

Global Distribution Analysis of Chinese Calligraphy Training and Learning Literature: 1970–2025

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Abstract: *This study systematically reviewed the global landscape of academic output in the field of calligraphic training research, with a focus on China's rapid development in this field. The present study employed bibliometric methods to quantitatively analyse 220 articles in the Web of Science database between 1970 and 2025. The objective of the study was to examine the trends of publications, research outputs, citations, and authors' contributions in each country. The results demonstrate that China is at the vanguard of calligraphic training research, as evidenced by its publication output and significant academic influence. It has emerged as the preeminent research powerhouse on the global stage. Despite the ongoing involvement of the United States, Japan and select European nations, there are discernible geographical disparities on a global scale. Concurrently, the research fervour in emerging Asian countries is progressively escalating. Further analysis at the author level suggests that Chinese scholars predominate in current research on calligraphic training. The findings outlined above not only reveal the evolutionary dynamics of the field, but also provide important insights for future globalisation and interdisciplinary innovation.*

Keywords: Bibliometric analysis, research trends, Chinese calligraphy Training, global distribution, citation analysis

1. Introduction

As a significant component of traditional Chinese culture, calligraphy has served as a medium for conveying the aesthetic spirit and philosophical tenets of Chinese culture. Furthermore, it has played a multifaceted role in various aspects of Chinese society, including personality cultivation, education, and enlightenment, as well as emotional regulation, throughout the historical course. Calligraphy training, as the primary means of acquiring calligraphy skills, was predominantly imparted by teachers and disciples in the early periods. The pedagogy emphasised a systematic training process, encompassing the stages of 'copying-brushwork-context'. In accordance with the progressive evolution of contemporary educational paradigms, the research agenda of calligraphy training has undergone a gradual transformation, expanding from the preservation of traditional skills to encompass a multifaceted exploration of learning mechanisms, psychological impact, cross-cultural communication, and even therapeutic functions.

In recent years, calligraphy training research has attracted considerable attention from the international academic community, primarily due to three factors. Firstly, the art of writing

Chinese characters has emerged as a pivotal entry point for comprehending Chinese culture within the broader context of the global 'Oriental Culture Fever'. Secondly, the integration of education and psychology research has propelled cross-disciplinary research in the domains of cognitive development and concentration training. Thirdly, the advancement of digital humanities tools, bolstered by scientific and technological progress, has facilitated the quantitative analysis and systematic evaluation of traditional calligraphy training research from a global standpoint. Thirdly, the development of digital humanities tools that are enabled by advances in science and technology has resulted in the quantification and analysis of traditional calligraphy training research, thereby enabling systematic evaluation from a global perspective. Despite the exploration of calligraphy from the perspectives of culture, art, and psychology, there is a paucity of comprehensive and quantitative analyses on the distribution, development trend, and position of China in the study of 'Calligraphic Training' as a specific practical activity. The objective of this study is to utilise bibliometric methods to analyse the extant literature in the core collection of Web of Science (WOS) between 1970 and 2025. The study will reveal the evolution, geographical distribution, and dominant force of research on calligraphy training. Furthermore, it will address the knowledge gap regarding the current research status of this field from a global perspective.

2. Literature Review

Calligraphy, considered a comprehensive art form, has historically been the focus of research in the disciplines of cultural studies, art history and aesthetic education (Xu, 2011). Following the shift in research paradigm, calligraphy training has gradually become an independent research object (Wang, 2015). Consequently, related studies have not only focused on the inheritance of calligraphy skills, but also covered aspects such as learners' cognitive mechanisms, writing behaviours and psychological regulation functions. For instance, Chen (2018) has highlighted the aesthetic, educational function of calligraphy within the Chinese primary and secondary education system, as well as its efficacy in emotion management and attention training.

Recent years have seen the introduction of bibliometric methods, which have brought new quantitative perspectives to research in the field of traditional culture. Li and Zhang (2020) revealed the evolution of disciplinary intersections and research hotspots in the study of Chinese calligraphy between 1990 and 2019 with the help of scientometric tools. Donthu et al. (2021) and Aria and Cuccurullo (2017) provided the methodological basis for the bibliometric analyses used in this study. Conversely, Aria and Cuccurullo (2017) have provided the methodological basis for the bibliometric analyses employed in this study, with their tools having been extensively utilised for trend detection and structural identification in interdisciplinary domains.

Furthermore, the cross-cultural and interdisciplinary nature of calligraphy has attracted the attention of academics. Calligraphy has played an important role in East-West cultural exchanges (Xu, 2011), and conversely, there has been an integration of calligraphy with modern health issues such as psychotherapy and attention deficit and hyperactive disorder (ADHD) interventions, representing a new trend in research (Huang, 2021). However, a paucity of research has been identified in the global research landscape concerning the subfield of 'Calligraphy Training'. Specifically, there is a need for comparative research assessing the differences and dynamics of research outputs between China and other countries. Furthermore, there is a lack of systematic research in this area.

The present study aims to undertake a comprehensive evaluation of the development of global calligraphy training research. This will be achieved by means of an analysis of four dimensions: quantity, geography, influence, and author structure. The study will clarify China's academic status and future development potential in this field, thereby providing theoretical support and practical references for subsequent related research, as shown in Table 1.

Table 1: Summary of study viewpoints

No.	Aurhor	Year	Viewpoints
1	Xu	2011	Calligraphy, considered a comprehensive art form, has historically been the focus of research in the disciplines of cultural studies, art history and aesthetic education
2	Wang	2015	Following the shift in research paradigm, calligraphy training has gradually become an independent research object
3	Chen	2018	Has highlighted the aesthetic, educational function of calligraphy within the Chinese primary and secondary education system
4	Li and Zhang	2020	Revealed the evolution of disciplinary intersections and research hotspots in the study of Chinese calligraphy between 1990 and 2019 with the help of scientometric tools
5	Aria and Cuccurullo	2017	Have provided the methodological basis for the bibliometric analyses employed in this study, with their tools having been extensively utilised for trend detection and structural identification in interdisciplinary domains
6	Xu	2011	Calligraphy has played an important role in East-West cultural exchanges
7	Huang	2021	there has been an integration of calligraphy with modern health issues such as psychotherapy and attention deficit and hyperactive disorder (ADHD) interventions, representing a new trend in research

3. Research Method

The present study employs bibliometric analyses, as shown in Table 2, deriving data from the Web of Science, Scopus, SPRINGER and PubMed Core Collection, encompassing the period from 1970 to 2025. The indicators analysed include the number of articles published, the number of citations, the contribution of countries, and the activity of authors.

Table 2: Comply with the inclusion criteria

Databases	Inclusion Criteria	No. of documents
WOS	1970 to the present.	173
Scopus		21
SPRINGER		17
PubMed		13

The utilisation of visualisation tools was instrumental in the creation of global distribution maps, time-series line charts, horizontal bar charts and timeline charts of authors' publications. These tools were employed to present a comprehensive picture of the development of calligraphy training research, with a focus on comparing China's performance with that of other countries in terms of volume and influence, as illustrated in Figure 1 below.

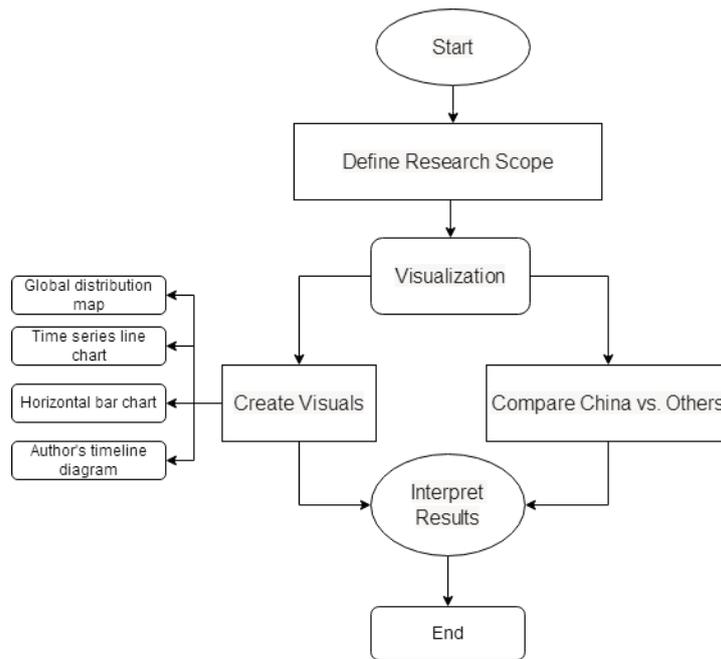


Figure 1: Research Flowchart

4. Results and Discussion

Global distribution of scientific output

The world map displays the distribution of scientific output in the domain of calligraphy training research, disaggregated by country. With regard to the distribution of publications, China, indicated in dark blue, has the highest number of publications in calligraphy training research worldwide, significantly ahead of other countries. This finding suggests that China has demonstrated considerable research activity and academic engagement in this domain in recent years, thereby establishing itself as a significant contributor to global calligraphy training research. The United States, the United Kingdom, Japan, Spain and Canada are shown in moderately dark blue, representing a high output and more stable research power in the field of calligraphy training research. European and Asia-Pacific countries, including the Netherlands, Poland, Malaysia and Australia, also contribute to this field, displaying a medium-light blue colour and a medium level of publications. In contrast, many countries in Africa, Central Asia, Latin America, and the Middle East are shown in grey on the map, indicating that these regions are less involved or still in their infancy in the field of calligraphy training research. The world is characterised by significant geographical imbalances, with research efforts concentrated in East Asia, North America and some European countries.

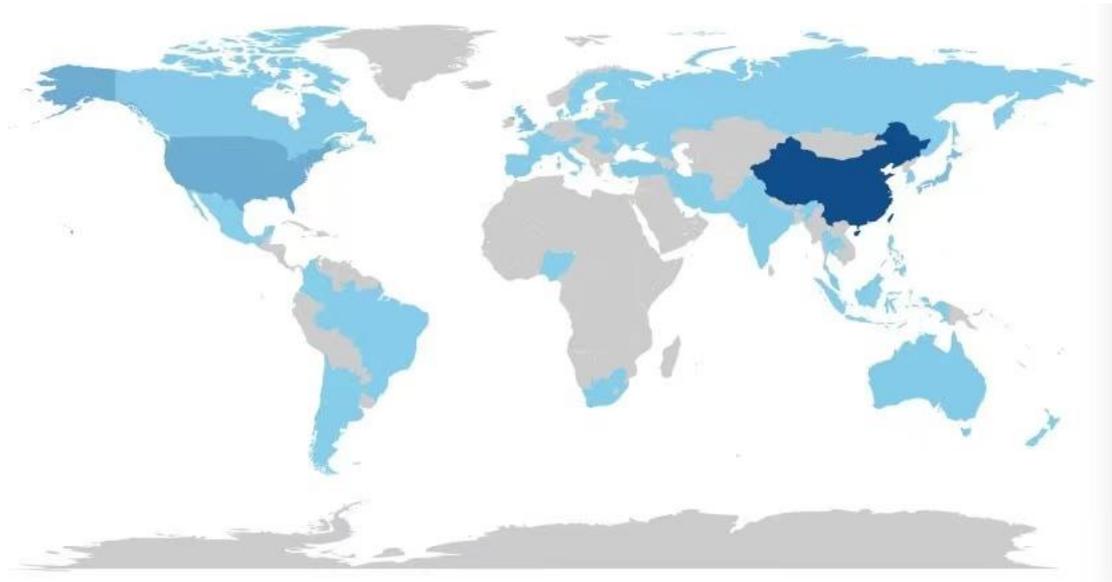


Figure 2: Countries' Scientific Production

The map provides a comprehensive representation of the contemporary international landscape in the domain of calligraphic training research, elucidating the precipitous ascent of China and the sustained contributions of traditional academic powers in Europe and the United States. The study indicates the existence of a considerable potential for future growth and development in the field of calligraphic training research. This potential is particularly pronounced in developing regions on a global scale.

In summary, the global distribution map (Figure 2) demonstrates that research in the field of calligraphy training is characterised by significant geographical imbalances. China, indicated in dark blue, is at the forefront in terms of the number of articles published. Conversely, the United States, the United Kingdom, Japan, Spain, and Canada constitute a medium research echelon. Regions such as Africa, Central Asia and Latin America demonstrate comparatively lower participation rates, indicating that the global research power of calligraphy training is mainly concentrated in East Asia, North America and some European countries.

Trends in research output over time

The line graph illustrates the trend of the number of articles published in the field of Calligraphy Training research in different countries between 1970 and 2025. The vertical axis indicates the number of published articles (Articles), the horizontal axis indicates the year (Year), and different countries are represented by curves with different colours, mainly including China, Japan, Korea, Malaysia, the United Kingdom and the United States.

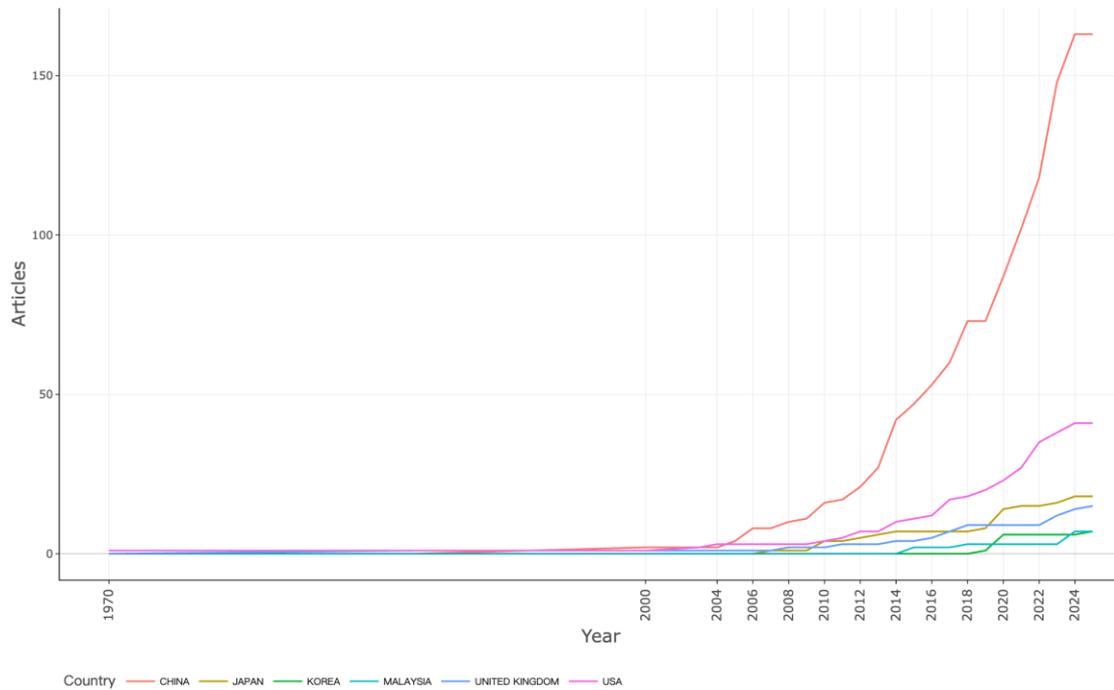


Figure 3: Countries' Production over Time

A general overview of global research activity in the field of calligraphic training reveals a relatively stagnant state, with a paucity of publications before the year 2000. However, following this period, particularly after the year 2010, there has been a notable surge in the number of publications worldwide, indicating a gradual rise in the prominence of calligraphic training research as a subject of interest.

Of these, China (red line) has seen the most significant growth. Since 2008, there has been an annual increase in the number of articles published in China, a trend that has accelerated significantly since 2015. By 2025, China had published significantly more research on calligraphic training than other countries, thus becoming the world's leading contributor to the field. This substantial growth is indicative of the elevated level of interest and research investment in the domain of calligraphic training within the Chinese academic community.

The United States (pink line) exhibited a period of relative dominance circa 2000, however, since 2015, China has been the dominant player. Nevertheless, the US has maintained steady growth and is consistently ranked among the world's leading publishers, thereby demonstrating its sustained academic influence in this field.

Other countries such as Japan (yellow line), Korea (green line), Malaysia (lime green line) and the United Kingdom (blue line) are also gradually increasing the number of articles, but at a slower rate than China and the United States. In most of these countries, the trend of the curve started to rise significantly after 2010 and the total number of articles is still in the low to medium range.

In summary, this picture clearly shows the global development trend in the field of calligraphy training research: emerging forces represented by China are rapidly rising, while the United States and other traditional powers maintain steady growth, and the rest of Asia is gradually joining this research boom, forming a new pattern of competition and cooperation in the field of global calligraphy training research.

In conclusion, the line graph (Figure 3) shows that global research on calligraphy education was relatively lukewarm before 2000 and has been growing rapidly since 2010. Among these, China has been increasing the number of publications every year since 2008, with explosive growth after 2015, and has secured the first place in the world by 2025. The United States, although dominant in the early years, has since been overtaken by China. Japan, the Republic of Korea, Malaysia, the United Kingdom and other countries are on the rise, but at a more moderate rate.

Corresponding author's national contribution

The following graph illustrates the distribution of publications in the field of Calligraphy Training research by country. The horizontal axis denotes the number of publications in each country, while the vertical axis enumerates the names of the countries involved in the research. The length of the bars is indicative of the level of scholarly output in the field by country, and the presence of cyan and a small amount of red in the bars may represent different types of literature (e.g. journal papers, conference papers, etc.), but no specific legend is provided in the figure.

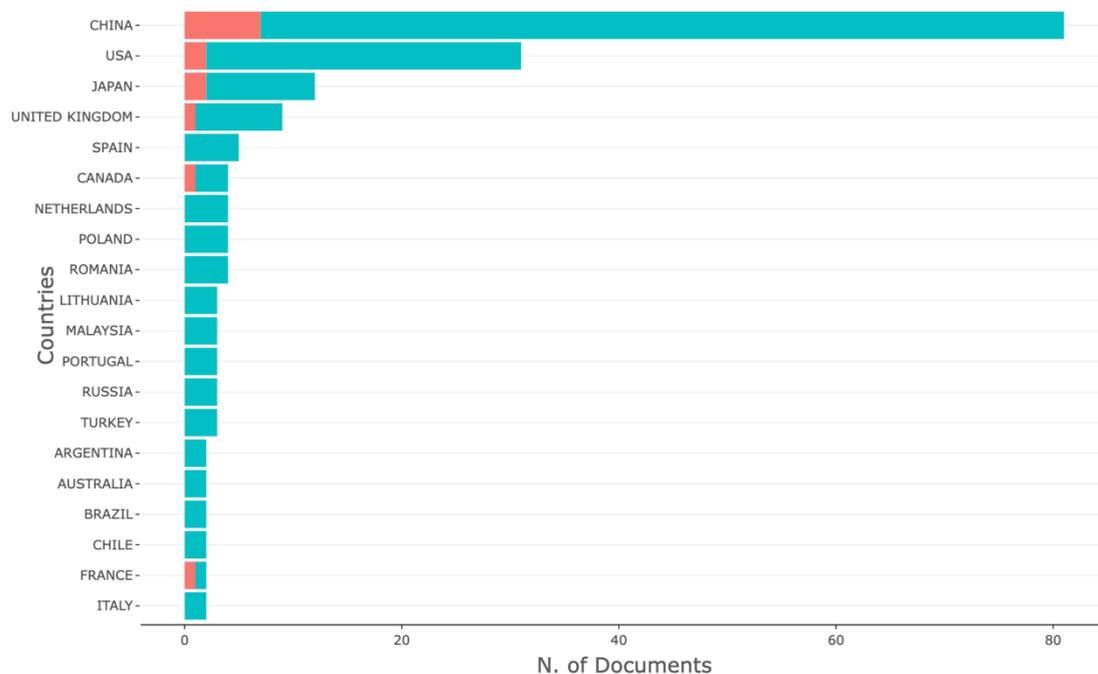


Figure 4: Corresponding Author's Countries

Overall, China is in first place by a significant margin, with more than 80 pieces of literature, far ahead of other countries. This demonstrates China's remarkable growth and dominance in the field of calligraphy training research. The United States is the second-largest contributor, with approximately half the number of documents as China, and continues to be a significant research entity in this domain. Japan, the United Kingdom, and Spain constitute the second tier, exhibiting a medium level of publications and demonstrating stable academic contributions. Canada, the Netherlands, Poland, Romania and other countries have a slightly smaller volume of literature, but also participate in the global academic dialogue.

With regard to the distribution of publications across the field, a clear long-tail effect emerges, whereby the majority of countries exhibit a paucity of publications, with a few exceptions such as China and the United States, and certain countries including Italy, France, Brazil, and Australia contributing a negligible number of publications. With respect to regional

distribution, East Asia (China, Japan), North America (USA, Canada) and several European countries (UK, Spain, the Netherlands) are the primary active areas in calligraphy training research, while South America, Eastern Europe and Southeast Asia exhibit comparatively lower levels of participation.

The map provides a comprehensive overview of the geographical distribution of calligraphy training research worldwide. The robust economic growth witnessed in China has precipitated a new wave of expansion in this field, while established economic powers such as the US and the UK maintain a high level of activity. A discernible participation gap is evident in other countries, indicating the presence of considerable untapped potential for future growth in this domain on a global scale.

In conclusion, the bar chart (Figure 4) further confirms China's leading position in calligraphy training research, with its corresponding literature far exceeding that of other countries. The participation of countries such as the United States, Japan, the United Kingdom, Spain, and Canada, although substantial, is still significantly different from that of China, and the overall long-tail effect is evident.

Citations to relevant literature by country

The horizontal bar graph illustrates the distribution of the number of citations (N. of Citations) in the domain of Calligraphy Training Research by country. The vertical axis enumerates the primary contributing countries, while the horizontal axis denotes the number of citations. Each blue dot denotes the specific number of citations received by the respective country, thereby visualising the disparities in global academic impact between nations.

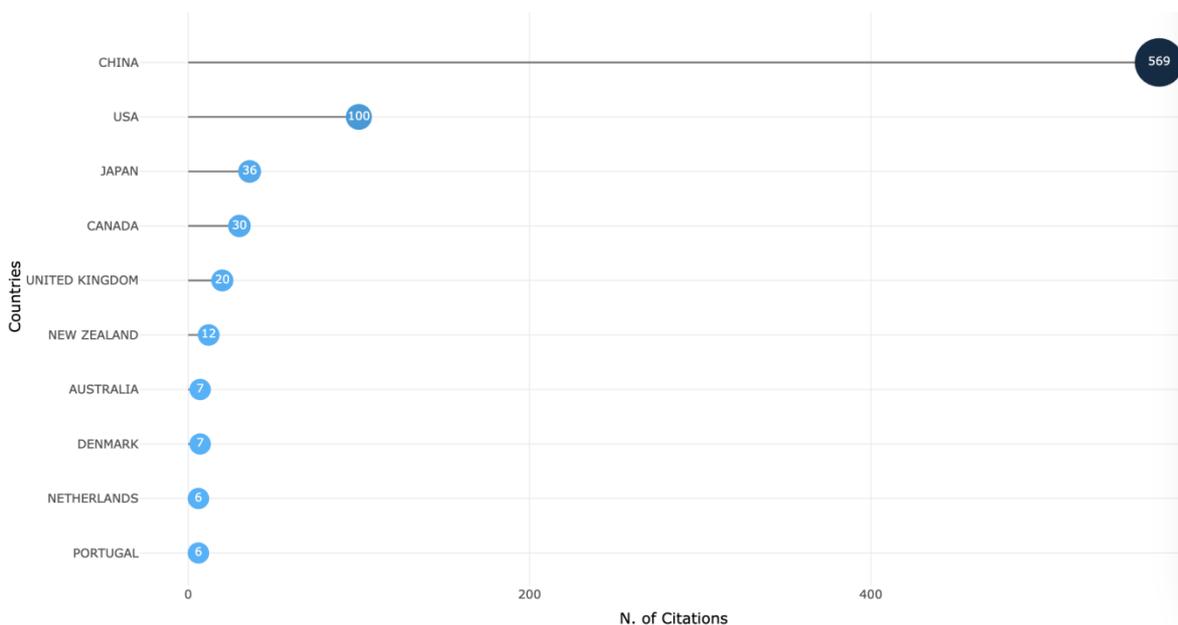


Figure 5: Most Cited Countries

China (CHINA) has been found to demonstrate significant superiority in terms of the number of citations received, with a total of 569 citations recorded. This finding serves to underscore the nation's notable international influence within the domain of calligraphy training research. This outcome aligns closely with the observed trend of China's notable surge in the number of publications in this field in recent years. This suggests that China has not only achieved growth in quantity, but also significant advancements in quality and international recognition.

The United States (USA) attained second position with 100 citations, thereby sustaining a substantial degree of international academic influence despite a considerable disparity when compared with China. This outcome is indicative of the USA's historical strengths in theoretical and applied research on calligraphic training. Japan (JAPAN, 36 citations) and Canada (CANADA, 30 citations) were the next most active countries, indicating a certain degree of research activity and international visibility.

The United Kingdom (UNITED KINGDOM, 20 citations) is positioned in the median range, suggesting that it sustains a consistent yet comparatively circumscribed impact in the domain. New Zealand (12 citations), Australia (7 citations), Denmark (7 citations), the Netherlands (6 citations) and Portugal (6 citations) are in the lower echelon of citations. This suggests that there is still a great deal of room for improvement in the international discourse on calligraphy training research in these countries. Further development is required in the field of calligraphic training in these countries.

The graph provides a visual representation of the distribution of international academic influence in the field of calligraphic training. It demonstrates that China has a significant lead over other countries, while China and the United States continue to dominate the global landscape. However, other countries are gradually engaging in the development of the discipline and contributing to the future diversification of global calligraphic training research. In summary, the citation analysis (Figure 5) reveals that China is in a distant first place in terms of the number of citations, with 569 reflecting the simultaneous increase in its academic quality and international recognition. The United States was the second most cited nation, with 100 citations, followed by Japan and Canada, reflecting the importance of these countries in international academic exchanges. The phenomenon of geographical concentration of the influence of global calligraphy training research is demonstrated by the high concentration of citations.

Main active author

The horizontal bar graph displays the most active authors in the field of calligraphy training research, along with the number of publications (N. of Documents) for each author. The vertical axis enumerates the names of the primary authors, while the horizontal axis denotes the number of documents published by the corresponding authors. The blue dots represent the specific number of publications, thereby providing a visual reflection of the scientific activity of each author within the field.

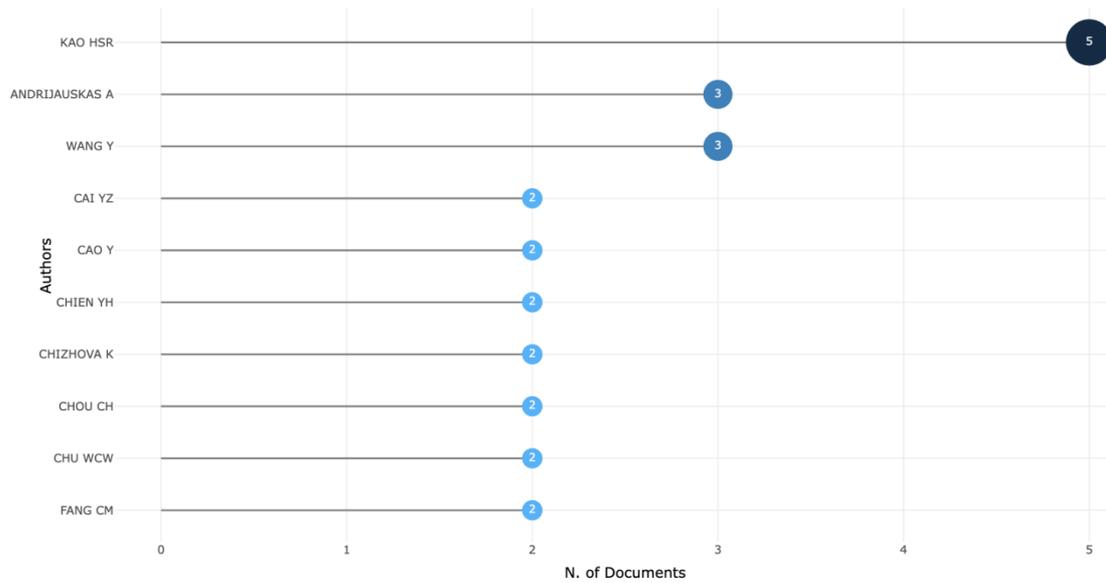


Figure 6: Most Relevant Authors

As illustrated by the figure, KAO HSR has published five relevant academic papers, a figure significantly higher than that of the other authors. This finding suggests a high level of output and a commitment to ongoing research in the field of calligraphy training. As can be seen from the data, ANDRIJAUSKAS A and WANG Y are in close proximity to the top of the ranking. The two authors have published three documents each, which indicates a high level of research activity.

Furthermore, it is evident that the authors CAI YZ, CAO Y, CHIEN YH, CHIZHOVA K, CHOU CH, CHU WCW, and FANG CM have each published two relevant papers, thereby constituting the second tier. The contribution of these authors, while individually less substantial, is collectively significant, representing a substantial research force within the domain of calligraphy training research.

The map provides a comprehensive overview of the authors in the field of calligraphic training in China, reflecting the characteristics of the field. The map reveals that the number of highly productive authors is relatively small, and the research power in the field is relatively dispersed. However, there has been a gradual formation of a number of stable and active research groups, which provide a solid academic foundation for the continuous development of the field.

In conclusion, the authors' productivity analysis (see Figure 6) demonstrates that KAO HSR is the most prolific author, with five publications. This is followed by ANDRIJAUSKAS A and WANG Y. The majority of the most productive authors are Chinese scholars, reflecting the concentration and increasing dominance of Chinese research activity in this field. In general, the number of productive scholars in this field is limited, and the research power is relatively dispersed, but gradually forming a stable core group.

Timeline of the author's publication

The following graphic illustrates the timeline of publications by leading authors in the field of calligraphy training research. The horizontal axis represents the years from 2005 to 2024, while the vertical axis lists the authors' names. The blue dots corresponding to each author represent the specific year and number of publications, with the size of the dots being proportional to the

number of publications in a single year. The red horizontal line demarcates the span of time that the author has been active in the field.

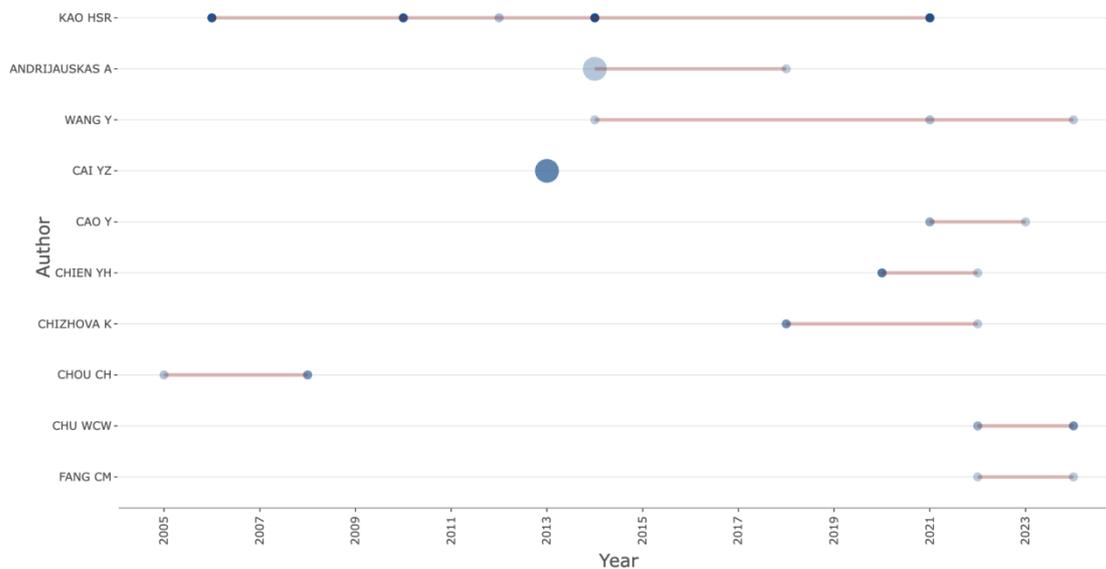


Figure 7: Authors' Production over Time

When considered as a whole, KAO HSR has the longest active research period, spanning from 2005 to 2021, with a plethora of publications recorded. This reflects the institution's long-standing and consistent research commitment within the domain of calligraphy training. Furthermore, ANDRIJAUSKAS A and WANG Y's active periods are centred on the period following 2013 and have persisted up to the present day. This suggests that they are prominent researchers who have ascended to a notable standing within the field in recent years. CAI YZ's research is primarily focused on the publication of articles in 2013, a shorter duration but with a greater impact in a single year. In contrast, CAO Y, CHIEN YH, and CHIZHOVA K initiated their research later, with a predominant focus on studies published after 2018. This shift indicates the emergence of new research talent in the field.

Furthermore, authors such as CHOU CH, CHU WCW, and FANG CM have recently (2021-2023) directed their publications towards this field, indicating a growing presence of emerging scholars within the discipline as research into calligraphy training continues to gain momentum.

The analysis of the data indicates a generational shift among the authors of research in calligraphy training. While early scholars (e.g., KAO HSR) established the foundations, the last decade has witnessed a proliferation of new authors who have gradually become significant contributors to the field's advancement.

In summary, the timeline analysis (Figure 7) reveals a generational turnover in the author community. It is evident that early scholars, such as KAO HSR, have maintained their level of activity until the present day, with the most recent scholars, including ANDRIJAUSKAS A and WANG Y, having emerged within the last decade. As research interest in this area grows, scholars from the next generation are increasingly engaged in exploring calligraphic training, thus promoting a new phase of development in the discipline.

5. Conclusion

This study has systematically reviewed the development and geographical distribution of global calligraphy training research, and clarified China's dominant position in terms of the number of publications and international influence. The People's Republic of China has not only achieved rapid growth in quantity, but also remarkable improvement in academic quality and international recognition. Despite the ongoing stable participation of traditional powerhouses such as the United States and Japan, the geographical distribution on a global scale remains characterised by a high degree of imbalance. In the future, there is a necessity to strengthen international cooperation, expand interdisciplinary perspectives, and encourage developing regions to participate actively in order to promote the global diversity and sustainable development of calligraphic training research. As a leader in the current field, China should continue to deepen its theoretical innovation and promote the inheritance and innovative development of global calligraphic culture.

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