A Visualization Research of Genre Analysis

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Abstract
Taking the literature with keyword word is genre analysis in the database of the core collection of Web of Science from 1995 to 2023 as the research object, this article draws institutional analysis figure, author's analysis figure, co-citation literature analysis figure, discipline analysis figure, keyword network figure, and country analysis figure by using visually scientific tools such as Citespace. Those figures systematically analyze the internal relationship and development of the research content of genre analysis. This paper employs bibliometrics and scientific knowledge mapping. By analyzing those figures the writer concludes that: Institutional cooperation in the field of radical analysis is needed to be strengthened. The stable core author group has not yet been established in this domain. Multi-disciplinary comprehensive research results have greatly promoted the progress and development of genre analysis. Genre analysis, Genre, academic writing, interdiscursivity, discourse analysis are hot topics currently. In this study, the basic knowledge of genre analysis is understood through co-citation literature analysis. The United States and China are the countries with the highest publications in genre analysis domain.
Keywords: Genre Analysis, Citespace, Bibliometrics, Research Articles, Literature Analysis

Introduction
Genre as a word originates from the French word (originally the Latin word genus) which means 'kind' or 'class'. The origination genre can be found over two thousand years ago in the description of Aristotle, in which he illustrated three literary genres, i.e. poetry, novel and drama. The genre has been widely used in numerous domains for example literary, film, music, media, fashion, art, video game, and linguistics for more than two millenniums. Their concepts of genre are different as they adopt various points of view. Research in folklore studies, literary studies and sociolinguistics has deepened our understanding of genre analysis. There are three main traditions in genre scholarship which refer to the Australian Systemic Functional Linguistics (SFL) approach, North American New Rhetoric School (NRS) approach, and English for Specific Purposes (ESP) approach to genre theory and pedagogy.

Genre analysis is "the study of situated linguistic behavior in institutionalized academic or professional settings, whichever way one may look at it, whether in terms of typification of rhetorical action, regularities of staged goal orientated social processes or consistency of communicative purpose" (Bhatia, 1997). In other words, genre analysis is mainly adopted to

probe the communicative functions and tactics of a certain discourse in linguistic research. It is mainly applied in analyzing works of ESP (English for Specific Purpose).

ESP analysis of genre-based pedagogy originated by (Swales, 1984, 1990, 2004; Bhatia, 1993). According to Swales (1990), texts are traditionally composed of a series of moves that serve functions for both an author and discourse community. The purpose of genre analysis is on prototypical rhetorical stages and the linguistic features of an academic or professional genre. Numerous scholars write articles on genre analysis. This research is conducted by using software like Citespace to visually analyze the literature of genre analysis from 1995-2023.

Citespace software is a tool for the analysis and visualization of scientific documents, which is mainly used to study the development and innovation of knowledge in academic fields. Citespace application software developed by Chen (2005) based on the Java platform is an information visualization technology suitable for multivariate, time-sharing and dynamic complex network analysis, and has become a new method widely used in bibliometrics. This method has been widely used in many fields. Citespace, an information visualization tool, has brought great changes to the literature research in the academic world. Its design is mainly based on Kuhn's scientific development model theory, Price's scientific frontier theory, the structural hole theory of social network analysis, the information foraging theory of scientific communication and knowledge unit dispersion and reorganization theory. The significance of these theoretical foundations lies in strengthening the readability, rationality and correctness of the interpretation, and realizing two theoretical functions through the interpretation of the atlas, namely, the explanatory function of the field status quo and the predictive function of the field future prospects (Chen, 2015).

Methodology

The research methods in this paper include bibliometrics and scientific knowledge mapping. Specifically, the author uses literature analysis tools and the knowledge elements of literature in the field of "Genre Analysis" are counted respectively. Keywords, institutes, authors, disciplines, and country are selected as the analysis objects, and the analysis objects are analyzed by keyword network analysis, institutional cooperation analysis, author analysis, subject analysis, co-citation literature analysis, countries analysis and corresponding scientific knowledge map drawn.

The data is retrieved from the database in the Web of Science Core Collection (WoS). This study uses the theme = "Genre Analysis", and language type: (English) and literary genre: (article). Searching was conducted on May 26th, 2023. A total of 584 retrieval results, literature-type selection papers and reviews were obtained, and finally, 459 papers were obtained as the original data, with a period of 1995-2023.

Bibliometrics is to process the main information of all the collected documents and reveal the patterns and information hidden in a large number of documents through matrix and integration. Information visualization is a way to transform information into graphics, which is convenient to reveal the content contained in literature and it is a method of data mining. The spectrogram method of scientific knowledge is a graphical representation method that combines bibliometrics and information visualization principles. It employs scientific Citespace software, developed by Professor Chen Chaomei from the School of

Information Science of Drexel University, USA. In recent years, it has been widely used in literature citation network analysis. The software originated in author co-citation analysis which is based on co-citation.

Analyze the theory and routing network algorithm, and explore the key path and knowledge turning point of discipline evolution. The main functions include author cooperation, institutional cooperation, co-occurrence of keywords, etc., and knowledge spectrum analysis of cited documents such as articles co-citation, journal co-citation, and author co-citation. The principle of software usage is the same while different analysis objects represent different meanings.

Results and Discussion
Institutional Analysis

Figure 1. Institution network analysis

Table 1
The top 10 institutions with the most publications

Id	Articles	Year	Institution
1	28	1999	City Univ Hong Kong
2	8	2019	Penn State Univ
3	8	2011	Jinan Univ
4	7	2010	Hong Kong Polytech Univ
5	6	2010	Malaysian Univ Sabah
6	5	2013	Univ Malaya
7	5	2019	Beijing Foreign Studies Univ
8	4	2019	Chinese Univ Hong Kong
9	4	2013	Stockholm Univ
10	4	2016	Nanyang Technol Univ

Institution in Citespace is taken as the analysis object in this section, and the analysis map of 84 network nodes and 32 connections with a density of 0.0092 is obtained in Figure 1. Institutional analysis is the statistical analysis of the data of high-yield scientific research institutions in genre analysis. It is helpful to understand the renowned institutions in this field. As shown in Figure 1, the nodes in the map are sparse, and the connections of various institutions are few which show that institutional cooperation in the field of genre analysis is relatively scarce. Most research institutions have no cooperative relationship and focus on intra-institutional cooperation with obvious regional characteristics. Therefore, the inter-agency cooperation of genre analysis needs to be strengthened and the scope of cooperation needs to be expanded.

At the same time, this paper sorts out the top 10 institutions in the field of genre analysis, as shown in Table 1. Six institutions of the top 10 are from China, which shows that the institutions in China pay more attention to genre analysis research. Consequently, they are productive institutions in this field. Specifically, the top 1 institution is City University of Hong Kong with the number of published articles reaching 45, which shows that City University of Hong Kong has paid more attention to this field and made in-depth research on genre analysis. In addition, the number of papers published by Pennsylvania State University is 8 which ranks third. The number of papers published by Jinan University is 8 that are listed in the fourth. The quantity of papers published by two Malaysian universities--University Malaysia Sabah and University Malaysia adds up to 11, which also attracts scholars' attention. According to the publication time, the publication year of the City University of Hong Kong was 1999. It shows that the City University of Hong Kong started its research on genre analysis earlier than other universities. It made great contributions to the research on genre analysis and played a leading role to some degree. Institutions of Pennsylvania State University, Beijing Foreign Studies University, and The Chinese University of Hong Kong published articles in 2019. Although these institutions started late, they were high-yield institution. It also shows that Pennsylvania State University, Beijing Foreign Studies University, and The Chinese University of Hong Kong have paid more attention to genre analysis in recent years. Topics they are concerned about are frontier and hot topics in this field.
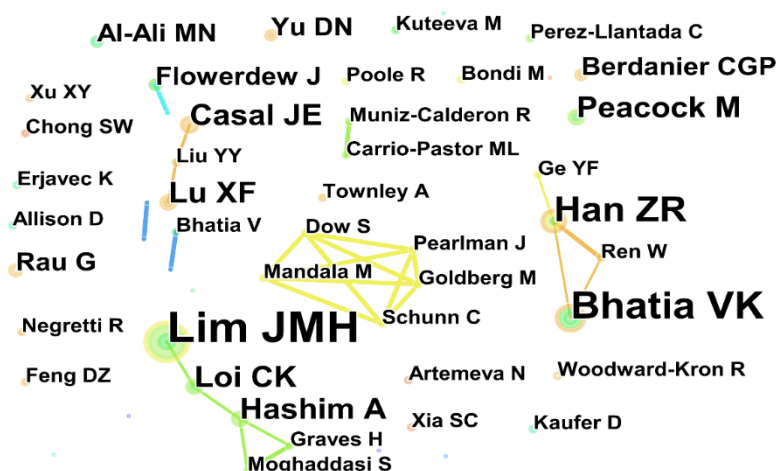
Author's Analysis

Figure 2. Author network analysis

Table 2
The top 10 author with the most publications

Id	Articles	Year	Author
1	10	2010	Lim JMH
2	7	2008	Bhatia VK
3	6	2011	Han ZR
4	4	2020	Lu XF
5	4	2013	Hashim A
6	4	2020	Casal JE
7	4	2010	Peacock M
8	4	2010	Loi CK
9	3	2019	Berdanier CGP
10	3	2021	Rau G

Author is selected as the analysis object in Citespace in this part, the years per slice is 3, and the threshold is g-index=5. Finally, the author analysis map of 77 network nodes and 26 connections with a density of 0.0089 is obtained (Figure 2). As can be seen from Figure 2, the author's map is similar to the institution's map. The nodes in the map are sparse and there are small groups in the cooperation of each author. However, the cooperation of authors in the field of genre analysis is relatively scarce. According to Price's Law, from 1995 to 2023 there were 662 authors engaged in the research of genre analysis, the square root of which was 25.7 indicating that the number of core authors in the field of genre analysis was 26. According to statistics, the number of articles published by these core authors is 82, accounting for 12.4% of the total number of papers. The percentage of published articles written by the core authors is not more than 50%, which shows that a stable core author group has not yet formed in the field of genre analysis.

In addition, as can be seen from Figure 2, a cooperative team with Lim and Loi, Bhatia, Han and others as the main representatives has been formed in the research field of genre analysis. The first publication year of Lim and Loi's team was in 2010. Comparing the top 10 authors, we can conclude that the team of Lim and Loi started early and the research was quite sufficient. During the research period, it produced a lot of achievements and made great contributions to this field. Bhatia ranks second in the number of articles published, with a value of 7. According to the prolific authors, the publishing time of the top 10 authors is mainly divided into two categories, one is to start research around 2010, and the other is in 2020, which shows that the development of this topic is divided into two watersheds. There are breakthroughs in the research in this field in 2010 and 2020. On the whole, Chinese scholars and Malaysian scholars occupy most of the research in this field. The tendency and attention of academic cooperation among scholars from other countries need to be strengthened and the core team needs to be formed. Moreover, the academic influence in the field of genre analysis needs to be improved.

Discipline Analysis
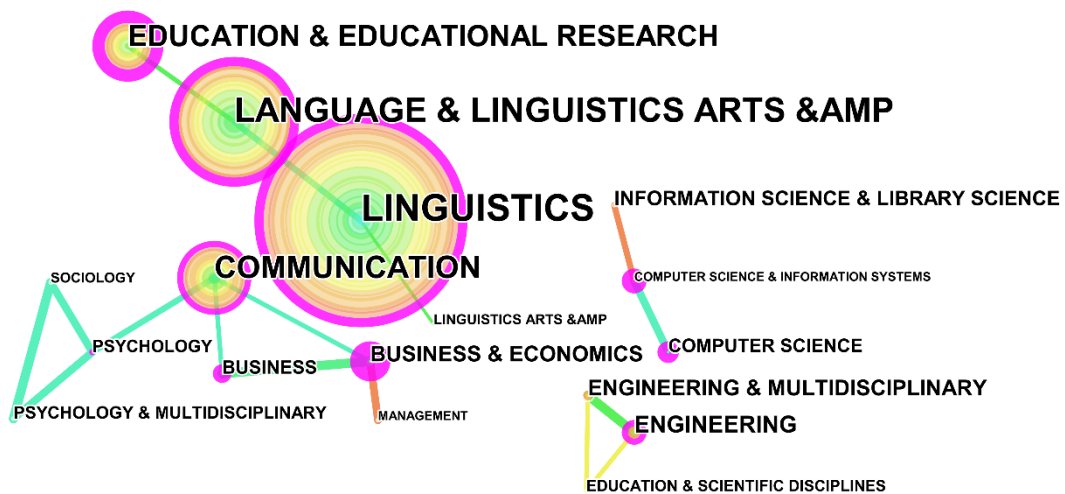

Figure 3. Category network analysis

Table 3
The top 10 journal with the most publications

Id	Articles	Centrality	Year	Category
1	271	0.49	1999	Linguistics
2	163	0.57	2004	Language & Linguistics Arts & Amp
3	111	0.25	2004	Communication
4	90	0.66	2000	Education & Educational Research
5	30	0.26	2012	Engineering
6	25	0	2012	Engineering & Multidisciplinary
7	22	1.01	2004	Business & Economics
8	20	0	2001	Information Science & Library Science
9	14	0.54	2004	Business
10	14	0.48	2001	Computer Science

Discipline is selected as the analysis object in Citespace in this section. The years per slice is 3, and the threshold is top 50. Finally, 31 network nodes and 46 connections with a density of 0.0989 are gotten (Figure 3). According to Figure 3, there are fewer subject nodes in the field of genre analysis and the node circle is larger. It shows that the research in the field of genre analysis is concentrated in a few disciplines. In addition, disciplines such as Linguistics, Language & Linguistics Arts & Amp, Communication, Education & Educational Research are relatively large, which indicates that these disciplines are highly productive in this field and have a large amount of published papers. In addition, the outer circles of disciplines such as Linguistics, Language & Linguistics Arts & Amp, Communication, Education & Educational Research, Business & Economics are purple, which suggests that they belong to frontier disciplines in this field. In other words, most frontier topics are focused on these disciplines. By judging the connection between disciplines, we can also conclude that most of the research belongs to cross-research. That is to say, the comprehensive research results of multiple disciplines, which is of great importance to the progress and promotion of this field.

This research also sorted out the related information of the top 10 disciplines in the field of genre analysis, as shown in Table 3. As can be seen from Table 3, Linguistics is a subject that attracts much attention in this field and the amount of papers has reached 271. Genre analysis pays attention to the internal structure and linguistic features. On this basis, it also focuses on the external resources that affect or restrict the variation or evolution of genre including social institutions and organizational regulations of industry practice, historical traditions, rhetorical culture and so on. Therefore, language research has attracted much attention from scholars. The second place is Language & Linguistics Arts & Amp with 163 articles published. The third discipline is Communication with 111 published articles. From the perspective of centrality, Business & Economics has the highest centrality reaching 1.01. It illustrates that this discipline is in the core position in this field and it has the richest cross-study with other disciplines. It is followed by Education & Educational Research. Language & Linguistics Arts & Amp ranks third. It has played an important role in promoting the discipline development in this field.

Keyword Network Analysis

Figure 4. Keyword network analysis

Table 4
The top 15 keywords with the most frequency

ID	frequency	Centrality	Year	Keyword
1	183	1.03	2002	genre analysis
2	45	0.43	2006	genre
3	26	0.09	2010	academic writing
4	18	0.14	2010	interdiscursivity
5	15	0.62	2004	discourse analysis
6	14	0.3	2011	research article
7	13	0.6	2013	move analysis
8	11	0.73	2010	corpus analysis
9	11	0.71	2008	move
10	9	0	2019	critical genre analysis
11	8	0	2010	English for specific purpose
12	8	0	2013	multimodality
13	7	0.09	2015	rhetorical structure
14	6	0	2011	English for academic purpose
15	6	0.59	2012	higher education

By adopting Citespace software, the writer analyzes the keywords in the field of genre analysis. The keyword co-occurrence map is produced by keyword selection as indicated in Figure 4 and the Years Per Slice is 3. Finally, 85 nodes and 103 lines are found with a density of 0.0289. According to Figure 4, the color change of keyword nodes from the inside to the outside indicates the research of keywords in different periods. The closer the color of the outer circle is to purple the hotter topic in current research. The size of keyword's node circle and label means the frequency of keywords, that is, the higher the keyword frequency, the larger the keyword node circle and label are. The nodes of genre analysis, genre, academic writing, interdiscursivity, discourse analysis and research article are relatively large. It manifests that these six keywords are hot topics in the field of genre analysis. At the same time, the outer circles of the keywords such as genre analysis, genre, research article, higher education, corpus analysis are the closest to purple, which indicates that these keywords are the frontier topics of current research.

At the same time, this study lists the top 15 keywords in frequency, as shown in Table 4. According to the frequency in Table 4, apart from searching words and meaningless words, academic writing is the high-frequency word in this field with a frequency of 26 which shows that the academic community pays more attention to the application of genre analysis in academic writing. Furthermore, the frequency of intertextuality is 18 ranking second. It indicates that intertextuality is also an important topic in this field. According to the centrality, corpus analysis ranks first among the topics except meaningless words with a value of 0.73 which indicates that corpus analysis is at the core of this field. The research in this field mainly analyzes the commonness and individual characteristics of different articles based on genre analysis through papers and articles from different corpora and explores the reasons. The second most central keyword is move, with a value of 0.71. The third place is discourse analysis with a value of 0.62. In the past, the internal structure and linguistic mechanisms of the genre revealed by "move" were also commonly used.

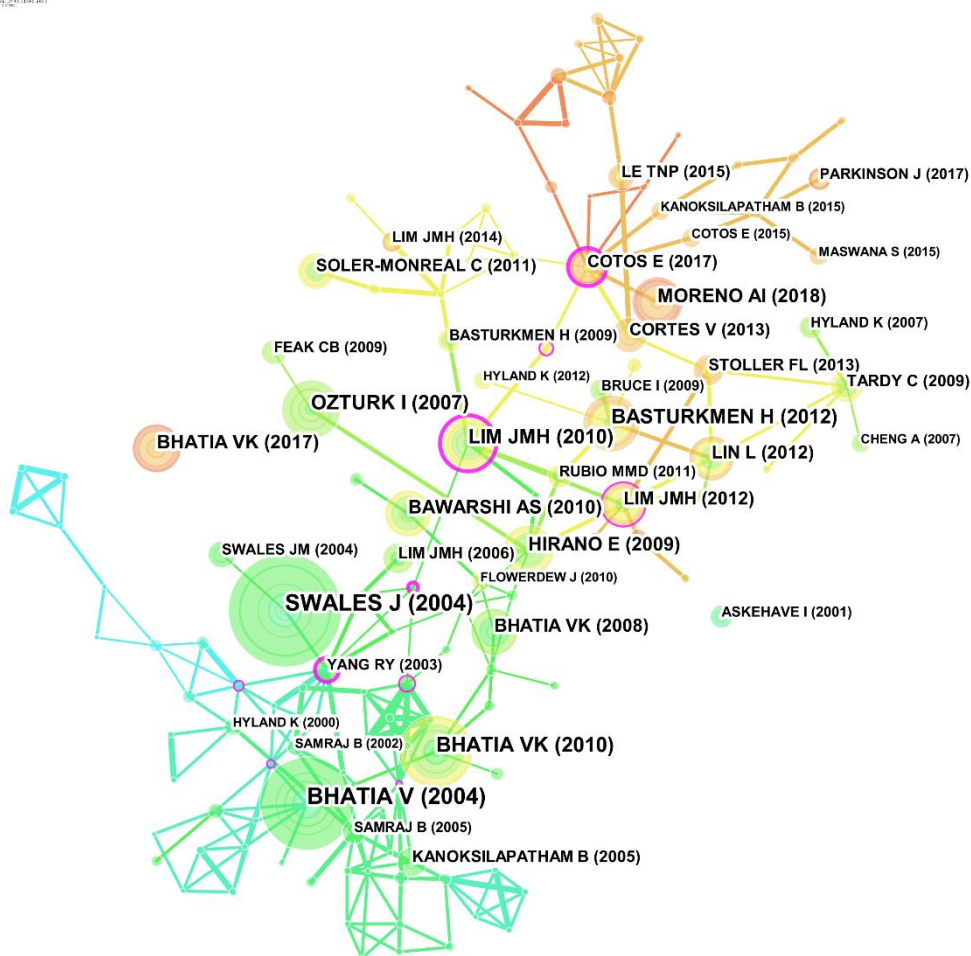## Co-citation Literature Analysis

Figure 5. Co-cited reference analysis

Table 5
Reference information

Id	Cited frequency	Centrality	year	References
1	33	0.01	2004	Swales J, 2004, Res Genres
2	29	0.03	2004	Bhatia V, 2004, Worlds Written Disco
3	23	0.03	2010	Bhatia Vk, 2010, Discourse Commun
4	18	0.01	2007	Ozturk I, 2007, Engl Specif Purp
5	18	0.04	2012	Basturkmen H, 2012, J Engl Acad Purp
6	17	0.37	2010	Lim Jmh, 2010, J Engl Acad Purp
7	16	0.1	2009	Hirano E, 2009, Engl Specif Purp
8	15	0	2017	Bhatia Vk, 2017, Critical Genre Analysis
9	15	0.01	2010	Bawarshi As, 2010, Genre Intro Hist
10	15	0	2018	Moreno Ai, 2018, Engl Specif Purp

In this section, Cited Reference is selected as the analysis node. The time interval is "1995-2023" and the time slice is 3. The threshold value is set as Top=20 and the current atlas is generated. Finally, 205 nodes and 377 connections with a density of 0.018 are obtained,

and Pathfinder is selected as the clipping algorithm. As shown in Figure 5, the writer sorted out the high-frequency literature information. The citation frequency of academic articles is often regarded as an index of citation quantitative analysis. The basic knowledge in the domain of genre analysis can be investigated through co-citation literature analysis. The top 10 pieces of literature with citation frequency are illustrated in Table 5. As can be seen from Figure 8, Swales (2004); Bhatia (2004); Bhatia (2010); Ozturk (2007); Basturkmen (2012) are large nodes, which are highly cited references in this domain. By searching the titles of highly cited references, we can infer that the topics of co-cited articles are mainly about the exploration and application of genre analysis, the basis of linguistics, and the text organization of research articles on language. In addition, the outer circles of nodes such as Lim (2010); Lim (2012); COTOS (2017) are purple, which means that these three references are fundamental documents cited by the current frontier research. They mainly include the review of the achievements in applied linguistics, the study of rhetorical steps and linguistic features of management in genre analysis, and the test of methodology and models of language steps. As can be seen from Table 5, Lim (2010) enjoys the highest centrality, which means that the article entitled "Commenting on research results in applied linguistics and education: a comparative genre-based investigation" is often cited together with other articles. It plays a significant role in promoting research in this domain and is at the core of this field. Highly cited articles are usually from renowned journals or books, such as *English for Specific Purposes*, *Journal of English for Academic Purposes*, etc., which have high recognition in the academic world.
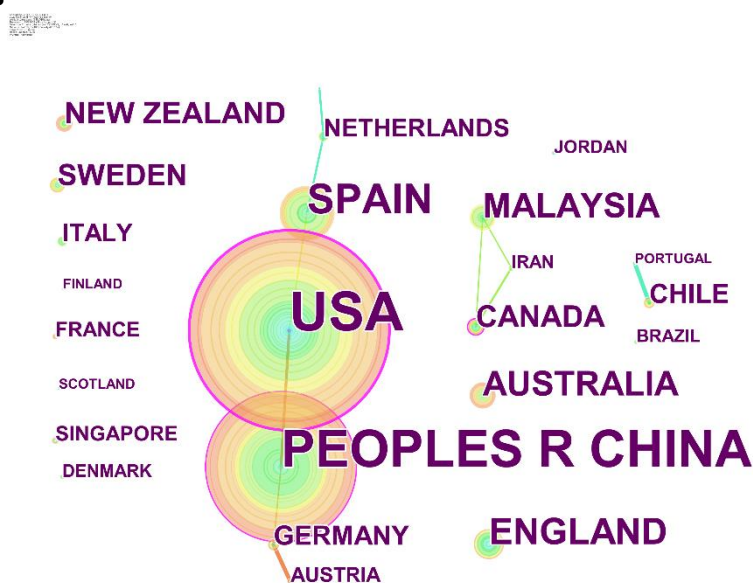
Country Analysis

Figure 6. Country network analysis

Table 6

The top 10 countries with the most publications

ID	Articles	Centrality	Year	Country
1	88	0.25	1995	USA
2	66	0.18	1999	PEOPLES R CHINA
3	27	0.05	2005	SPAIN
4	17	0.08	2002	ENGLAND
5	14	0.05	2004	AUSTRALIA
6	14	0.03	2006	MALAYSIA
7	10	0	2000	NEW ZEALAND
8	10	0.1	2005	CANADA
9	9	0	2008	SWEDEN
10	7	0	2006	CHILE

Table 6 also lists the publishing status of the top 10 countries according to published articles frequency. According to the frequency listed in Table 6, we can see that the United States and China are the countries with the highest publications in this field. The number of papers published in the United States has reached 88. It shows that the United States has paid great attention to genre analysis research. The United States is in the leading place in the genre analysis domain. Secondly, China ranks second in the frequency of publication, which means that China is also an important country in the field of genre analysis. The amount of published articles in China is fewer than that in the United States. However, it is far ahead of other countries. In addition, the number of articles published in Spain is 27, ranking third. England ranks fourth with 17 published articles. Australia and Malaysia both issue 14 articles, ranking fifth and sixth. Other countries are still in the stage of continuous learning and progress. According to centrality, the United States has the highest centrality reaching 0.25. According to Figure 6, the only connecting line in the figure has the most connection with the United States, showing that it is at the core place of genre analysis and has close relations with other countries, and its research results are mostly produced by collective wisdom. China's centrality ranked second with a value of 0.18, which demonstrates that China's position in this field is also very significant. China has established cooperative relations with some countries.

Conclusion

Employing Citespace and other tools, the researcher makes a deep analysis of the genre analysis literature in Web of Science databases during the past 30 years (1995-2023). The author constructs the institutional analysis figure, author's analysis figure, co-citation literature analysis figure, discipline analysis figure, keyword network analysis figure, and country analysis figure. The research draws the following conclusions: Cooperation among institutions in the genre analysis domain is significantly deficient. Many research institutions lack collaborative partnerships. Internal cooperation with distinct regional characteristics among institutions is given priority. Consequently, it is crucial to strengthen inter-agency collaboration in genre analysis and expand the scope of cooperative efforts. A core group of authors has yet appeared in the genre analysis field. The team supervised by Lim and Loi has been active since 2010 and has made significant contributions. Currently, Chinese and Malaysian scholars play an active role in this field. Furthermore, efforts should be made to improve the academic influence of genre analysis. In addition, disciplines such as Linguistics,

Language & Linguistics Arts & Amp, Communication, Education & Educational Research are highly productive in this field and have many published papers. Genre analysis, genre, academic writing, interdiscursivity, discourse analysis and research article are popular topics in the field of genre analysis. Articles written by Swales (2004); Bhatia (2004); Bhatia (2010); Ozturk (2007); Basturkmen (2012) are highly cited literature in this domain. Highly cited articles are usually from prestigious journals or books, such as *English for Specific Purposes*, *Journal of English for Academic Purposes*, etc., which have high reputation in the academic circle. China and the United States are high-yield countries in genre analysis. In addition, the study of genre analysis in China, the United States, and Canada is close to the current frontier research.

To sum up, the development of genre analysis, research status, research hot spots, and frontier development trends of genre analysis are revealed through bibliometrics, knowledge map, and visualization. The research results have some reference values for promoting the development of linguistics and teaching.

Limitation
With the method of bibliometrics, we can comprehensively grasp the current situation, frontier and hot spots of genre analysis research in recent 30 years through the quantitative analysis of literature characteristics and cited data. It provides some references and suggestions for scholars and students who pay attention to this field and makes some contributions to further in-depth research in the future. However, due to the influence of the author's energy, time span, retrieval database and other factors, this paper has the following limitations: the literature data used in the study comes from the English journal Wos and it doesn't contain other international database literature and other languages. In future research, we can expand the retrieval database and make a more detailed comparison of the research on genre analysis. In the future, it is urgent to increase the combing analysis and data mining of genre analysis literature. At the same time, it is necessary to expand the time span of genre analysis literature and increase the comparative study of genre analysis literature at home and abroad.

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