their core role in disseminating writing assessment and performance research. The Asian EFL Journal has seven publications, indicating a high level of attention to research on English as a Foreign Language (EFL) in the region, particularly in studies related to Asian backgrounds. Cogent Education and the Journal of Language and Education each have five publications, reflecting a range of education, including language and education. At the same time, System and Frontiers in Psychology each have four publications demonstrating interdisciplinary contributions, particularly in the psychology of language learning, education systems, and writing abilities. This distribution emphasises a mix of professional and multidisciplinary journals significantly contributing to the field.

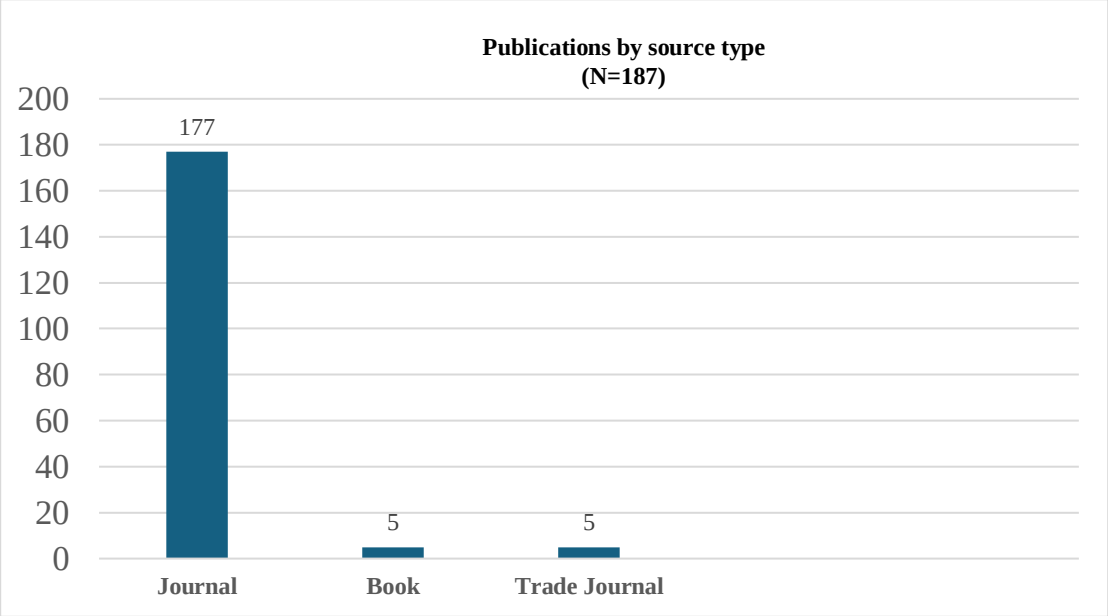

Figure 2. Publications By Source Type

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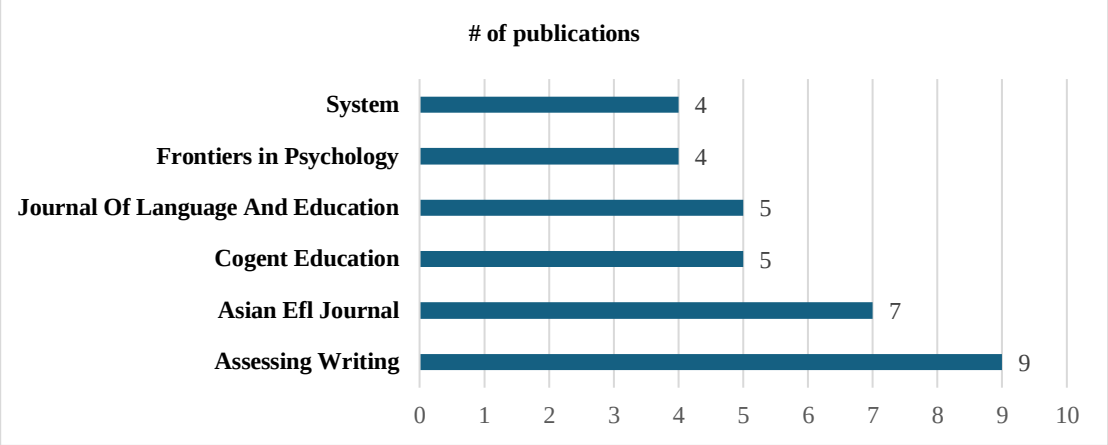

Figure 3. Sources With At Least Four Publications.

Figure 4 shows the distribution of publications by file type, totalling 187 publications. The vast majority are journal articles, accounting for 183 publications, while only 6 are book chapters. This indicates that journal articles are the primary medium for disseminating research in this field, possibly due to their wider coverage and greater academic influence than book chapters. The data shows that people are more inclined to publish journal articles, reflecting their importance in scholarly communication. In Figure 5, the top three countries with the highest number of published articles are the United States (34), Iran (21), and China (20). Figure 6 illustrates the distribution of publications by individual authors. Most authors, including Van Driel, Van Den Broek, Saab, Riasati, Raedts, Huisman, Costley, and Bavali, each contributed three publications. Graham has a slightly higher count with four publications, while Teng, M.F., leads with five. This chart highlights the contributions of key authors, with a clear concentration of around three publications per author, except for the higher outputs from Graham and Teng.

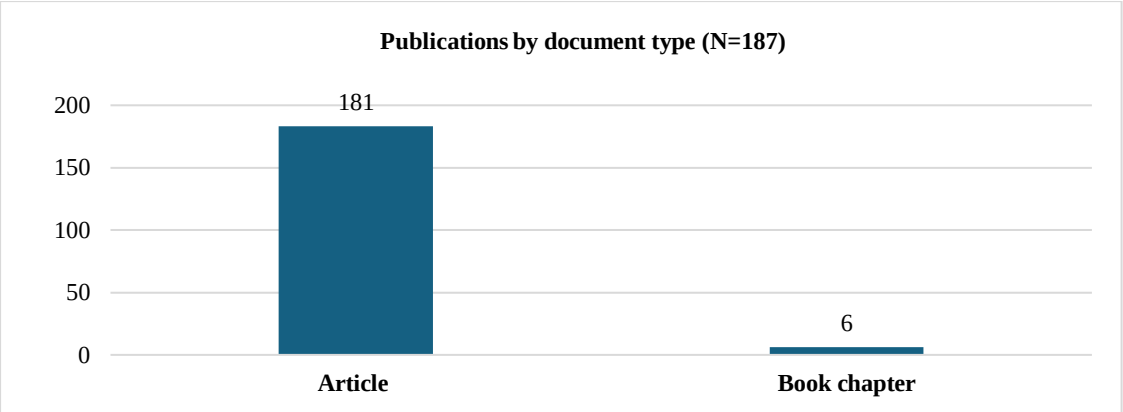

Figure 4. Publications by document type.

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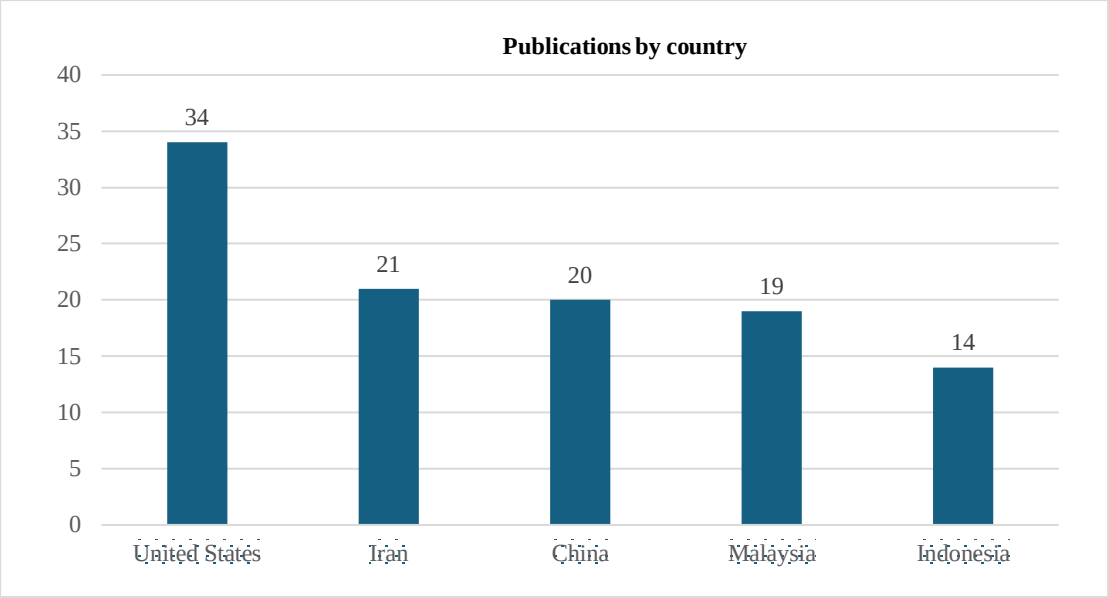

Figure 5. Publications by Country

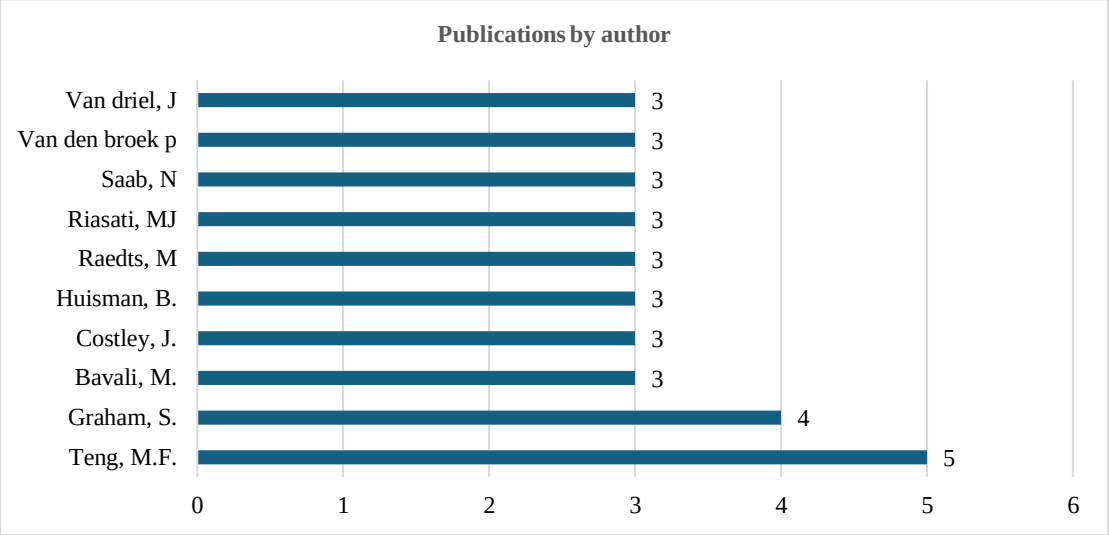

Figure 6. Publications by Author

Figure 7 shows the distribution of publications by subject area. It is worth noting that the total number of publications described in the figure is 187, highlighting the multidisciplinary nature of the subset of publications obtained through our query. As expected, Social Sciences and Arts and Humanities have become the two disciplines with the highest number of publications in academic writing performance. Surprisingly, Computer Science ranks fourth in Figure 7.

In terms of publication and citation trends over the years, as shown in Figure 8, the number of published articles usually indicates an upward trend. The decrease in 2023 can be attributed to our data collection work continuing until mid-July 2024. In addition, among the analysed articles, the article published in 1997 had the highest citation rate of 7.46. Most of the articles published in 2023 are 32.

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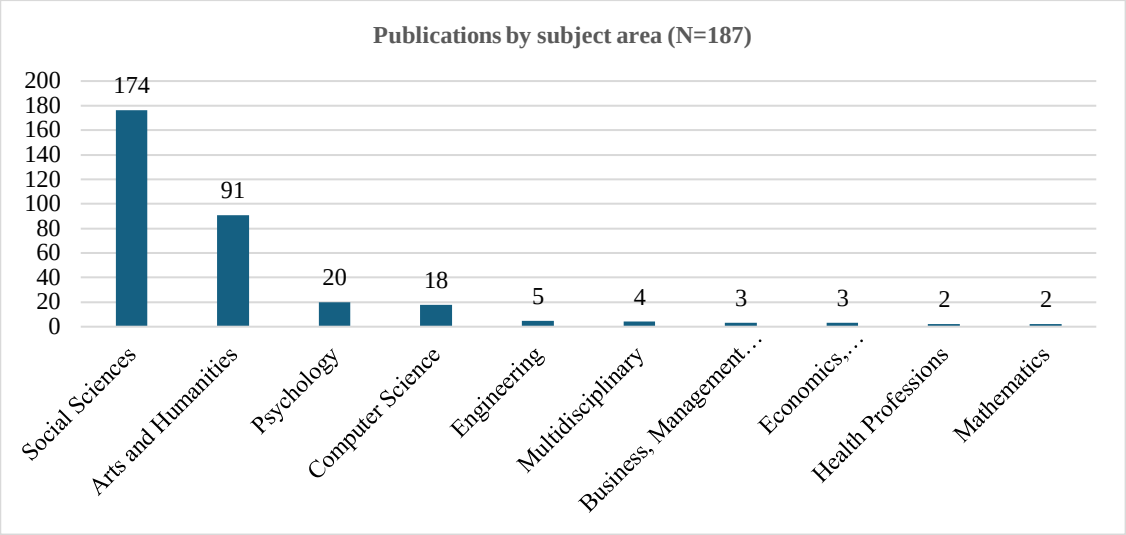

Figure 7. Publications by Subject Area

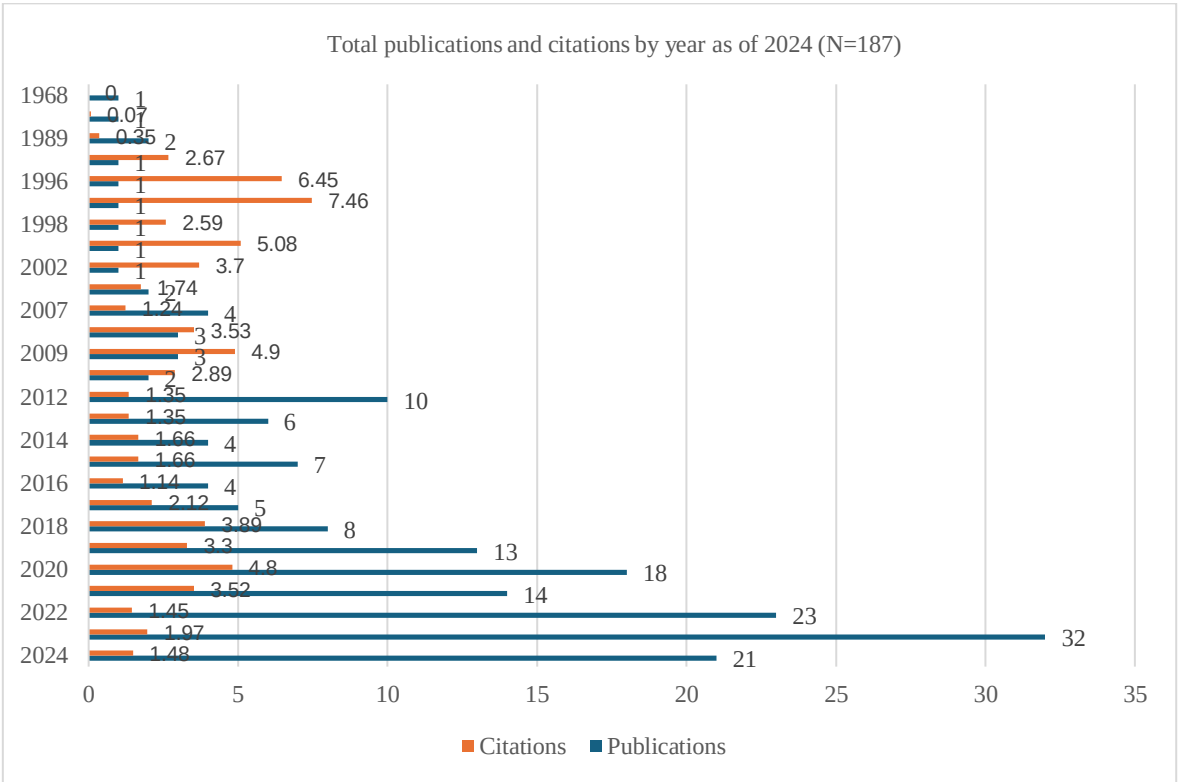

Figure 8. Publications And Citations by Year

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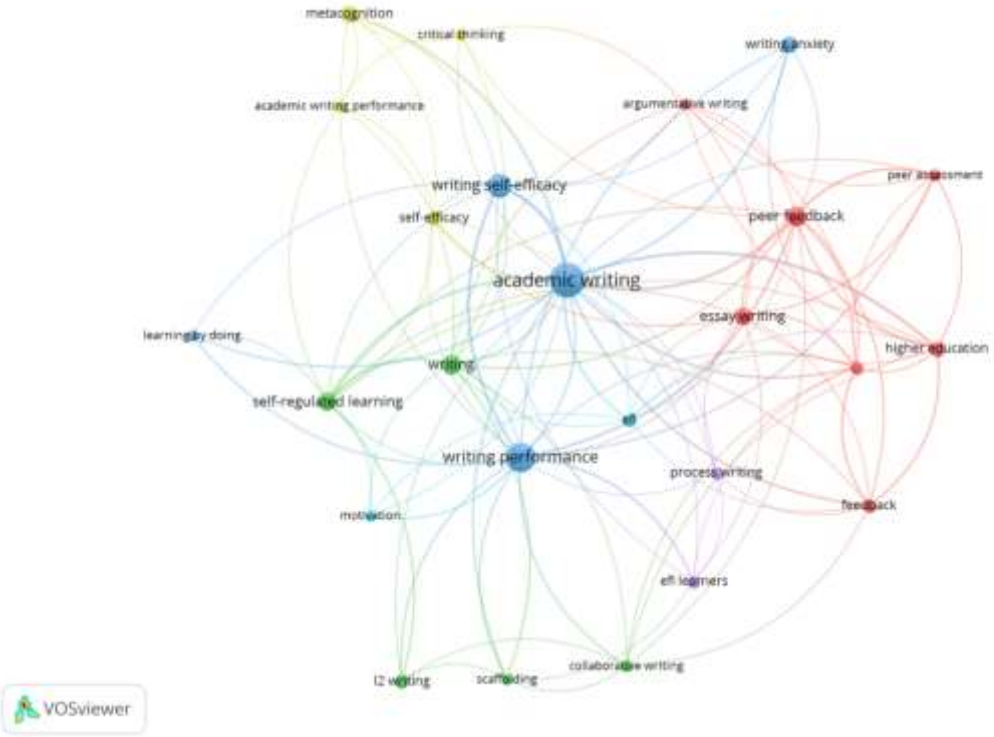

Figure 9. Author Keywords Co-Occurrence At Least Five Times

Figure 10. Word Cloud of the Most Frequent Author Keywords Appearing At Least Three Times

Next, we used VOS viewer 1.6.20 to analyse the co-occurrence of author keywords in the data. Through analysis, we have identified 25 author keywords that appear at least five times together. These 25 keywords are divided into 6 clusters, as shown in Figure 9, each cluster distinguished by a unique colour. In Figure 8, the thickness of the lines corresponds to the co-occurrence frequency between the two author keywords. For example, the thicker the line connecting "Academic writing" and "Higher education," the higher their frequency of appearance in the analysed publication.

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In addition, Figure 10 displays a word cloud highlighting the most frequently occurring author keywords. The top five author keywords and their frequency of occurrence are as follows: "Writing" has a frequency of 9, "human" has a frequency of 6, "students", "teaching", and "writing performance" have a frequency of 5.

Top Publications, Authors, Sources, Affiliations, and Countries

Table 1. Top 10 Cited Publications

Publication	Source	Total Citation	TC per Year	Normalised TC
Pajares and Valiante (1997)	Education Research	209	7.46	1
Pajares and Johnson (1996)	Psychology Schools	187	6.45	1
Huisman et al. (2018)	Assess Eval High Education	179	25.57	6.57
Xiao and Lucking (2008)	Internet Higher Education	177	10.41	2.95
Huisman et al. (2019)	Assess Eval High Education	152	25.33	7.69
Teng and Zhang (2020)	Second Language Writing	140	28	5.83
O'Hara and Sternberg (2001)	Creativity Research	122	5.08	1
Matsuno et al. (2009)	Language Test	116	7.25	1.48
Plakans (2009)	English for Academic Purposes	107	6.69	1.37
Graham et al. (1992)	Exceptional Children	88	2.67	1
TC = Total citations.				

We will now focus on determining top publications based on citation counts, identifying top authors and sources based on h-index, and selecting top affiliated institutions (i.e. universities) and countries based on the number of publications they have published. Table 1 lists the top 10 publications ranked by the highest citation count.

The table also lists the journals that published these publications. It is worth noting that a recent paper published by Pajares and Valiante (1997) stood out with a total of 209 citations in educational journals.

It is noteworthy that these ten studies explore a range of fascinating subjects pertinent to writing performance. Pajares et al. (1997) examine the influence of self-efficacy, comprehension, and talent theories on students' academic outcomes. Pajares et al. (1996) also investigate the effects of exchanging peer feedback on enhancing writing skills. Huisman et al. (2018) conduct a comparative analysis of peer feedback on academics. Xiao et al. (2008) analyse the impact of two peer evaluation techniques on college students' satisfaction and performance in academic writing. Huisman et al. (2019) also present quantitative findings on improving academic writing among higher education students following peer feedback. Teng & Zhang (2020) investigate the impact of writing interventions rooted in Self-Regulated Learning (SRL) strategies on second language proficiency, use of SRL strategies, and academic self-efficacy. O'Hara et al. (2001) evaluate the influence of creative, practical, or analytical guidance on essay outcomes. Matsuno (2009) discusses self-assessment peer and instructor assessment in writing instruction environments. Plakans (2009) explore reading strategies within writing tasks. Lastly, Graham et al. (1992) examine whether setting goals for products and processes could enhance the writing skills of students with learning disabilities.

Table 2. Top Authors With H-Index > 2.

Author	h_index	g_index	m_index	TC	NP
Teng Mf	5	6	1	110	6

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Graham S	4	4	0.121	303	4
Huisman B	3	3	0.375	352	3
Raedts M	3	3	0.158	50	3
Saab N	3	3	0.375	352	3
Van Den Broek P	3	3	0.375	352	3
Van Driel J	3	3	0.375	352	3
Chang P	2	2	0.154	33	2
Costley J	2	3	0.667	10	3
Daems F	2	2	0.105	35	2
TC = Total citations; NP = number of publications.					

Table 3. Top Sources With H-Index > 2.

Source Title	h_index	g_index	m_index	TC	NP
Assessing Writing	5	9	0.556	93	9
System	4	4	0.211	143	4
Asian EFL Journal	3	6	0.231	41	7
Assessment and Evaluation in Higher Education	3	3	0.429	339	3
Computer Assisted Language Learning	3	3	0.3	117	3
Journal of English For Academic Purposes	3	4	0.188	119	4
Journal of Writing Research	3	3	0.375	51	3
Asia-Pacific Education Researcher	2	2	0.4	12	2
Asia-Pacific Journal of Second and Foreign Language Education	2	3	0.5	21	3
British Journal of Educational Technology	2	2	0.4	140	2
TC = Total citations; NP = number of publications.					

Based on our query results, we compiled Tables 2 and 3, which display the top authors and publication sources with an h-index greater than 2. Regarding the author, it has been observed that the h-index calculated based on the 187 articles retrieved ranges from 2 to 5. In addition, their total citation count ranges from 35 to 110, while their publication count ranges from 2 to 6.

Regarding the sources of publications, we observed that the h-index ranges from 2 to 5, the number of publications ranges from 2 to 9, and the total number of citations falls within the range of 12 to 339. It is worth noting that almost all sources are related to education and higher education, but one source is related to the system domain.

When considering the most relevant affiliated institutions, we found that Islamic Azad University made significant contributions with five published papers, followed by Beijing Normal University with three published papers in Figure 11. The survey shows that among the affiliated institutions in the report, six universities are in Asia, 3 in Europe, and 1 in North America. It highlights the prominent role played by Asian countries in the field of writing performance research.

Finally, Figure 12 shows the country ranking based on the output of publications in the Writing Performance field. It is evident that the United States is in a leading position and has published 28 publications. After the United States, China became a well-known contributor with 26 publications, while Iran and Malaysia demonstrated substantial participation with 20 and 14 publications, respectively. Similarly, Malaysia, Indonesia, and China have made significant contributions to writing performance research, making them one of the few representatives in Asia.

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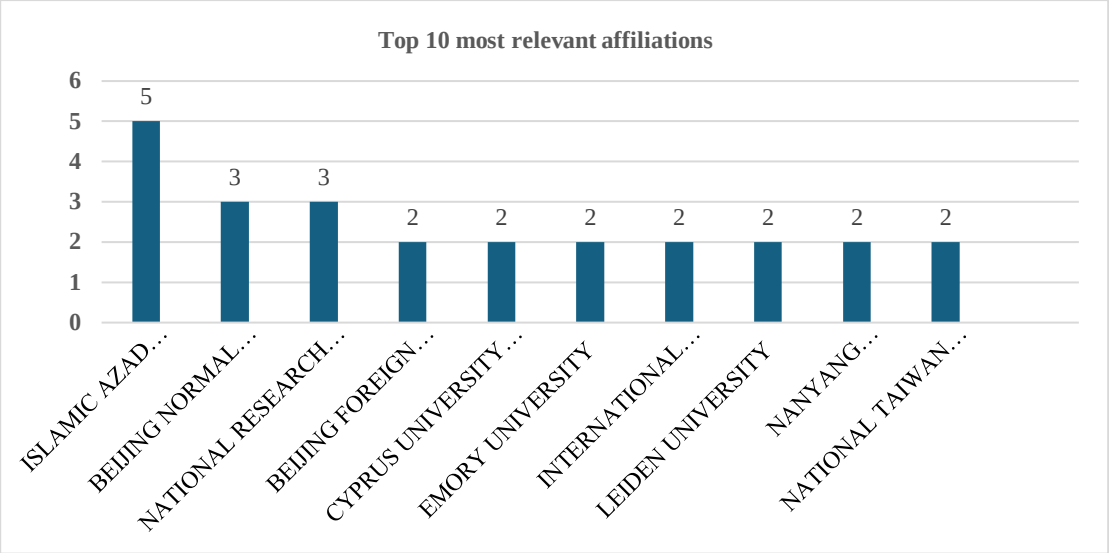

Figure 11. Top 10 Most Relevant Affiliations

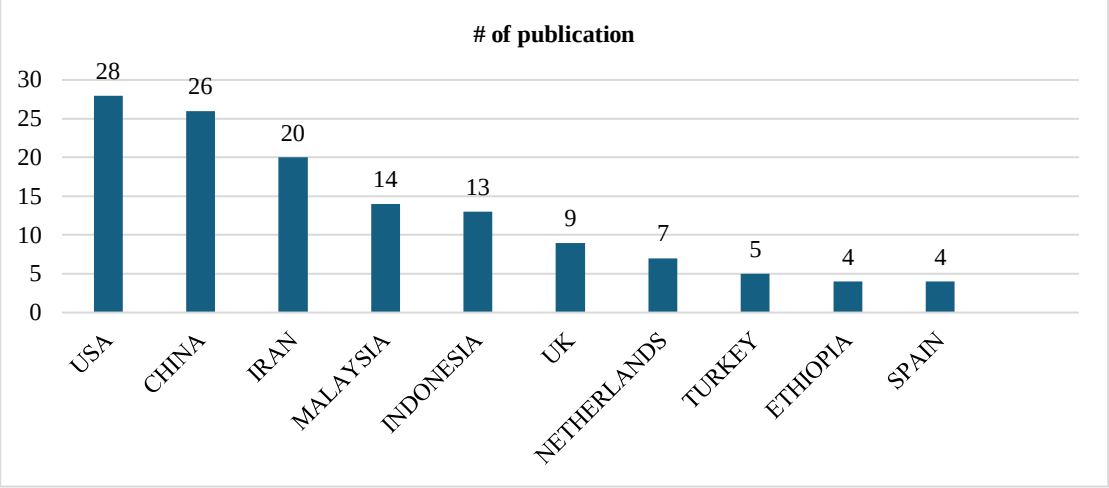

Figure 12. Top 10 Countries in Terms of Number of Publications

Thematic Evolution of Author Keywords

Based on extensive analysis of author keyword fields using the Biblioshiny UI with the Bibliometrix R package, we generated a highly informative topic evolution map (Figure 12). As Cobo et al. (2011a) elaborate, this comprehensive map provides valuable insights into the topic of interest (in our case, writing performance), making it a useful resource for researchers and readers. Using the default settings of Biblioshiny (i.e. single word count=250, minimum clustering frequency (per thousand documents) =5, weight index=inclusion index weighted by word co-occurrence, minimum weight index=0.1, clustering algorithm=Walktrap), but setting the number of time slots to 2 ensures that the best representation of the topic is transformed without providing readers with too much information. Through our meticulous data processing, we have identified three different periods of writing performance for 56 years: 1968-2018, 2019-2022, and 2023-2024. The thematic evolution diagram can visualise the evolution of the field over time, highlighting the changing trends and areas of interest in the research field.

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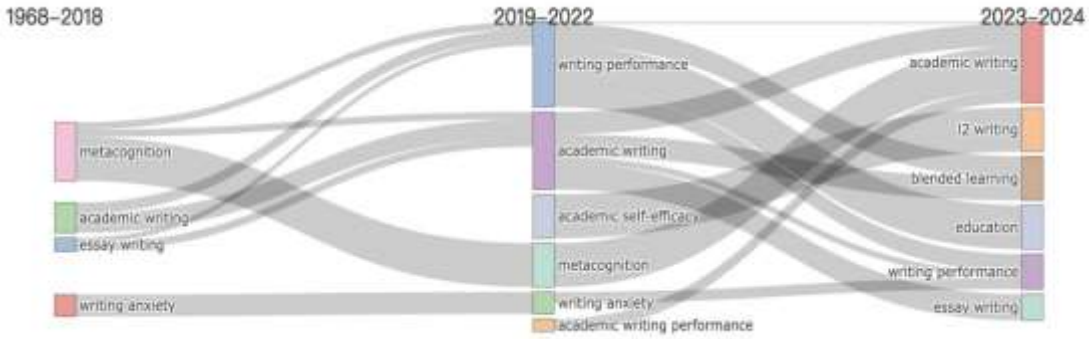

Figure 13. Thematic Evolution (1968–2024)

As shown in Figure 13, four themes were developed from 1968 to 2018. These topics include metacognition, academic writing, essay writing, and writing anxiety. From 2019 to 2022, the number of themes has expanded to 6, and new fields, such as academic self-improvement, have been explored in the context of writing performance. Looking ahead to 2023-2024, Figure 13 shows six different themes, among which education, L2 writing, blended learning, and essay writing are areas of interest for writing performance.

Next, we evaluated the theme maps of the author's keywords across three time slots: 1968-2018, 2019-2022, and 2023-2024 (Figure 13-15). A thematic map is a graphical representation measurement that helps researchers explore topics based on centrality and density (Cobo et al., 2011). Centrality measures the strength of external connections between a topic or its combination with other topics, indicating the importance of the topic in the overall research area. Density measures the strength of internal connections between all keywords, describing a research topic or cluster and reflecting the level of development of the topic (Callon et al., 1991). According to the research map by Cobo et al. (2011), the topics are divided into four quadrants:

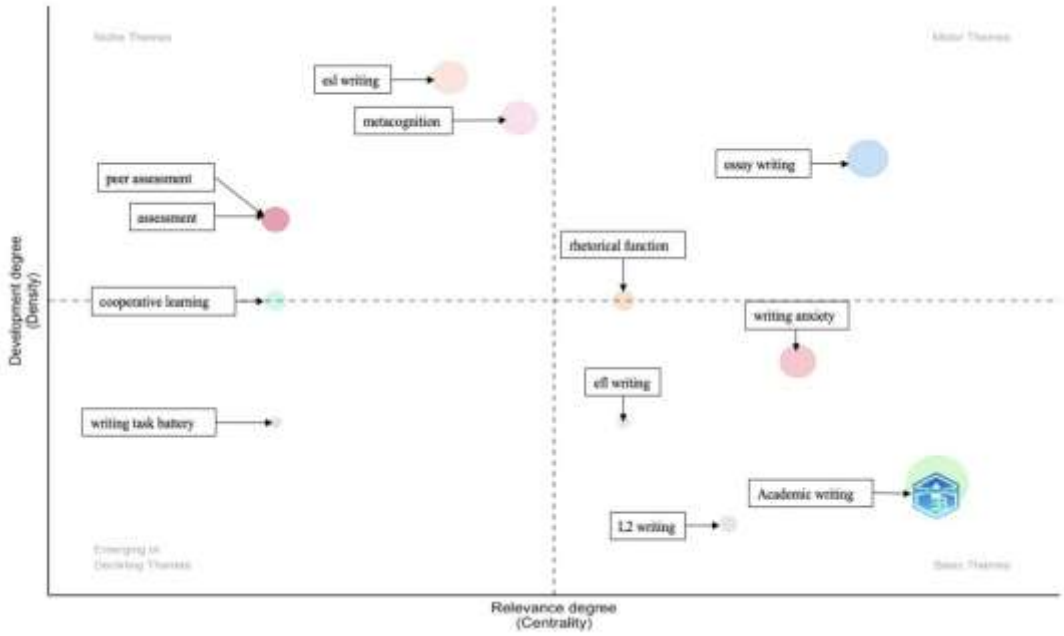

Figure 14. Thematic Map (1968–2018)

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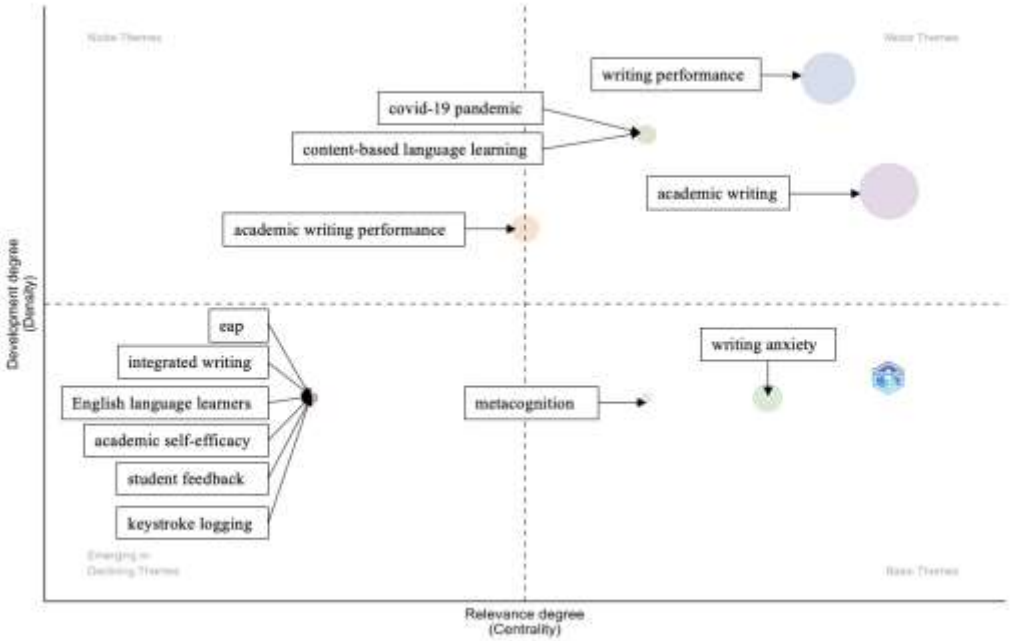

Figure 15. Thematic Map (2019–2022)

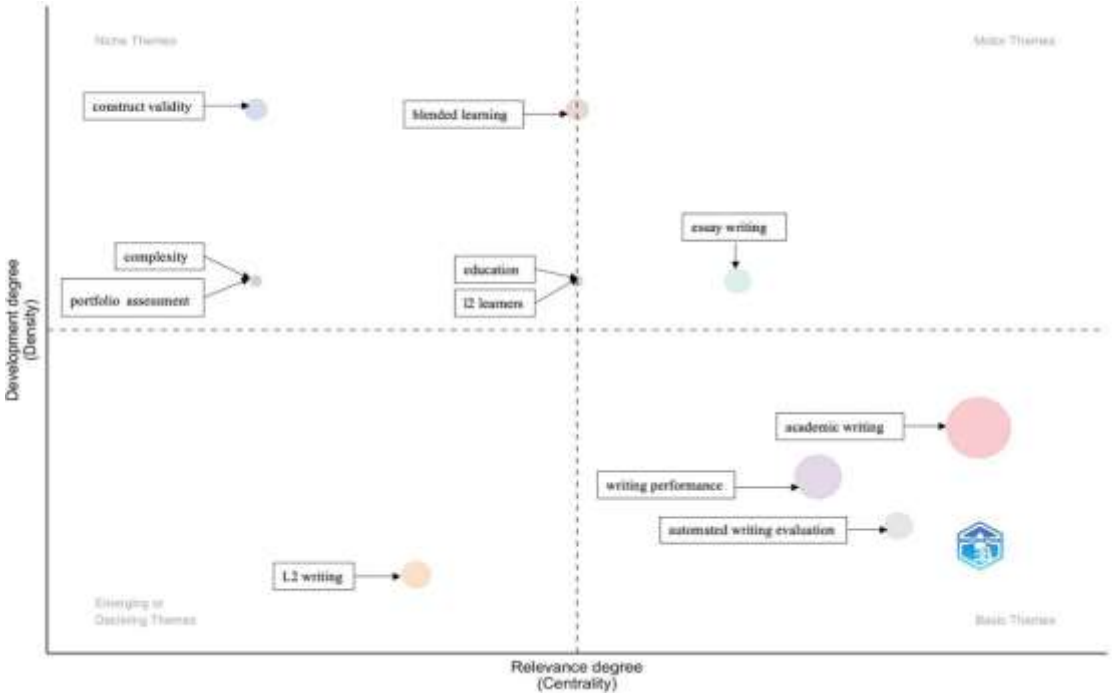

Figure 16. Thematic Map (2023–2024)

The upper right quadrant is called the 'motor theme', which includes well-developed themes and is crucial in advancing the research field. The characteristic of these themes is that they have strong external relevance and are usually conceptually linked to other related topics (Pessin et al., 2022). In contrast, the upper left quadrant is referred to as 'niche themes', which include themes with strong internal connections but limited external connections, making their overall importance more moderate in a wider range of fields (Donthu et al., 2021b). These topics are often highly specialised and somewhat marginalised. The lower left quadrant contains "emerging or declining themes" that are underdeveloped and marginalised, exhibiting low density

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and centrality. These themes represent areas that are emerging or gradually losing relevance within the field. Finally, the lower right quadrant is referred to as the 'basic themes', consisting of basic themes from the research field but lacking significant development. These themes are crucial to the overall structure of the field, although they may not have been thoroughly explored.

Upper right quadrant (Motor themes): These themes are well-developed and crucial for building the research field. This quadrant indicates their external relevance to concepts applicable to other themes, which are closely related conceptually.

Upper left quadrant (Niche themes): The themes in this quadrant have developed internal connections but limited external connections, so their importance in this field is average. These themes are highly specialised and marginalised.

Lower left quadrant (Emerging or declining themes): The themes in this quadrant develop weakly and are marginalised. They exhibit low density and centrality, representing emerging or disappearing themes.

Lower right quadrant (Basic themes): The themes in this quadrant are important to the research field but lack significant development. This quadrant includes horizontal and general basic themes. (Aria & Cuccurullo, 2017).

Thematic Map (1968–2018)

As shown in Figure 14, we identified 12 clusters of author keywords from 1968 to 2018. Each cluster is named after the author keyword that appears most frequently within that group. The size of each circle represents the frequency of keywords within that cluster, reflecting the thematic significance of each group.

The theme maps from 1968 to 2018 reveal important trends in writing research. The emergence of essay writing as a motor theme indicates its crucial role and widespread development in academic discourse. In niche thematic categories, ESL writing, and metacognition show strong development but are not as core, highlighting specialised areas in language acquisition and cognitive awareness of writing. Peer assessment and assessment also belong to this category, focusing on assessment methods in educational environments. Emerging or declining themes, such as writing task batteries, exhibit lower development and centrality, indicating either emerging interest or decreased relevance Basic themes such as academic writing, EFL writing, writing anxiety, and L2 writing are essential but underdeveloped, pointing toward fundamental but growing research areas. It is worth noting that the rhetorical function connects motor themes and basic themes, emphasising its importance in mainstream and basic research. Cooperative learning covers niche topics and emerging or declining topics, highlighting its relevance in the professional and potential development of writing instruction. This map highlights the dynamic and developmental nature of writing research from 1968 to 2018, pointing out key areas and potential future directions at that time.

Thematic Map (2019–2022)

In the theme maps from 2019 to 2022, our analysis (Figure 15) identified 13 sets of author keywords related to writing. The sports themes include writing performance and academic writing, which are highly concentrated and developed, indicating their crucial role in the field. In addition, the COVID-19 pandemic and content-based language learning were combined, reflecting their significant but specific impact on writing research during this period. The basic themes of writing anxiety and metacognition exhibit a high degree of centrality but at a lower level of development, indicating their fundamental importance and growth potential. Emerging or declining themes include EAP, comprehensive writing, English learners, academic self-efficacy, student feedback, and keystroke recording, all exhibiting low centrality and

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development, indicating that the focus is nascent or weakened. It is worth noting that academic writing performance covers niche and movement themes, highlighting its transitional importance between professional and central research fields. This theme map emphasises writing research's dynamic and constantly evolving nature, pointing out key focus areas and emerging trends in shaping academic discourse.

Thematic Map (2022–2024)

The theme map for 2022-2024 reveals the main trends in writing research. Essay writing stands out as a motor theme, indicating its central and developed position in the field. Writing performance, academic writing, and automated writing evaluation are classified as basic themes, emphasising their fundamental importance, but the still evolving L2 writing appears in the emerging or declining theme quadrant, indicating that it is either an emerging area of interest or losing relevance. Niche themes include construction validity, complexity, and portfolio assessment, representing professional but important research areas. It is worth noting that blended learning covers niche and motor themes, indicating its increasing importance and development. Similarly, the combination of education and L2 learners spans niche and motor themes, emphasising their evolving significance in writing research. This map emphasises the dynamism of writing research, pointing out mature fields such as paper writing and academic writing while highlighting emerging trends and professional fields that have received attention.

Finding

This study is based on data analysis from bibliometric reviews, focusing on academic writing performance. This analysis reveals several key findings: Firstly, empirical research has significant shortcomings, with many studies relying mainly on qualitative methods such as literature analysis and lacking supplementary methods such as surveys or experimental studies (Hyland, 2019). The key author keywords identified include metacognition, writing anxiety, and assessment. The study also emphasised the importance of genre knowledge and the evolution of writing standards, highlighting the need for a more comprehensive framework that includes various cognitive and disciplinary conventions (Gardner et al., 2019). This analysis emphasises the dynamism of academic writing and proposes future research directions, focusing on the interactions between different writing skills and the impact of writing support programs.

The "Basic Information" section shows that from 1968 to 2024, 187 publications on academic writing performance were retrieved, mainly journal articles. The output of publications in the United States, Iran, and China is leading. Among the "top publications, authors, sources, branches and countries", Writing Assessment and Asian Foreign Language Journal are the main sources, and the main authors Teng and Graham, have made great contributions. The top-tier affiliates are mainly in Asia. "Co-occurrence analysis" identifies frequently occurring keywords, shows six clusters with the theme of "academic writing" and "higher education", and indicates key research areas. The "theme evolution" shows the evolution of the research theme from "thesis writing" to "mixed learning", reflecting the transformation from traditional writing research to a more comprehensive and digital-oriented approach.

In addition to these developing fields, the basic theme of academic writing is still crucial from 2022 to 2024. These include research on academic writing itself, which provides structured guidance and helps second language learners navigate academic discourse (Jiang & Hyland, 2020). Writing performance is another key focus. The research aims to quantify and evaluate writing skills, understand the factors affecting performance in depth, and help teachers better support students (Silalahi et al., 2021). In addition, automated writing assessment tools are becoming increasingly important because they can effectively and objectively assess writing. These tools make use of artificial intelligence and NLP technology to provide immediate feedback, which is particularly beneficial to non-native speakers and helps to improve grammar, coherence and vocabulary (Flowerdew & Wang, 2016).

With the continuous expansion of online education, hybrid learning methods are expected to reshape academic writing teaching methods, make them more accessible, and cultivate personalized learning paths (Pessin et al., 2022). These basic aspects of academic writing research are essential for developing students' necessary skills and supporting more advanced professional investigations.

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Implications of the Findings

This article provides comprehensive references for educators, researchers, and institutions involved in improving academic writing performance regarding practice and social impact. It addresses current research gaps, adopted methods, major publication sources, disciplinary fields, citations, author keyword co-occurrence, influential publications, authors with high h-index, top sources with high h-coefficient, top affiliated institutions, and leading countries (Aria & Cuccurullo, 2017). These findings provide actionable insights for developing effective writing support plans and teaching strategies, or academic writing training to students and teachers. For example, thematic evolution analysis can provide information for curriculum design and policy-making by highlighting basic skills and confirming emerging trends to take measures to improve teachers and students academic writing (Donthu et al., 2021b). By utilising these insights, academic institutions can better support students and researchers, thereby improving overall writing quality and contributing to academic success.

Limitations and Future Recommendations

It is worth noting that although problem-solving and critical thinking are important components of writing performance, this analysis reveals a significant gap in the emphasis on these skills in current research. This lack of representativeness highlights a key area for future exploration, emphasising the need for a deeper focus on developing these cognitive skills in academic writing research. Therefore, we strongly recommend policy formulation to strengthen critical thinking and problem-solving skills in academic writing performance, such as investing funding in training teachers in academic writing to ultimately enhance students' academic writing performance. More importantly, policies are needed to develop academic writing curricula that foster students' critical thinking and problem-solving abilities, thereby improving their academic writing performance. For teachers, they should also recognise the importance of academic writing performance in practice, particularly in enhancing critical thinking and problem-solving abilities when conducting academic writing courses.

Conclusion

This bibliometric analysis has explored the intricate landscape of academic writing performance by systematically examining key publications, influential authors, and major research trends from 1967 to 2024. The study utilised data from the Scopus database, focusing on terms such as "writing performance," "academic writing," and "essay writing." Our analysis identified significant author keywords like essay writing, writing anxiety, and metacognition, and underscored the importance of genre knowledge and the evolving standards of academic writing.

In conclusion, this comprehensive bibliometric analysis provides valuable insights into the status and future directions of academic writing performance research. This study emphasises the development of effective writing support plans and teaching strategies to enhance academic writing skills, especially for non-native English speakers. By addressing these gaps and leveraging established trends, educators, researchers, and institutions can significantly improve the quality of academic writing, thereby promoting greater academic success and knowledge advancement. Integrating problem-solving and critical thinking into writing teaching and research is crucial for shaping future academic abilities and ensuring a more comprehensive understanding of writing performance.

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