

ARTICLE

## Analysis of Chekhov's Literary Research Hotspots and the Application of Educational Technology Using CiteSpace

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### ABSTRACT

Utilizing CiteSpace, the research provides a detailed visual and quantitative analysis of Chekhov's literature-related documents from the Scopus database, spanning the period from 2014 to 2023. The research highlights significant trends and research hotspots in Chekhov literature, reflecting a substantial increase in scholarly activity and global interest over the past decade. Key findings reveal that the primary focus of research is on Chekhov's literary themes, his impact on Russian and international literature, and comparative studies with other prominent literary figures. The analysis identifies leading countries and institutions in this field, with Russia, the United States, and the United Kingdom emerging as major contributors. Furthermore, the study emphasizes the growing role of advanced technological tools such as deep learning and neural networks in analyzing Chekhov's works. These technological advancements facilitate deeper insights into Chekhov's literature and offer innovative approaches for educational technology. The integration of these tools can enhance the analysis of thematic and emotional elements in literary texts, support the development of interactive and immersive educational modules, and provide new ways to engage students with Chekhov's works. This study not only sheds light on the developmental trajectory of Chekhov's literary research but also suggests practical applications for educational technology, aiming to enrich the understanding and appreciation of Chekhov's contributions to world literature and integrate them into modern pedagogical practices.

**Keywords:** Chekhov; CiteSpace; Russian Literature; Visual Analytics; Deep Learning; Educational Technology; Literary Hotspots

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## 1. Introduction

Anton Chekhov is one of the most influential figures in Russian literature, and he is celebrated for his short stories, plays, and sketches, which have pioneered modernist literature<sup>[1]</sup>. Since the early 20th century, Chekhov's works have been a focal point of literary research in Russia and internationally. The year 2024 marks the 120th anniversary of Chekhov's death, a significant milestone that has reignited interest in his works. This anniversary has been recognized globally, with various commemorative events and publications, such as the "Complete Collection of Chekhov's Plays (Annotated Edition)" released by Shanghai Translation Publishing House, which revisits Chekhov's classic plays and their enduring impact on the stage<sup>[2, 3]</sup>.

Moreover, renowned Chinese scholar Xu Le from the Chinese Academy of Social Sciences highlighted Chekhov's influence on modern literature in a recent article on NetEase News. He emphasized how Chekhov's works resonate with contemporary issues, underscoring his timeless relevance<sup>[4]</sup>. Additionally, the years 2024–2025 have been designated as the "China-Russia Cultural Year" by the leaders of China and Russia last year, further emphasizing the importance of Chekhov in the cultural dialogue between these two nations<sup>[5]</sup>.

Computer-assisted analysis has become a cornerstone in literary studies, propelled by advancements in academic research methods and technological tools. Among these tools, CiteSpace stands out as a sophisticated bibliometric analysis tool that not only charts but actively uncovers the latent knowledge embedded within scientific literature. Developed by Professor Chaomei Chen<sup>[6]</sup> at Drexel University, CiteSpace originated from the principles highlighted in Thomas Kuhn's seminal work, "The Structure of Scientific Revolutions"<sup>[7]</sup>. It was designed to visualize the dynamic shifts and evolutionary patterns in scientific research, reflecting Kuhn's idea that scientific research focus can change incrementally or drastically over time<sup>[8]</sup>.

CiteSpace initially focused on co-citation analysis, a method designed to identify the foundational literature and emerging frontiers within a specific knowledge domain. Over the years, its functionalities have expanded to include the analysis of co-occurrences among authors, institutions, and geographic regions, enabling a multi-dimensional view of scientific collaborations and intellectual exchanges. This

capacity to create "scientific knowledge maps" or "science maps" enables researchers to visualize the development process and structural relationships within a field, thus aligning perfectly with the needs of literary research, where understanding historical context and thematic evolution is key<sup>[9]</sup>. The CiteSpace software has now been updated to version 6.3, with its functionalities increasingly refined.

In applying CiteSpace to Chekhov-related literature from the Scopus database between 2014 and 2023, this study leverages the tool's ability to dissect and display the intricate relationships among research topics, authors, journals, and keywords. By doing so, it aims to map out the hotspots and trends in Chekhov studies, providing insights into the current state and potential future directions of this literary field<sup>[10]</sup>. The application of such a comprehensive tool underscores the study's commitment to a nuanced understanding of Chekhov's impact on modern literature, reflecting both the depth and breadth of academic inquiry facilitated by contemporary technological advances.

## 2. Materials and Methods

### 2.1. Research Objectives

The collection of scientific text data forms the foundation for CiteSpace's visual analysis. Indexed databases, such as Elsevier's Scopus, provide comprehensive information about each document, including not just the main text but also details such as document types, authors, publication years, journals, keywords, abstracts, affiliations, and DOIs. The data used in CiteSpace analysis is based on the format provided by Scopus, ensuring a thorough and detailed examination.

This study seeks to uncover the key trends and focal points in Chekhov's literary research using CiteSpace to trace the development trajectory and anticipate future directions. By delving into these research patterns, we hope to offer fresh insights and inspiration for a deeper understanding of the current state and future possibilities in Chekhovian literary studies. Specifically, the research will construct a comprehensive database of Chekhov-related literature and utilize CiteSpace to identify significant themes and areas of focus. Additionally, the analysis will shed light on the potential future directions of Chekhov's research, providing a roadmap for scholars in the field.

## 2.2. Data Sources

The literature data for this study were sourced from Scopus, one of the leading global academic databases. We focused on journal publications from 2014 to 2023, with data retrieved on January 10, 2024. The search targeted articles with titles containing “Chekhov” and categorized as “ARTICLE” type. Non-journal articles were excluded, yielding a total of 386 records for analysis in **Figure 1**.

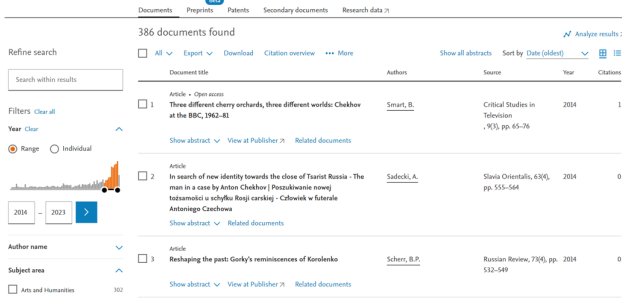


Figure 1. Literature search interface.

## 2.3. Research Methods and Tools

We began by selecting 386 journal articles based on publication volume and the impact factor of journals relevant to Chekhov’s studies.

Before conducting the analysis, the Scopus-formatted data needs to be filtered and deduplicated. Data filtering involves selecting and cleaning the literature data to enhance the accuracy of the analysis. Although the data on Chekhov studies is relatively concentrated, filtering is still meaningful. It allows for the removal of duplicate literature, setting a specific time frame, excluding irrelevant content, or selecting high-quality literature to ensure the relevance and precision of the analysis results. Deduplication helps eliminate redundant data, and this step can be accomplished using the data preprocessing module in CiteSpace. As shown in **Figure 2**, to enter the data preprocessing interface, first select the “Scopus” tab, then load the raw data into the “Input Directory”, load the processed data folder into the “Output Directory”, and finally click “Remove Duplicates” to complete the deduplication process. Subsequently, CiteSpace is used to perform a visual analysis of these internationally influential Chekhov literary studies.

To configure the settings, the software was set to a time span from 2014 to 2023, divided into ten annual time slices. We employed the Cosine algorithm for measuring network

node association strength and set the threshold at the top 50 nodes per slice in **Figure 3**. Subsequent network pruning was performed using the Minimum Spanning Tree algorithm<sup>[11]</sup>, ensuring that the resulting scientific knowledge maps were tailored to our specific research needs.

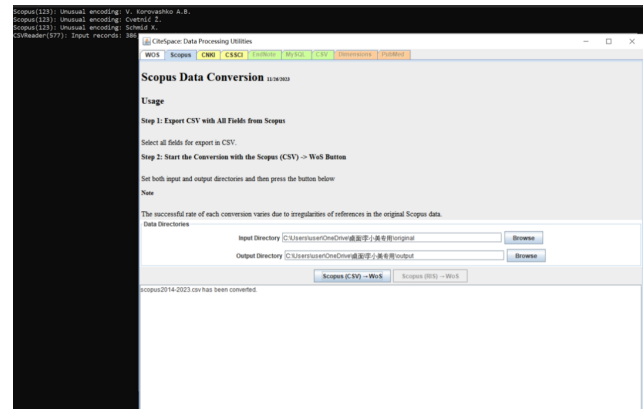


Figure 2. CiteSpace software data deduplication interface.

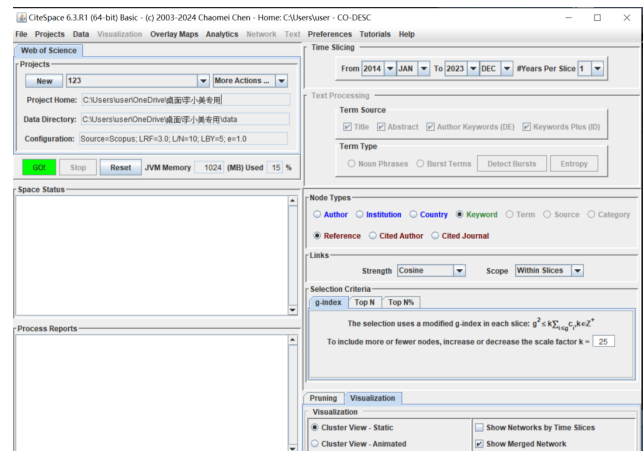


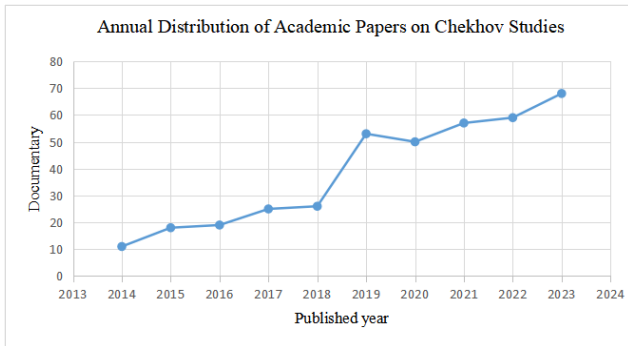
Figure 3. CiteSpace software related option parameters settings interface.

Following this, CiteSpace was used to conduct a visual analysis of these significant international Chekhov literary studies. Using text mining techniques and qualitative and quantitative approaches, we identified the prevailing research hotspots in global Chekhov studies, their evolution, and emerging trends. This dual approach allowed us to map out the current landscape and predict future developments in the field<sup>[12]</sup>.

## 3. Results

### 3.1. Analysis of Paper Distribution and Journal Publication

The development of a particular field can be reflected by the temporal trends in its publication volume<sup>[13]</sup>. To gain a comprehensive understanding of the achievements in Chekhov literary studies over the past decade, this study compiled the annual publication volumes from 2014 to 2023, as illustrated in the **Figure 4**.



**Figure 4.** Distribution of annual publication output on Chekhov studies.

From **Figure 4**, it can be seen that from 2014 to 2016, there was a steady increase in the volume of literature on Chekhov, followed by a significant surge from 2017 to 2021. This rapid growth highlights the rising international interest in Chekhov’s works, with 2012 marking the beginning of this trend, though research outputs remained limited then. Two primary factors contributed to this early limitation: foundational gaps in global Chekhov studies and constraints in technological tools. 2016 emerged as a turning point, with a sharp rise in published papers, leading to a peak in 2024. Influential journals contributing to this field include the “Rudn Journal of Studies in Literature and Journalism”, “Stanislavski Studies”, and “Sibirskii Filologicheskii Zhurnal”<sup>[14–17]</sup>.

### 3.2. Distribution Statistics of High-Output Countries in Chekhov Literary Research

By setting the “Country” option in the panel and leaving the rest as default, a knowledge map of high-output countries in Chekhov literary research worldwide can be obtained. In the **Figure 5**, each node represents a country, and lines between two nodes represent connections between the countries, with the size of each node corresponding to the number of published papers. Further data mining was conducted to

gain an in-depth understanding of the hierarchical structure of the nodes in this field, as detailed in **Table 1**.

From the perspective of centrality, nodes with a centrality value of 0.1 or higher are key nodes, often seen as driving changes in the research field. As shown in **Table 1**, the centrality values of literature from Russia and the United States exceed this threshold, indicating that these countries have a high influence and innovative capacity in Chekhov studies, playing a significant role in shaping the field<sup>[18]</sup>.

**Table 1.** Top 10 high-yield countries ranked by the number and centrality of the paper.

Countries	Count	Centrality
Russian Federation	171	0.15
United States	41	0.10
United Kingdom	25	0.01
Poland	12	0.00
Canada	10	0.01
China	10	0.00
Germany	10	0.00
Japan	9	0.00
Netherlands	9	0.01
Kazakhstan	8	0.00

In terms of research output, Russia has published the most articles on Chekhov studies, with other countries showing comparatively similar levels of output. Russia places particular emphasis on hosting various cultural events and academic conferences, such as the new exhibition project “Chekhov in Our Days” at the Chekhov Family Museum in Yalta, which showcases the modern impact of Chekhov, as well as the annual “Young Chekhov Forum” in Taganrog and the “Chekhov Readings” in Yalta, further facilitating in-depth discussions of Chekhov literature.

As illustrated in **Figure 5**, China’s international research on Chekhov’s literature started later compared to Russia, the United States, and the United Kingdom, and initially faced gaps in foundational research and technology. However, China has made significant progress and conducted extensive research<sup>[4, 19]</sup>. Additionally, universities and research institutions in China, Germany, Hungary, and the CIS countries actively participate in Chekhov studies, hosting international conferences and commemorative events to explore the works and impact of Chekhov, such as the international conference commemorating the 120th anniversary of Chekhov’s death. Particularly noteworthy is the contribution of the Chinese translator Ru Long, who has made

significant efforts in translating and promoting Chekhov’s works. Since 1950, Ru Long began translating Chekhov’s works, and his translations of the “Complete Chekhov Short Stories” have been recently published by the People’s Literature Publishing House. This collection includes nearly 500 short and medium-length stories written by Chekhov from 1880 to 1903, representing the most comprehensive version available in China. Ru Long’s translations have not only enriched Chinese readers’ understanding of Chekhov’s literature but also facilitated the global cultural dissemination and academic study of Chekhov’s works.



Figure 5. Visual knowledge map of the most productive countries for Chekhov literary studies.

### 3.3. Distribution of Prolific Institutions in Chekhov Literary Research

By running the software and selecting the “Institution” option, you can obtain a distribution map of prolific institutions (see Figure 6). In this figure, larger circles do not necessarily indicate more connections. This suggests that institutions with numerous research outputs may not have strong collaborative relationships with other organizations.

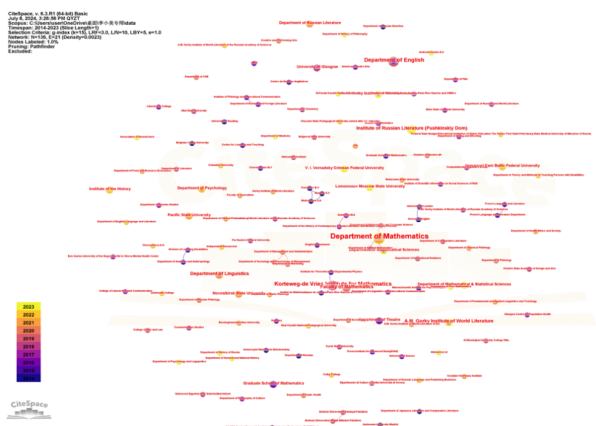


Figure 6. Cooperation map of high-yield institutions.

To explore the collaboration among different research institutions, as shown in Figure 6, the nodes in the graph represent various research institutions, with lines between nodes describing their collaborative relationships<sup>[9]</sup>. The color of the lines indicates the time of the first collaboration between institutions, while the thickness of the lines represents the frequency of collaboration; thinner lines indicate fewer collaborations. The collaboration map of high-yield institutions includes 201 nodes and 44 lines, with each node displaying the number of papers published by that institution, and the lines showing the interactions between organizations. Institutions with a higher degree of collaboration demonstrate more frequent interactions with other organizations. From the graph, it is evident that the collaborations between institutions are quite close, which helps to fully utilize the resources of universities and research units, sparking new research perspectives and enabling more in-depth and rapid conduct of meaningful research. Major research producers include the Russian Academy of Sciences, the A. M. Gorky Institute of World Literature of the Russian Academy of Sciences, and the Institute of Russian Literature the Pushkin House, Russian Academy of Sciences, among others. Russian universities account for 35% of the publications in the top ten frequency rankings. However, other research institutions have relatively fewer collaborations with external organizations, indicating that they primarily rely on internal resources for independent research.

### 3.4. Distribution of Prolific Authors in Chekhov Literature

Defining high-productivity authors in the realm of literary studies, authors characterized by frequent publication and high citation rates are instrumental in shaping academic discourse and advancing disciplinary knowledge. These scholars, through their rigorous analyses and substantial contributions, help elucidate Chekhov’s narratives, influencing both theoretical perspectives and methodological innovations. To better reflect the core authors and their associations within the field of Chekhov literature, a visual analysis of author collaboration was conducted on 386 papers (see Figure 7).

Among the leading scholars in Chekhovian studies, R.B. Akhmetshin stands out as a prominent figure. With over 100 published works, Akhmetshin has made signif-



icant contributions to the literature on Chekhov, offering profound insights into the narrative and thematic structures of Chekhov’s oeuvre. Notable among his publications is his 2023 study<sup>[20, 21]</sup>, “The Literary Significance of Chekhov’s ‘Bystanders,’” which explores the complex moral and existential dimensions of Chekhov’s everyday characters. This work reveals the deep impact these characters have on the narrative structure of Chekhov’s writings. In 2018, Akhmetshin’s research addressed a wide range of topics, from the narrative transitions in Chekhov’s plays to comparative analyses between Chekhov and Dostoevsky<sup>[22–24]</sup>. These studies highlight the distinctive narrative styles and thematic connections that characterize the literary techniques of both authors. Additionally, his 2017 paper, “Sakhalin or Asia?,” examines Chekhov’s travels to Asia, integrating travel narrative with literary analysis to offer a fresh perspective on Chekhov’s interactions with different cultures<sup>[25]</sup>. This study enhances our understanding of Chekhov’s global outlook and its influence on his literary creations.

connected, which is significant for in-depth exploration of the field.

A comparative analysis contrasting Akhmetshin’s Russian-centric analyses are the works of Dong Xiao from China, whose extensive analysis of the comedic essence in Chekhov’s “The Cherry Orchard” has been highly influential, has been downloaded 7208 times, reflecting significant academic interest and impact. Dong’s analysis underscores the universal appeal and diverse interpretations of Chekhov’s plays, providing a comparative lens through which the global reception of Chekhov’s work can be viewed. This contrast highlights the varied cultural perspectives that enrich the understanding of Chekhov’s literary art.

This analysis of high-productivity authors not only underscores the pivotal role these scholars play in advancing Chekhov studies but also highlights the interdisciplinary and international dimensions that these contributions foster. Through their extensive research outputs and collaborative efforts, these authors continue to propel the study of Chekhov’s works into new academic terrains.

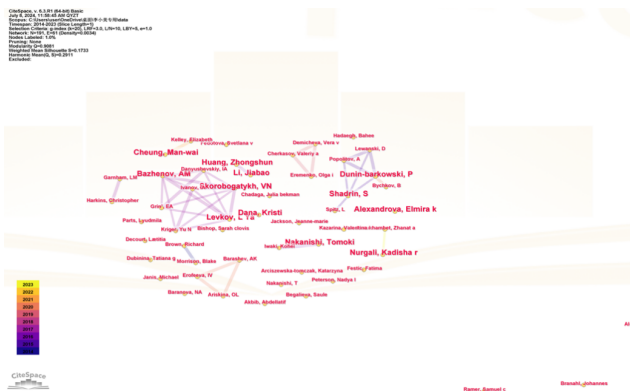


Figure 7. Cooperation map of high-yield authors.

In Figure 7, the size of the nodes represents the number of papers published by the authors, and the lines indicate collaborative relationships. According to Price’s Law, assuming the most productive author in each field has published max papers, then  $m = 0.749n_{max}^{1/2}$ . In this field, authors who have published more than mmm papers are defined as the nmax authors of this study. Given that  $n_{max} = 3$ ,  $m \approx 2$ , authors who have published more than 2 papers are considered core authors. In the sample literature, there are 25 core authors, with the leading ones being Akhmetshin<sup>[20, 21]</sup>, Steger and Kosenko<sup>[26]</sup>. The field of Chekhov literary research exhibits close cooperative relationships. The research efforts in this field are relatively concentrated, with scholars closely

### 3.5. Study of Hotspots and Trends in Chekhov Literature Based on Burst Term Visualization Analysis

Using the software’s “Detect Bursts” function, it is possible to observe professional terms that have surged in a short period in specific years, thus revealing more profound developmental changes. In Table 2, the burst term map generated from the sample literature. From the burst terms, the duration of hotspots tends to shorten over time.

These keywords reflect the foremost research hotspots and evolving trends in the field of Chekhov literary studies. Among them, “human nature” stood out with the highest burst intensity of 1.42 from 2019 to 2021, indicating that this theme received significant attention. Similarly, “Russian writers” and “realism” also exhibited strong burst intensities of 1.74 and 0.54, respectively, from 2021 to 2023, reflecting researchers’ interest and focus on Russian writers and the theme of realism. The duration and intensity of these burst keywords demonstrate the developmental trajectory and trends within the field of Chekhov literary studies, suggesting that researchers will continue to focus on important themes related to Chekhov’s literature for some time.

Table 2. Top 5 keywords with the strongest citation bursts.

Authors	Year	Strength	Begin	End	2014–2023
actor training	2016	0.67	2016	2017	
human nature	2015	1.42	2019	2021	
Chekhov	2017	0.88	2019	2020	
Russian writers	2021	1.74	2021	2023	
realism	2016	0.54	2021	2023	

### 3.6. Analysis of Research Hotspots Based on Keyword Co-Occurrence

#### 3.6.1. Keyword Co-Occurrence Analysis

Keywords are vital for describing document content and are extensively used in search engine optimization (SEO), content creation, information retrieval, and academic research. In scholarly studies, keywords identify the main concepts and topics of literature, usually provided by the authors, reflecting the core themes of the research. The analysis of keyword co-occurrence can discern the relationships between these keywords over a specific period, revealing connections among different research themes, which are visually represented through network graphs.

Adding to this, keywords reflect the interrelationships among various themes in the literature and are core summaries of the central ideas of articles. Analyzing keywords helps in studying the hotspots in a particular field. The co-occurrence map of Chekhov literature keywords, as shown in **Figure 8**, was obtained using software analysis. In this map, the size of each node represents the frequency of occurrence of the keyword; as the frequency increases, the circle of the node also becomes larger. Among the keywords that appeared more than ten times, “Anton Chekhov” and “Russian literature” had the highest frequencies, appearing 58 times and 12 times, respectively.

Summarizing the main hotspots that scholars in the field of Chekhov literature focus on, there are six main directions: Anton Chekhov, Russian literature, Turgenev, An Unpleasantness, Adaptation, and Trevor Griffiths. The high-frequency keywords are largely consistent with those ranked high in centrality, meaning that the higher the frequency of a keyword, the higher its centrality. These co-occurrence maps of keywords show the focus areas of Chekhov literature research and reflect the in-depth exploration and continuous attention of researchers to these themes.

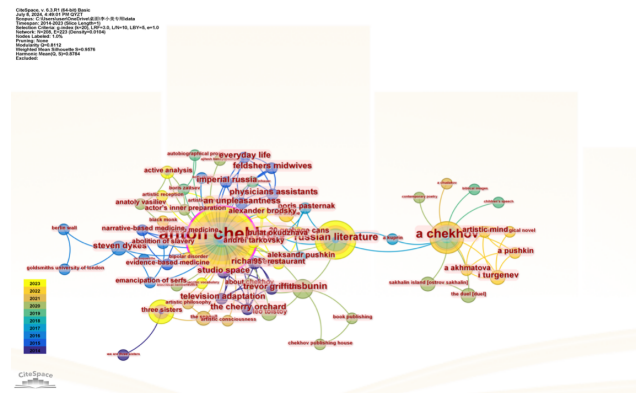


Figure 8. Keyword co-occurrence map.

#### 3.6.2. Keyword Cluster Analysis

A Keywords Cluster Map is a visual tool used in data analysis and knowledge management to group keywords that frequently appear together within a set of documents or datasets. This map visually organizes keywords into clusters or groups based on their associations or relationships<sup>[27]</sup>. Combining literature analysis, the results of the keyword analysis can be summarized into two main categories, as shown in **Figure 9**.

Firstly, Chekhov’s literature is studied. Researchers delve deeply into Chekhov and his works, revealing the significance of Chekhov’s literature in Russian literature and its global influence through the analysis of related keywords such as Anton Chekhov, Russian literature, Turgenev, An Unpleasantness, Adaptation, and Trevor Griffiths. Chekhov’s works and creative methods have a profound impact on literary creation and have become important subjects for interdisciplinary research. Studying Chekhov’s literature helps in understanding and appreciating his works more deeply and significantly contributes to literature, culture, education, and interdisciplinary studies<sup>[28–30]</sup>.

Secondly, there is the optimization of research methods and tools. Researchers use bibliometric tools like CiteSpace to analyze the hotspots and trends in Chekhov’s literary stud-

ies. Keywords reflect the interrelationships between various themes in the literature, and analyzing these keywords helps identify the field’s hotspots. Specific methods include utilizing deep learning and neural network models to analyze literature themes and applying algorithm optimization and feature learning methods to predict and optimize systems through training datasets<sup>[31]</sup>. The key themes in Chekhov’s literary research focus on applying intelligent simulation technologies such as deep learning, neural networks, and support vector machines, reflecting researchers’ innovation and exploration in these areas.

The study of Chekhov’s literature holds significant importance in the literary field and promotes intelligent technology development through interdisciplinary integration. By analyzing literary works, promoting education, and developing cultural industries with intelligent technology, the integration of literature and technology is realized, thereby advancing social and cultural progress.

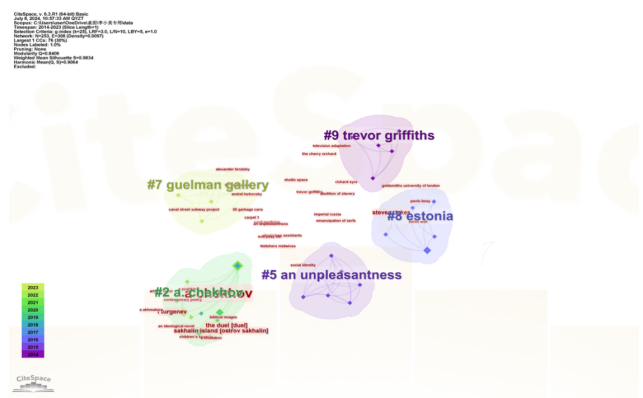


Figure 9. Keywords cluster map.

## 4. Discussion

With globalization, with significant changes in information environments, data mining, and cross-media computing, a new technological environment and conceptual extensions have emerged for Chekhov’s literary studies. These advancements have led to breakthroughs, bridging the “technology gap” between science and application. This progress has ushered Chekhov’s literary studies into a new stage of development, both in theory and application. Chekhov’s literary research is not only conducted in Russia but is also recognized by academic institutions worldwide. Researchers from diverse cultural backgrounds bring new vitality and diversity to interpreting and evaluating Chekhov’s works.

Currently, Chekhov’s literary studies are transitioning from “shallow intelligence” methods, such as information perception and machine learning, to “deep intelligence” methods that mimic how the natural brain processes information. High-frequency keywords include “Anton Chekhov”, “Russian literature”, “Turgenev”, “An Unpleasantness”, “Adaptation”, and “Trevor Griffiths”, while interest in other directions remains relatively stable. According to node centrality analysis, “human nature”, “actor training”, and “Russian writers” are influential in Chekhov’s literary studies. Meanwhile, related research on neural networks, deep learning, and feature learning is expected to remain a focal point in the future of Chekhov’s literary studies.

In the realm of educational technology, the findings from this research on Chekhov’s literature have practical implications. For instance, the application of deep learning models can enhance the analysis of emotional and thematic elements in literary texts, providing richer, more nuanced insights. This can facilitate the design of interdisciplinary curricula that integrate Russian literature with technological tools, offering students interactive and immersive learning experiences. Furthermore, the development of new digital tools and platforms can better integrate Chekhov’s literary works into modern educational contexts, promoting a deeper understanding among students. These technologies can transform how literary analysis is taught, making it more accessible and engaging through the use of visual analytics and interactive content. Recommendations for future applications include focusing on creating educational modules that leverage these insights to foster a deeper appreciation and understanding of Chekhov’s works across various educational levels.

## 5. Conclusions

Based on CiteSpace software and through qualitative and quantitative analysis of international journals in the field, the following conclusions are drawn.

From the visualization results of the distribution statistics of prolific countries, institutions, and authors, the prolific countries in Chekhov literature are concentrated in Russia, the United States, the United Kingdom, and Poland. The top three prolific research institutions in terms of publication volume are the Russian Academy of Sciences, the A.M. Gorky Institute of World Literature of the Russian Academy



of Sciences, and the Institute of Russian Literature (Pushkin House). The most productive authors are Akhmetshin<sup>[20, 21]</sup>, Steger and Kosenko<sup>[26]</sup>. Cooperation between institutions and scholars is relatively loose. Russia ranks at the top among the results of prolific countries, institutions, and authors, indicating its leading position in academic research on Chekhov literature.

Trend analysis shows that future developments in Chekhov literature research may include the following directions: firstly, in-depth exploration of the philosophy and worldview in Chekhov's works; secondly, strengthening comparative studies between Chekhov and other literary figures; thirdly, investigating the relationship between Chekhov literature and contemporary culture; and fourthly, applying new research methods and technologies such as digital humanities and machine learning.

These findings not only reveal the globalization and interdisciplinary trends in Chekhov literature research but also underscore the potential of integrating these insights into educational technology. As technology continues to evolve, the future will likely see an increased use of digital tools to enhance the pedagogical applications of Chekhov's works. By harnessing the power of advanced computational methods and machine learning, educators can develop more nuanced and interactive curricula that bring Chekhov's literary insights to life for students across diverse disciplines. This integration promises to enrich literary studies with new layers of interpretation and understanding, fostering a deeper appreciation of Chekhov's contributions to world literature.

## Author Contributions

Conceptualization, D.L.; methodology, D.L., F.Y., D.S.; data curation, F.Y., M.T.; writing—original draft preparation, D.L., M.T.; writing—review and editing, B.S., A.U., S.A., D.S.; visualization, D.L., M.T.; supervision, D.L., S.A. All authors approved the final version of the manuscript.

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## Institutional Review Board Statement

Not applicable.

## Informed Consent Statement

Not applicable.

## Data Availability Statement

The authors confirm that all data generated and analyzed in this study are included in this paper.

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## Conflict of Interest

The authors declare no conflict of interest.

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