International Journal of Learning, Teaching and Educational Research
Vol. 22, No. 3, pp. 294-309, March 2023
https://doi.org/10.26803/ijlter.22.3.18
Received Jan 9, 2023; Revised Mar 15, 2023; Accepted Mar 21, 2023

Writing Motivation in the Web of Science and Scopus Databases: A Scientometrics Perspective in CiteSpace

Wenxuan Wang*

University Sains Malaysia, Pulau Pinang, Malaysia

Ishak Nor Asniza

University Sains Malaysia, Pulau Pinang, Malaysia

Abstract. In education, writing motivation is a major concern since high levels of motivation generally contribute to effective writing. This study selected 148 studies from the Web of Science and Scopus on writing motivation in the early 21st century (2001–2022). Accordingly, using the Scientometric perspective in CiteSpace, the current research state, development trends, and possible future paths in writing motivation are systematically analysed. The analysis of publications includes quantity and trends, citation frequency, and keyword co-occurrence. Findings reveal that (1) since 2011, the number of publications on writing motivation has increased annually, showing a steady upward trend. (2) Highly cited articles on writing motivation focus on the following research perspectives: motivation theory, writing performance, gender, grade level, and writing instructional methods. Furthermore, Pajares and the United States emerged as outstanding contributors and nations, respectively. (3) The majority of research hotspots are devoted to educational research, psychology, and linguistics. (4) The writing motivation research process can be separated into three distinct phases: the emerging phase, the stagnation phase, and the rapid development phase. Writing motivation is a promising research field that will require researchers and practitioners to investigate educational methodologies continuously, select large samples to study the scope, and implement ideas. By doing so, these constructive methods will benefit students' writing and meet future work requirements.

Keywords: writing motivation; literature review; scientometrics; CiteSpace

*Corresponding author: *Ishak Nor Asniza, asnizaishak@usm.my*

1. Introduction

Writing, as a reaction to students' overall language proficiency (Fallon et al., 2020), also acts as a link between academic work, professional communication, and interpersonal interaction (Camacho et al., 2021). Additionally, writing is a more integrated and sophisticated process than listening, speaking, or reading (Rashtchi, 2019). Given the complexity and challenge of writing, motivation is seen as one of the most significant factors influencing the performance and development of writing (Ling et al., 2021). Writing motivation refers to students' perceptions of writing situations, writing assignments, and their writing capabilities that drive them to write (Latif, 2019). Despite the time and effort invested by researchers and teachers, the levels of students' writing motivation is not currently satisfactory (Khosronejad et al., 2021). For instance, Lee et al. (2018) conducted a writing motivation survey and found that students are inattentive and even sleep during writing classes. Along with a lack of writing motivation, many students' writing performance has been deteriorating over time (Yeung et al., 2020). Exploring the factors that trigger writing motivation and developing strategies for improvement is critical for researchers and practitioners.

Since the 21st century, the antecedent publications on writing motivation are well documented. A number of studies have examined how to enhance students' writing motivation with the help of various writing teaching approaches (Sherafati et al., 2020). As well as relying on writing teaching methods, other influencing factors deserve teachers' attention. Troia et al. (2013) indicated that writing motivation is significantly and positively related to gender, grade level (age), writing ability, and English proficiency. The influence variables mentioned above are an examination of the theory in practice. Theories on writing motivation, such as self-determination theory (Deci & Ryan, 2000), expectancy-value theory (Wigfield, 1994), and achievement motivation theory (Elliot & Harackiewicz, 1996), all provide important supporting roles for research in this area. In conclusion, motivation is a central factor in writing because high levels of motivation usually promote students' effective writing (Yu et al., 2020).

Scientometrics was first introduced by Nalimov and Mulchenko in 1969 as an emerging discipline that uses quantitative methods to explain the laws of scientific development (Garfield, 2009). Since then, the definition of scientometrics has been given a richer connotation by various scholars from their own research fields. For example, Dobrev argued that scientometrics should revolve around all scientific issues that can be assessed quantitatively (Rousseau, 2021). Scientometric research methods include cluster analysis, co-occurrence analysis, co-citation analysis, and spectrogram analysis. CiteSpace is citation visualisation and analysis software developed in the context of scientometrics (Chen, 2006). It enables the structure, patterns, and distribution of scientific knowledge to be presented visually. The visualisation diagram forms a scientific knowledge map, which is ultimately used to explore the research hotspots, research frontiers, and key literature in a particular research area as well as helping to predict future developments (Chen et al., 2010).

While the study of writing motivation has developed since the 21st century, papers using scientometrics for analysis in this area are not available. Moreover, nearly all of the most thorough and authoritative research literature that is now

available worldwide is collected in the Web of Science (WoS) and Scopus (W&S) databases. Therefore, this study builds on this research gap by examining 148 papers published in the WoS and W&S databases on writing motivation. The following research questions are addressed from a scientometric perspective in CiteSpace software:

1. What are the research trends on writing motivation since the 21st century?
2. What are the research perspectives in frequently cited papers on writing motivation? Who is the most highly cited author on writing motivation? Which country has the most highly cited papers on writing motivation?
3. What are the research hotspots on writing motivation? What are the research phases on writing motivation?

2. Literature Review

A systematic review of publications on writing motivation can be divided into three research perspectives: (1) Identify the studied motivational theories; (2) Examine the relationship between writing motivation and other impact factors such as gender, grade level, and writing performance; and (3) Examine the impact on writing motivation using teaching methods or electronic tools.

2.1 Writing Motivation and Motivation Theory

Theory is fundamental to guiding practice and providing perspective and support for research. Thus, it is necessary to analyse writing motivation and motivation theory. Motivation is not a single structure, but a multidimensional structure consisting of several interrelated factors (Conradi et al. , 2014). Scholars and experts have produced corresponding theories of motivation based on different factors. Firstly, self-determination theory emphasises the importance of innate psychological needs for fostering personal development (Ryan & Deci, 2000). According to Yeung et al. (2020), the relationship between Chinese students' writing motivation and writing achievement was examined under the self-determination theory. Secondly, based on expectancy-value theory, Wright et al. (2021) suggested that students' beliefs influence their motivation to engage in writing practice, which means that learning to write is valuable and that the writing task is likely to be successful. Thirdly, achievement goal theory is one of the most direct of the many theories of motivation used to explain individual behaviour in educational contexts and guide educational practice. Using achievement goal theory to design a writing motivation scale, the study found that achievement goals were correlated with students' age (Hamilton et al., 2013). If the three motivational theories mentioned above act directly on writing motivation, attribution theory differs in that it involves a success or failure analysis of a previous writing test (Weiner, 2012). Apart from those, other scholars and researchers have constructed theories related to writing motivation, such as self-efficacy theory (Dweck, 2013) and interest theory (Hidi & Renninger, 2006). Even though various psychologists construct motivational theories for different factors, the ultimate aim is to serve the students' writing tasks.

2.2 Writing Motivation and Impact Factors

To examine the factors that influence fluctuations in writing motivation, the following variables were considered: writing performance, gender, and grade level (age).

2.2.1 Writing Motivation and Writing Performance

Previous research has shown that motivation predicts writing performance, which is why writing motivation is so important. Graham (2018) concentrated on two crucial components of the structure of motivation: self-efficacy (beliefs in one's capacity to write) and attitudes (beliefs in one's enjoyment of writing). Pajares and his colleagues found a link between writing self-efficacy and writing-related indicators such as writing performance (Pajares, 2003; Pajares et al., 2001). Moreover, Ekholm et al. (2018) conducted an empirical study of writing attitudes and concluded that motivational structures were favourably associated with quantitative measures of writing performance. In sum, writing performance is a direct reflection of students' writing motivation, and teachers need to observe changes in students' motivation during writing teaching activities.

2.2.2 Writing Motivation and Gender

While some research findings suggest negligible gender differences in academic ability, gender differences in academic motivation indices and academic self-beliefs are frequently reported (Pajares & Valiante, 2001). Based on this, some researchers have turned their attention to gender and writing motivation (Ekholm et al., 2018; Klassen, 2002; Pajares & Valiante, 2001; Troia et al., 2013). One opposing finding from the review of Klassen (2002) was that gender differences in the two studies had a significant effect on self-efficacy (Pajares & Johnson, 1998; Pintrich & De Groot, 1990). However, there was no substantial difference in the motivation of males and females to write (Pajares & Valiante, 2001). Most notably, when asked about their writing skills, both boys and girls agreed that girls were slightly better at writing. In other words, it might make sense for teachers to focus on what drives boys to write when teaching them how to write.

2.2.3 Writing Motivation and Grade (Age)

Owing to the fact that students of different ages have various psychological characteristics, the level of the school year is also one of the influencing factors that affect students' writing motivation. Research shows that as students grow older, their motivation to complete academic tasks decreases. For instance, the results of Pajares and Valiante's (2001) study showed that in terms of self-efficacy, Year 7 and Year 8 students were less enthusiastic about the writing task compared to their younger counterparts (Year 6) in the same school. However, Yeung et al.'s (2020) research presented the opposite results, with no significant variation between writing motivation and grade differences. Furthermore, the educational environment may alter the writing motivation of students in different grades.

2.3 Writing Motivation and Teaching Approach

Since motivation affects students' writing achievement (Pajares, 2003), teachers have begun to employ various teaching approaches to boost students' motivation. Han and Hiver (2018) conducted a genre-based approach with 174 Korean secondary school students, the results of which showed that a genre-based teaching approach was the best way to promote student motivation. Moreover, Yu et al. (2020) used the same pedagogical approach to conduct a large-scale study of 35 universities and obtained the same result.

With the integration of traditional teaching and learning with modern technology, emerging digital tools have taken their place in the field of research

on writing motivation. Fathi et al. (2019) designed an experimental group using a blog-mediated writing classroom. The study found that the intervention of blogging in English writing instruction was more conducive to students' motivational regulation than the control group, in which students received traditional writing instruction. In addition, automated writing evaluation (AWE) is software that provides students with scoring and automatic feedback on their writing. Wilson et al. (2021) found, through a focus group and AWE, that students in grades 3–5 believed that instant scoring and access to comments contributed to their motivation to improve their writing scores and revise.

In conclusion, through the teachers' continuous efforts, with the help of traditional teaching methods and the use of information technology and electronic means, the ultimate aim is to motivate students to write and thus change the status quo of less satisfactory writing performance.

2.4 The Research Gap

Through a systematic review of the literature on writing motivation, researchers and practitioners have explored the field in terms of motivation theory, impact factors, and pedagogy. While there is more research on writing motivation, there are only a handful of review articles in the field. Pajares (2003) published the first narrative review of writing motivation at the turn of the century, reflecting researchers' desire to integrate the findings of prior studies. To date, only three systematic reviews have been published on writing self-efficacy (Klassen, 2002), writing attitudes (Ekholm et al., 2018), and writing motivation in school (Camacho et al., 2021). The third researcher chose only two databases: PsycINFO and ERIC, which are authoritative databases in the fields of psychology and education, respectively. It is worth noting that linguistics and computer science should not be neglected in the study of writing motivation. Previous review articles have used narrative reviews and systematic reviews, while no studies have yet integrated the research findings on writing motivation using a scientometric approach. Therefore, this study was undertaken to fill this research gap. To address the research gap, this study selected the Web of Science and Scopus databases for a systematic and comprehensive analysis of the existing literature. The research progress of writing motivation in the early 21st century was tracked with the help of CiteSpace visualisation software, reviewing the current state of research and future trends.

3. Research Methodology

3.1 Data Sources

Two major databases, WoS and W&S, were selected as data sources for this study. The WoS database contains more than 20,000 authoritative and high-impact academic journals and conference papers globally, and serves as a search engine for all Social Science Citation Index (SSCI) journals (Li et al., 2022). As the world's biggest peer-reviewed database, W&S holds a significant position in identifying studies in the fields of education and social sciences (Bodily et al., 2019). These two databases cover virtually all of the authoritative literature, ensuring the data's authenticity and the research's validity.

The data collection and processing includes the following steps: In the first step, a literature search was carried out on both databases for the keyword 'writing motivation', which was the subject of this study. The period was set from 1 January 2001 to 31 December 2022, and a total of 251 publications were screened, including 132 studies from Scopus and 119 studies from WoS. In the second step, duplicate papers and non-article papers were screened. A comparison of the literature in the two databases by title and author name revealed 33 identical papers. A total of 34 publications were excluded by clicking 'article' in the document type in both databases. In the third step, a manual check was carried out to eliminate a total of 36 non-relevant and non-English terms from the titles and abstracts of the papers. Finally, 148 articles were chosen as the dataset for further research. Figure 1 shows the process of filtering the data through a flow chart:

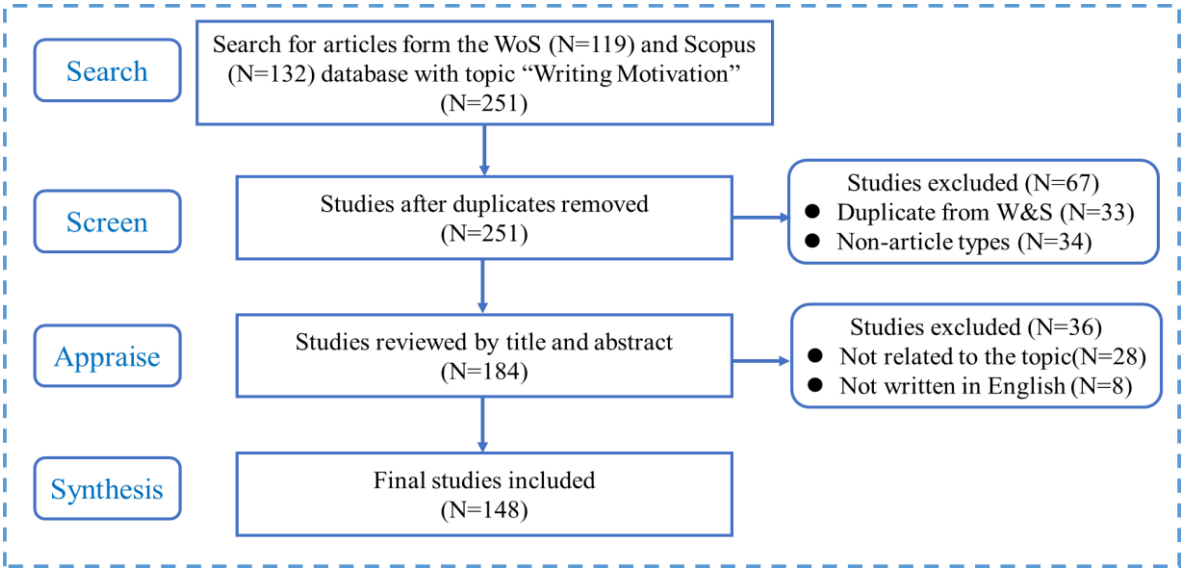

Figure 1: Paper selection process for scientometric analysis

3.2 Data Analysis Technique

CiteSpace is a common tool for analysing potential links between the literature that is based on JAVA programming language (Chen, 2006). This tool can visually assess scientific data, detect research trends, and track research hotspots in the research area. Before creating a document map using the text data format, the W&S document was pre-processed in CiteSpace using a data converter. After completing the data transformation, a new project was created, with the time slice selected as from 2001 to 2022 and the node type selected as keywords, resulting in a knowledge graph of keyword co-occurrence. In the end, a thorough analysis of the data obtained through annual distribution, citation frequency, and keyword co-occurrence helped to reveal the state of development and prefatory knowledge in the field of writing motivation.

4. Research Findings

4.1 The Trends of the Studies on Writing Motivation from W&S

An analysis of the number and trends of writing motivation publications in the early 21st century provides insight into past trend changes and identifies future research directions.

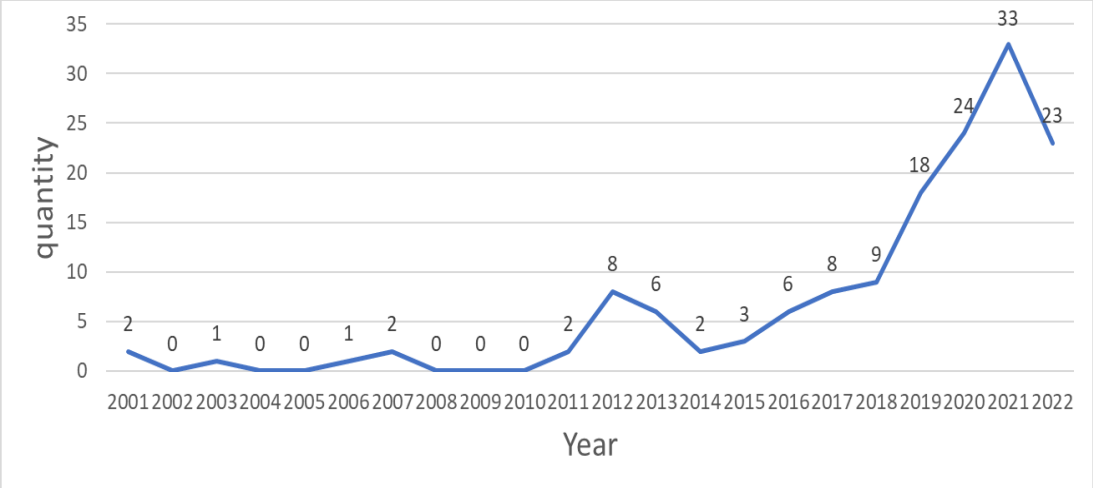

Figure 2: Annual distribution of the studies on writing motivation from W&S

Figure 2 depicts the change in the number of studies on writing motivation published by W&S between 2001 and 2022. Overall, researchers' studies on the field of writing motivation showed an upward trend, with a peak of 33 in 2021. In the early stages of research on writing motivation, this field did not attract widespread attention from researchers, and there were only a few papers each year. Since 2011, this field has attracted more attention from scholars and professionals, and the W&S literature on writing motivation has gradually grown. However, it shows a linear decline in 2022. It is worth noting that research by scholars in this area slowed down in the two years following 2012, but gradually improved over the next few years. The most notable surge starts in 2018, with the growth rate of this research theme nearly quadrupling by 2021. This trend suggests that research on writing motivation continues to be topical and deserves the attention and exploration of researchers and practitioners.

4.2 Citation Frequency of the Studies of Writing Motivation from W&S

The literature cited represents the impact of a paper. Analysis of highly cited publications not only provides a better understanding of writing motivation and other relevant variables, but also allows for the identification of prominent contributors to the field. This section addresses the second research question based on citation frequency, research perspectives, contributors, and countries, respectively.

Table 1 lists highly cited publications related to writing motivation. By reading and analysing the titles and abstracts of the ten most-cited papers, it is feasible to summarise their research viewpoints in the following three categories: (1) writing motivation and motivation theory (MacArthur et al., 2016; Troia et al., 2012; Waller & Papi, 2017); (2) writing motivation and other variables, including writing performance (Duijnhouwer et al., 2012; Graham et al., 2017; Troia et al.,

2013), students' gender (Pajares & Valiante, 2001; Troia et al., 2013), and students' grade level (Mata, 2011; Troia et al., 2013); and (3) writing motivation using teaching methods or electronic tools (Wilson & Czik, 2016). By identifying topical research areas, researchers are presented with a useful resource and writing motivation research can continue to advance. More importantly, Pajares has made a substantial contribution to the discipline, with the highest number of citations in the top two positions.

Table 1: Top 10 cited studies on writing motivation from W&S

No.	Title	Author	Journal	Citation Count	Year
1	Self-Efficacy Beliefs, Motivation, and Achievement in Writing: A Review of the Literature	Pajares	*Reading and Writing Quarterly*	537	2003
2	Gender Differences in Writing Motivation and Achievement of Middle School Students: A Function of Gender Orientation?	Pajares &Valiante	*Contemporary Educational Psychology*	196	2001
3	Automated Essay Evaluation Software in English Language Arts Classrooms: Effects on Teacher Feedback, Student Motivation, and Writing Quality	Wilson & Czik	*Computers and Education*	84	2016
4	Relationships Between Writing Motivation, Writing Activity, And Writing Performance: Effects of Grade, Sex, And Ability	Troia et al.	*Reading and Writing*	77	2013
5	Feedback Providing Improvement Strategies and Reflection on Feedback Use: Effects on Students' Writing Motivation, Process, And Performance	Duijnhouwer et al.	*Learning and Instruction*	75	2012
6	Motivation And Feedback: How Implicit Theories of Intelligence Predict L2 Writers' Motivation and Feedback Orientation	Waller & Papi	*Journal of Second Language Writing*	73	2017
7	Motivation Research in Writing: Theoretical and Empirical Considerations	Troia et al.	*Reading and Writing Quarterly*	59	2012
8	The Relationship Among Strategic Writing Behavior, Writing Motivation, and Writing Performance with Young, Developing Writers	Graham et al.	*Elementary School Journal*	46	2017

9	Motivation For Reading and Writing in Kindergarten Children	Mata	*Reading Psychology*	42	2011
10	A Multicomponent Measure of Writing Motivation with Basic College Writers	MacArthur et al.	*Learning Disability Quarterly*	38	2016

Contemporary academic research also holds a prominent position in worldwide rivalries. Table 2 lists the top five nations in terms of the number of publications on the topic. Obviously, the United States (US) generated the most research papers in this field (in total, 42), accounting for 28% of the total number of publications in this field, and the number of literature citations was high (1 015). China is a close second with 224 citations, roughly four times fewer than the US. This is followed by Turkey, Belgium, and the United Kingdom (UK) with 47, 31, and 23 citations, respectively. Hopefully, this rating will encourage each nation to place greater emphasis on teaching motivation, resulting in additional teaching and practice in the field.

Table 2: Top 5 nations cited studies on writing motivation from W&S

Rank	Country	Publication	Citations	Average Citation / Publication
1	The United States	42	1015	24.17
2	China	30	224	7.47
3	Turkey	8	47	5.88
4	Belgium	6	31	5.17
5	United Kingdom	6	23	3.83

4.3 Keyword Co-occurrence of the Studies on Writing Motivation from W&S

Keywords are highly summarized and focused descriptions of the research content of the literature (Zainuddin & Halili, 2016). Co-occurrence analysis identifies relationships between related topics in the subject area represented by the text by analysing the forms that co-occur in the same textual segment (Ramakreshnan et al., 2021). This section implements keyword clustering mapping and keyword time zone mapping through keyword co-occurrence.

Firstly, keyword cluster analysis refers to the grouping of all keywords in the literature based on certain associations (Zakaria et al., 2021). The Q-value and S-value represent the cluster modularity value and the cluster mean silhouette value, respectively. The Q-value greater than 0.3 is generally considered to have a significant clustering structure, while the S-value greater than 0.7 means that the clustering is convincing (Chen et al., 2010). The Q and S values in this study were 0.53 and 0.83, respectively, which indicates a significant mapping structure and convincingly efficient clustering. To facilitate the analysis of keyword clustering, Table 3 depicts that 139 of the 148 publications are distributed across the following themes: educational research, psychology, and linguistics:

Table 3: Top 3 subject distributions of the studies on writing motivation from W&S

No.	Subject Area	Quantity	Proportion (%)
1	Educational Research	73	49.32
2	Psychology	36	24.32
3	Language Linguistics	30	20.27

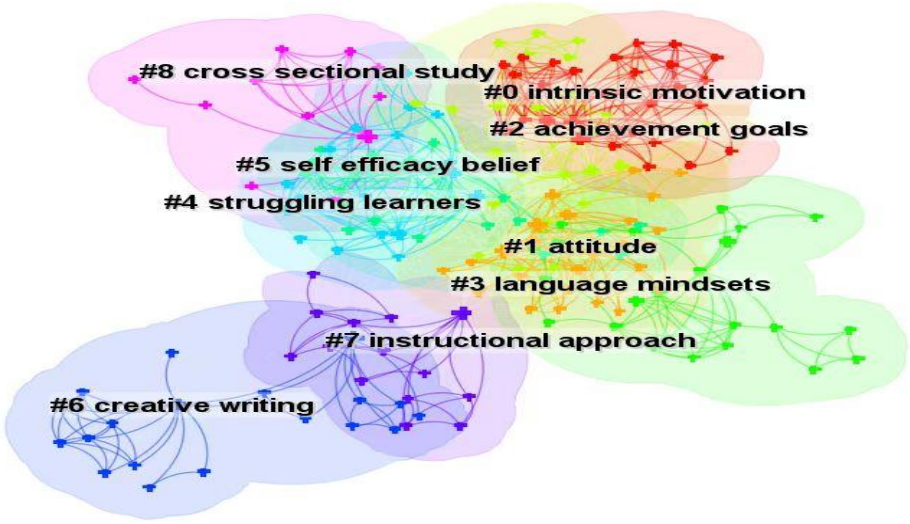

Figure 3

By combining Table 3 and Figure 3, it is possible to summarize the research on writing motivation into the following areas: Firstly, writing motivation in the field of education includes clusters 2, 4, 6, 7, and 8. Researchers have conducted cross-sectional studies (selected segments of a larger population) to test teaching methods to improve students' writing motivation. Secondly, writing motivation in the field of psychology includes clusters 0, 1, and 5. These three clusters focus more on the intrinsic psychology of students, which also reveals that teachers should pay more attention to students' attitudes and motivations in teaching writing. Thirdly, cluster 3 revealed research in the field of writing motivation and linguistics. Language mindsets refer to students' beliefs about their capability to learn a language; these can be changed. In summary, writing motivation according to the three themes mentioned above helped to identify the interplay and relationships between the domains.

Secondly, keyword co-occurrence analysis also demonstrates the developmental process of writing motivation (Chu et al., 2022), which is supported by the time zone mapping in Figure 4. The time zone mapping is a view from the time dimension and gives a clear picture of the updates and interactions in the literature (Li et al., 2022). Each circle represents a keyword, and its position corresponds to the year in which it first appeared. The different colours and circle sizes indicate the number of nodes, presenting the writing motivation in relation to other related studies over time. These lines reflect the first appearance of two keywords in the same article (Chen, 2006). For visual analysis, Figure 4

combines with the timeline mapping and annual distribution of the studies on writing motivation from W&S.

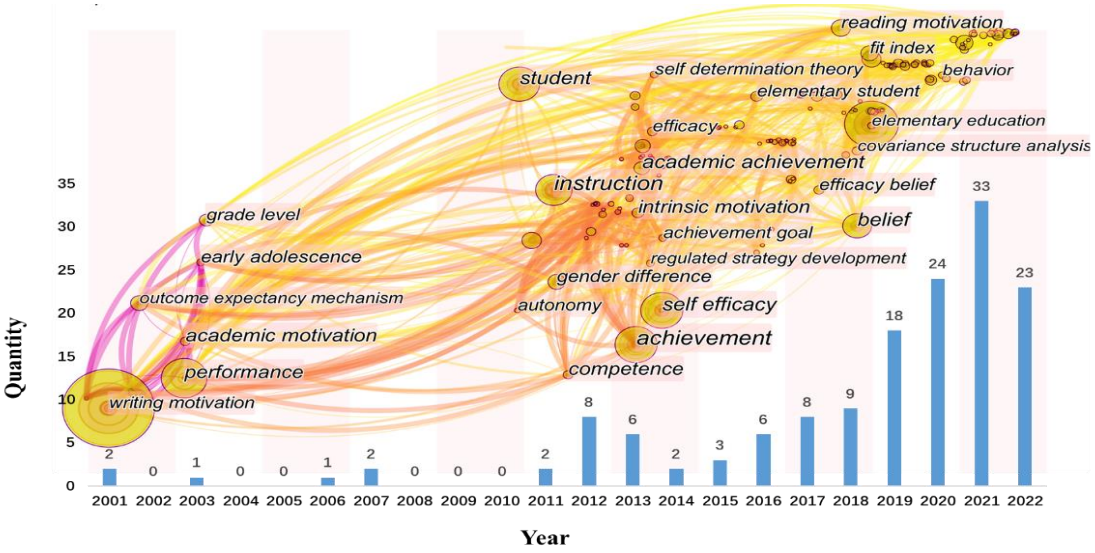

Figure 4: Keywords time zone mapping and annual distribution of studies on writing motivation from W&S

Based on the keyword 'time zone mapping', the research on writing motivation is divided into the following three stages: In the first phase, the emerging phase from 2001 to 2003, Pajares and Valiante (2001) published the first study on writing motivation. Two years later, the relationship between writing motivation and grade level, gender, and performance was noted. Pajares (2003) suggested that students' confidence in their writing ability affects their writing motivation. The second phase, from 2004 to 2010, was a period of stagnation. In these seven years, there was only one study on writing motivation. As a result, no new keyword was shown for this period. The third phase, from 2011 to the present, is a period of rapid development. It is clear from Figure 4 that as the field of writing motivation gradually comes to the forefront of researchers' minds, emerging keywords are presented more intensively. The co-occurrence of keywords at this stage points the way to future research that could focus more on writing achievement, teacher instruction, and elementary education.

5. Discussion

The visual analysis of 148 papers selected from W&S could help researchers understand the direction of writing motivation, clarify the background and development of research, grasp the current level of research, identify the strengths and weaknesses of research at this stage, predict future research directions or trends, and better guide subsequent research. Although researchers began studying writing motivation in 2001, the topic received scant attention during the first decade of the 21st century. It was only after 2011 that the number of relevant studies began to grow significantly. The decrease in 2022 reflects the fact that scholars are not dedicating all their efforts to the study of writing motivation. Furthermore, a review of the sample literature reveals that the field's overall coverage is not exceptionally comprehensive. Therefore, writing motivation is a promising research topic for researchers and teachers in the future.

The study of motivation in writing encompasses multidisciplinary research. The main areas of research at W&S focus on education, psychology, and linguistics. In addition, writing motivation has been studied in three areas: motivation theory, relationships with other variables, and teaching methods. From macro-disciplines to micro-areas, researchers in many countries are actively working to make their own academic contributions. The developed countries have a definite advantage in terms of the number of publications on writing motivation, while China, as a developing country, has a relatively large number of papers but does not perform well in terms of citations.

According to the time zone mapping, researchers have favoured elementary students as the research subject over the past five years. Prior study has shown that motivation grows with age (Pajares and Valiante, 2001), therefore there is a pressing need to boost students' writing motivation at the elementary level. Additionally, reading as an input skill has a non-negligible impact on students' writing. Over time, the focus of the field has changed more markedly, from an initial emphasis on external objective factors to internal psychological factors, and from problem-based analysis to improved pedagogical techniques, all of which reflect the epoch-making educational significance of writing motivation.

Previous literature review publications depended entirely on research team members reading extensively and manually summarizing the relevant literature. When choosing the standards for literature collection and databases, each researcher has their own stance and methodology. Furthermore, researchers have limited time and energy. Owing to different perspectives and cognitive styles, different researchers analyse the same literature and reach different conclusions.

Nonetheless, the combination of scientometrics and visual analysis has prompted researchers to undertake a more accurate assessment of the literature, providing them with a thorough and systematic examination of the emergence and evolution of research hotspots in the field of writing motivation. The titles, abstracts, and keywords of the filtered literature were employed for the final clustering analysis using CiteSpace generated subject terms. The sample of data collected for this study accurately reflects the strengths of scientometrics, while the analysis can be replicated across researchers. As long as the same criteria are used, even different researchers end up with the same results. Currently, there is no comprehensive scientometric study of the literature on writing motivation. Therefore, this study has screened, analysed, and summarised the authors, keywords, citations, and source journals of the literature in this field, using visualisation to reflect past research hotspots and predict future development trends visually, accurately, and graphically and to provide referable directions and suggestions for future development.

6. Conclusion

This study adopted a scientometric perspective in CiteSpace to analyse previous research findings, recent development processes, and future directions in the field of writing motivation. Specifically, 148 papers from W&S on writing motivation were analysed in terms of trends, research perspectives, and citation frequency, followed by a visual analysis of keyword co-occurrence. In terms of research methodology, this study differs from past reviews in that it employed a combination of quantitative literature analysis and visualisation, thereby

contributing to the study of writing motivation from a methodological standpoint.

In conclusion, this literature review serves not only as a valuable resource for scientific research and design but also as a guide for instructors and students. However, there are inevitable research limitations. Firstly, some valuable papers were not accepted in the W&S database. Secondly, other variables related to writing motivation were not considered in this study, such as teacher feedback and student personality. Building on previous research on writing motivation, there are still some fundamental questions that researchers have yet to address. Are there other variables that influence students' writing motivation such as classroom systems, textbooks, and family background? Does digital media technology negatively affect writing motivation? In future research, it is highly likely that researchers will shed light on these questions and advance the field of writing motivation. Furthermore, when research from non-English-speaking countries is prominent in terms of its contribution to and impact on a particular field, researchers should also select authoritative literature from relevant databases to gain a more comprehensive understanding of global research frontiers and trends.

7. References

Bodily, R., Leary, H., & West, R. G. (2019). Research trends in instructional design and technology journals. *British Journal of Educational Technology*, *50*(1), 64–79. https://doi.org/10.1111/bjet.12712

Camacho, A. M., Alves, R., & Boscolo, P. (2021). Writing motivation in school: A systematic review of empirical research in the early twenty-first century. *Educational Psychology Review*, *33*(1), 213–247. https://doi.org/10.1007/s10648-020-09530-4

Chen, C. (2006). CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the Association for Information Science and Technology*, *57*(3), 359–377. https://doi.org/10.1002/asi.20317

Chen, C., Ibekwe-SanJuan, F., & Hou, J. (2010). The structure and dynamics of co-citation clusters: A multiple-perspective co-citation analysis. *Journal of the Association for Information Science and Technology*, *61*(7), 1386–1409. https://doi.org/10.1002/asi.21309

Chu, W. W., Hafiz, N. R. M., Mohamad, U. A., Ashamuddin, H., & Tho, S. W. (2022). A review of STEM education with the support of visualizing its structure through the CiteSpace software. *International Journal of Technology and Design Education*, *33*(1), 39–61. https://doi.org/10.1007/s10798-022-09728-3

Conradi, K., Jang, B. G., & McKenna, M. J. (2014). Motivation terminology in reading research: A conceptual review. *Educational Psychology Review*, *26*(1), 127–164. https://doi.org/10.1007/s10648-013-9245-z

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/s15327965pli1104_01

Duijnhouwer, H., Prins, F. J., & Stokking, K. M. (2012). Feedback providing improvement strategies and reflection on feedback use: Effects on students' writing motivation, process, and performance. *Learning and Instruction*, *22*(3), 171–184. https://doi.org/10.1016/j.learninstruc.2011.10.003

Dweck, C. S. (2013). Self-theories. *Psychology Press EBooks*. https://doi.org/10.4324/9781315783048

Ekholm, E., Zumbrunn, S., & DeBusk-Lane, M. (2018). Clarifying an elusive construct: A systematic review of writing attitudes. *Educational Psychology Review*, *30*(3), 827–856. https://doi.org/10.1007/s10648-017-9423-5

Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, *70*(3), 461–475. https://doi.org/10.1037/0022-3514.70.3.461

Fallon, L. M., Marcotte, A. M., & Ferron, J. M. (2020). Measuring academic output during the good behavior game: A single case design study. *Journal of Positive Behavior Interventions*, *22(*4), 246–258. https://doi.org/10.1177/1098300719872778

Fathi, J., Ahmadnejad, M., & Yousofi, N. (2019). Effects of blog-mediated writing instruction on l2 writing motivation, self-efficacy, and self-regulation: A mixed-methods study. *Research in Applied Linguistics*, *10*(2), 159–181. https://doi.org/10.22055/rals.2019.14722

Garfield, E. (2009). From the science of science to Scientometrics visualizing the history of science with HistCite software. *Journal of Informetrics*, *3*(3), 173–179. https://doi.org/10.1016/j.joi.2009.03.009

Graham, S. M. (2018). A revised writer(s)-within-community model of writing. *Educational Psychologist*, *53*(4), 258–279. https://doi.org/10.1080/00461520.2018.1481406

Graham, S. M., Kiuhara, S. A., Harris, K. R., & Fishman, E. J. (2017). The relationship among strategic writing behavior, writing motivation, and writing performance with young, developing writers. *Elementary School Journal*, *118*(1), 82–104. https://doi.org/10.1086/693009

Hamilton, E., Nolen, S. B., & Abbott, R. D. (2013). Developing measures of motivational orientation to read and write: A longitudinal study. *Learning and Individual Differences*, *28*, 151–166. https://doi.org/10.1016/j.lindif.2013.04.007

Han, J., & Hiver, P. (2018). Genre-based L2 writing instruction and writing-specific psychological factors: The dynamics of change. *Journal of Second Language Writing*, *40*, 44–59. https://doi.org/10.1016/j.jslw.2018.03.001

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, *41*(2), 111–127. https://doi.org/10.1207/s15326985ep4102_4

Khosronejad, M., Ryan, M., Barton, G., & Kervin, L. (2021). "I get all my ideas from the tree": Investigating elementary students' views as reflexive writers. *Research Papers in Education*, 1–23. https://doi.org/10.1080/02671522.2021.1961299

Klassen, R. (2002). Writing in early adolescence: A review of the role of self-efficacy beliefs. *Educational Psychology Review*, *14*, 173-203.

Latif, M. (2019). Unresolved issues in defining and assessing writing motivational constructs: A review of conceptualization and measurement perspectives. *Assessing Writing*, *42*, 100417. https://doi.org/10.1016/j.asw.2019.100417

Lee, I., Yu, S., & Liu, Y. (2018). Hong Kong secondary students' motivation in EFL writing: A survey study. *TESOL Quarterly*, *52*(1), 176–187. https://doi.org/10.1002/tesq.364

Li, Y., Abdul-Rashid, S. H., & Ghazilla, R. A. R. (2022). Design methods for the elderly in Web of Science, Scopus, and China National Knowledge Infrastructure databases: A Scientometric analysis in Citespace. *Sustainability*, *14*(5), 2545. https://doi.org/10.3390/su14052545

Ling, G., Elliot, N., Burstein, J., McCaffrey, D. F., MacArthur, C. A., & Holtzman, S. (2021). Writing motivation: A validation study of self-judgment and performance. *Assessing Writing*, *48*, 100509. https://doi.org/10.1016/j.asw.2020.100509

MacArthur, C. A., Philippakos, Z. A., & Graham, S. M. (2016). A multicomponent measure of writing motivation with basic college writers. *Learning Disability Quarterly*, *39*(1), 31–43. https://doi.org/10.1177/0731948715583115

Mata, L. (2011). Motivation for reading and writing in kindergarten children. *Reading Psychology*, *32*(3), 272–299. https://doi.org/10.1080/02702711.2010.545268

Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading & Writing Quarterly*, *19*(2), 139–158. https://doi.org/10.1080/10573560308222

Pajares, F., Hartley, J., & Valiante, G. (2001). Response format in writing self-efficacy assessment: Greater discrimination increases prediction. *Measurement and Evaluation in Counseling and Development*, *33*(4), 214–221. https://doi.org/10.1080/07481756.2001.12069012

Pajares, F., & Johnson, M. (1998). Self-efficacy beliefs and the writing performance of entering high school students. *Psychology in the Schools*, *33*(2), 163–175. https://doi.org/10.1002/(sici)1520-6807(199604)33:2

Pajares, F., & Valiante, G. (2001). Gender differences in writing motivation and achievement of middle school students: A function of gender orientation? *Contemporary Educational Psychology*, *26*(3), 366–381. https://doi.org/10.1006/ceps.2000.1069

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33–40. https://doi.org/10.1037/0022-0663.82.1.33

Ramakreshnan, L., Aghamohammadi, N., Fong, C. S., & Sulaiman, N. M. N. (2021). A comprehensive bibliometrics of 'walkability' research landscape: visualization of the scientific progress and future prospects. *Environmental Science and Pollution Research*, *28*(2), 1357–1369. https://doi.org/10.1007/s11356-020-11305-x

Rashtchi, M. (2019). Scaffolding argumentative essay writing via reader-response approach: A case study. *Asian-Pacific Journal of Second and Foreign Language Education*, *4*(1). https://doi.org/10.1186/s40862-019-0078-2

Rousseau, R. (2021). Naukometriya, Nalimov and Mul'chenko. *Collnet Journal of Scientometrics and Information Management*, *15*(1), 213–224. https://doi.org/10.1080/09737766.2021.1943042

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*(1), 54–67. https://doi.org/10.1006/ceps.1999.1020

Sherafati, N., Largani, F. M., & Amini, S. (2020). Exploring the effect of computer-mediated teacher feedback on the writing achievement of Iranian EFL learners: Does motivation count? *Education and Information Technologies*, *25*(5), 4591–4613. https://doi.org/10.1007/s10639-020-10177-5

Troia, G. A., Harbaugh, A. G., Shankland, R., Wolbers, K. A., & Am, L. (2013). Relationships between writing motivation, writing activity, and writing performance: Effects of grade, sex, and ability. *Reading and Writing*, *26*(1), 17–44. https://doi.org/10.1007/s11145-012-9379-2

Troia, G. A., Shankland, R., & Wolbers, K. A. (2012). Motivation research in writing: Theoretical and empirical considerations. *Reading & Writing Quarterly*, *28*(1), 5–28. https://doi.org/10.1080/10573569.2012.632729

Waller, L., & Papi, M. (2017). Motivation and feedback: How implicit theories of intelligence predict L2 writers' motivation and feedback orientation. *Journal of Second Language Writing*, *35*, 54–65. https://doi.org/10.1016/j.jslw.2017.01.004

Weiner, B. (2012). *An attributional theory of motivation and emotion*. Springer Science & Business Media.

Wigfield, A. (1994). Expectancy-value theory of achievement motivation: A developmental perspective. *Educational Psychology Review*, *6*(1), 49–78. https://doi.org/10.1007/bf02209024

Wilson, J. M., Ahrendt, C., Fudge, E. C., Raiche, A., Beard, G., & MacArthur, C. A. (2021). Elementary teachers' perceptions of automated feedback and automated scoring: Transforming the teaching and learning of writing using automated writing evaluation. *Computers & Education*, *168*, 104208. https://doi.org/10.1016/j.compedu.2021.104208

Wilson, J. M., & Czik, A. (2016). Automated essay evaluation software in English Language Arts classrooms: Effects on teacher feedback, student motivation, and writing quality. *Computers & Education*, *100*, 94–109. https://doi.org/10.1016/j.compedu.2016.05.004

Wright, K., Hodges, T. S., Enright, E. A., & Abbott, J. (2021). The relationship between middle and high school students' motivation to write, value of writing, writer self-beliefs, and writing outcomes. *Journal of Writing Research*, *12*(3), 601–623. https://doi.org/10.17239/jowr-2021.12.03.03

Yeung, P., Ho, C. S., Chan, D., & Chung, K. C. (2020). Writing motivation and performance in Chinese children. *Reading and Writing*, *33*(2), 427–449. https://doi.org/10.1007/s11145-019-09969-0

Yu, S., Jiang, L., & Zhou, N. (2020). The impact of L2 writing instructional approaches on student writing motivation and engagement. *Language Teaching Research*, 136216882095702. https://doi.org/10.1177/1362168820957024

Zainuddin, Z., & Halili, S. H. (2016). Flipped classroom research and trends from different fields of study. *The International Review of Research in Open and Distributed Learning*, *17*(3). https://doi.org/10.19173/irrodl.v17i3.2274

Zakaria, N. H., Convey, P., Gomez-Fuentes, C., Zulkharnain, A., Sabri, S., Shaharuddin, N. A., & Ahmad, S. A. (2021). Oil bioremediation in the marine environment of antarctica: A review and bibliometric keyword cluster analysis. *Microorganisms*, *9*(2), 419. https://doi.org/10.3390/microorganisms9020419