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A Bibliometric Analysis of Linguistics and Education Interface (From 1970 to 2024)

Akbar Majidi[*1], Esmaeil Safaei Asl[2]

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Abstract

Purpose: This study aimed to quantify and analyze the characteristics of scholarly publications in the field of education and linguistics during the period 1970–2024.

Methodology: A bibliometric approach was employed to examine the relevant literature indexed in the Web of Science database. A total of 2,915 articles were retrieved and analyzed using bibliometric techniques supported by VOSviewer and Excel software.

Findings: The results indicate a steady and continuous growth in both publications and citations in this field over the studied period. Among authors, Lim, Jason Miin-Hwa from UCSI University, Malaysia, was identified as the most prolific contributor with 12 publications. INTED Proceedings emerged as the leading journal with 70 articles. At the country level, the United States ranked first with 497 publications, while Kazan Federal University led institutions with 81 contributions. Keyword analysis revealed that "linguistics" was the most frequently used term in the corpus. Cluster analysis uncovered the intellectual structure of the field, highlighting the emergence of eight thematic clusters that shape current research directions.

Conclusion: The findings provide valuable insights for academic researchers, practitioners, and policymakers by illustrating historical trends, identifying leading contributors, and mapping thematic structures in the intersection of linguistics and education.

Value: By offering a quantitative bibliometric overview, this study highlights the bibliographic and thematic features of research in linguistics and education. The results contribute to the identification of research gaps, support future research planning, and assist educational and linguistic policymakers in strategic decision-making.

Keywords: ***Linguistics, Education, Bibliometrics Analysis, Scientometrics, Language, Educational Linguistics.***

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1. Assistant Professor, Department of Knowledge and Information Science, University of Tabriz, Tabriz, Iran. (Corresponding Author) Akbar.majidi@tabrizu.ac.ir
2. Assistant Professor, Department of English Language Teaching, Farhangian University, Tehran, Iran. P.O. Box 14665-889

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Extended Abstract

Introduction: Halliday (2007: 34) argues that linguistics, similar to sociology and psychology, underpins the entire educational process, as education largely occurs through language, and academic performance is closely tied to linguistic development. Language, therefore, functions as a pivotal bridge linking the two domains of linguistics and education. Recognizing this intricate and interwoven relationship, as well as the thematic overlaps that connect these two fields within the broader discipline of educational linguistics, the present study addresses the need for a comprehensive and systematic review of research at their interface. To this end, the study employs bibliometric and scientometric techniques to analyze global scholarly outputs published at the intersection of linguistics and education. Such quantitative methods allow for the mapping of scholarly literature and the identification of patterns, trends, and intellectual structures (Xu, Yu, & Wang, 2019; Tang et al., 2018).

A preliminary review of bibliometric studies related to linguistics, education, and their overlap reveals a limited body of research. Among these, Asriati et al. (2024) conducted the only directly relevant study. However, their work was constrained to a nine-year period and relied solely on the Google Scholar database. In contrast, the present research examines a 50-year span (1970–2024) using the Web of Science (WoS) Core Collection, and employs the VOSviewer software to generate more comprehensive visualizations of scholarly networks.

Purpose: The study was designed with the following objectives:

1. To examine the status and growth of published articles on linguistics and education;
2. To identify the most highly cited publications in this field;
3. To determine the top contributing authors;
4. To identify leading universities and institutions;
5. To highlight core journals and influential publication outlets and visualize their interrelations;
6. To identify the top contributing countries and map international collaborations;
7. To visualize keyword co-occurrence networks in linguistics and education research.

Methodology: The study adopted a bibliometric approach to evaluate scholarly literature in the intersection of linguistics and education. Data were retrieved from the Web of Science Core Collection on March 15, 2025, using the following query:

(((TS = ("linguistics")) AND TS = ("education")) AND DOP = (1970-01-01/2024-12-29)).

This search yielded 2,915 articles, each with bibliometric metadata (titles, authors, journal sources, publication years, keywords, abstracts, and citation counts). These data were analyzed using bibliometric methods supported by VOSviewer and Excel software.

Findings: Publication trends: The results demonstrate a steady upward trajectory in both publication outputs and citations received over the 1970–2024

period, indicating continuous growth in scholarly interest at the interface of linguistics and education (Figure 1).

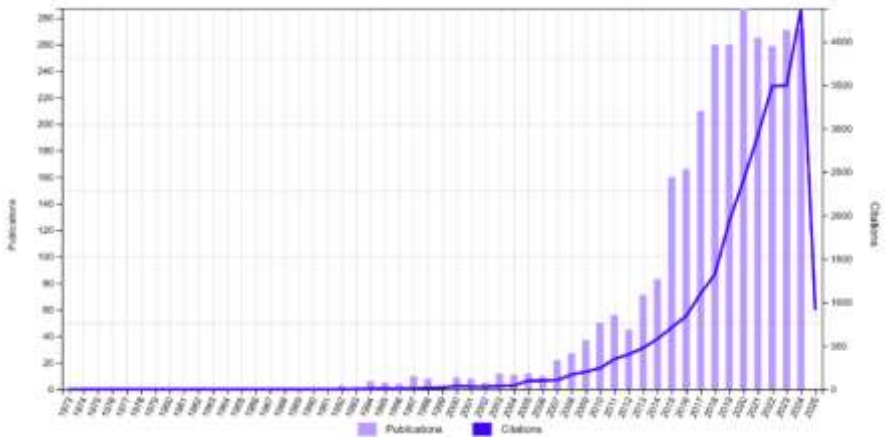

Figure 1. Trend of publication of articles and citations in the interaction of linguistics and education

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Highly cited articles: The most influential article was authored by Otheguy, García, and Reid (2015), entitled "Clarifying translanguaging and deconstructing named languages: A perspective from linguistics," which received 946 citations.

Authors: A total of 5,875 authors contributed to publications in this domain. Among them, Lim, Jason Miin-Hwa (UCSI University, Malaysia) was the most prolific, with 12 publications.

Journals and sources: Research outputs were distributed across 1,341 journals and publication outlets. The INTED Proceedings ranked first, with 74 publications (2.4% of total output).

Countries: Contributions came from 111 countries, with the United States leading at 497 publications (17.05%), followed by China (298; 10.22%) and Russia (291; 9.98%). A co-authorship analysis based on a threshold of five publications revealed strong collaborations among the United States, China, Russia, England, Brazil, and Spain (Figure 2).

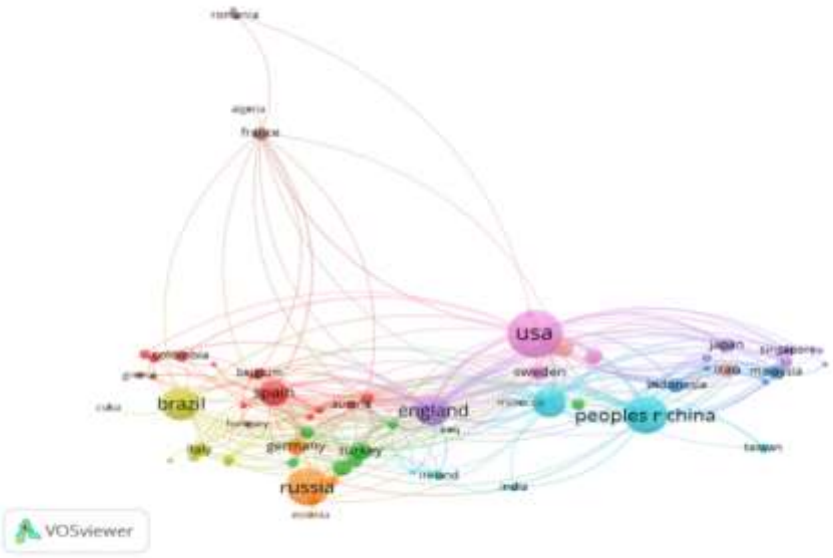

Figure 2. The co-authorship map of the countries publishing linguistics and education articles

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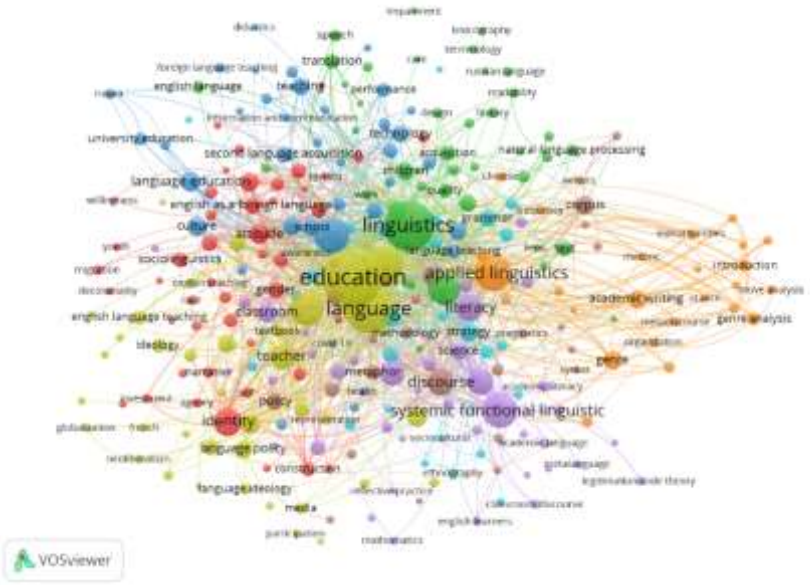

Figure 3. The network structure of high-frequency keywords in linguistics and education (1970-2024)

Keywords and thematic trends: From the 2,915 articles, 9,341 unique keywords were extracted and analyzed. The most frequently occurring keyword was "linguistics" (257 occurrences), followed by "education" (166), "systemic functional linguistics" (131), "corpus linguistics" (129), and "applied linguistics" (113). Visualization through VOSviewer (Figure 3) revealed network structures of high-frequency keywords, with clusters showing thematic concentrations and intellectual interconnections.

Cluster analysis: After filtering, 279 keywords met the threshold for co-occurrence analysis. Results showed the emergence of eight thematic clusters. Among them, Cluster 4 was the largest, comprising 38 keywords, with a co-occurrence count of 1,812, 2,407 links, and a total link strength of 6,512. Keywords in this cluster included education, language, English, and higher education. The cluster structure revealed overlaps and complementarities: Clusters 1 and 3 emphasized sociocultural and affective aspects of language learning; Clusters 2 and 7 dealt with linguistic analysis and applications; Clusters 3 and 4 addressed educational systems from varied perspectives; Clusters 5 and 6 centered on systemic functional linguistics, literacy, and pedagogical strategies; and Clusters 7 and 8 explored discourse in academic writing, education, and policy. Together, these results highlight the interplay between micro-level factors (identity, motivation, classroom interaction) and macro-level influences (language policy, curriculum reform, discourse in education).

Conclusion: The bibliometric mapping confirms that linguistics and education constitute a dynamic and interconnected field of inquiry, with diverse yet overlapping thematic strands. The analysis not only identifies the growth trajectory, prolific contributors, and leading sources but also uncovers the intellectual structure that underpins research at this interface. By situating the field within its global landscape, the study highlights both established areas of inquiry and emerging trends.

Value: This research contributes to knowledge by providing a comprehensive bibliometric overview of linguistics and education research spanning five decades. The findings serve as a reference point for academics, practitioners, and policymakers, helping them identify leading contributors, thematic hotspots, and gaps in the literature. By uncovering patterns of growth, collaboration, and thematic development, the study opens new pathways for future research and supports evidence-based policymaking in the domains of linguistics and education.

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1. Assistant Professor, Department of Knowledge and Information Science, University of Tabriz, Tabriz, Iran (Corresponding Author) Akbar.majidi@tabrizu.ac.ir
2. Assistant Professor, Department of English Language Teaching, Farhangian University, Tehran, Iran. P.O. Box 14665-889

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1-Introduction

Halliday (2007: 34) points out that linguistics, like sociology and psychology, underlie the whole educational process since education largely takes place through language, and educational performance is closely related to linguistic development. Hence, it can be argued that language plays a pivotal role in interlinking the two fields of linguistics and education. In this regard, Spolsky utilizes the term "educational linguistics" as an umbrella covering any fields and disciplines that illuminate language in education with linguistics, broadly conceived, playing a central role, and the interdisciplinary areas of sociolinguistics, psycholinguistics, anthropological linguistics as well as neurolinguistics, clinical linguistics, pragmatics, and discourse analysis (Hult, 2008:15). As Matthiessen (2015) put it, educational linguistics, in broad terms, involves all aspects of language in education. Educational linguistics is concerned with teaching and learning [or education] through language (Halliday, 2007: 354). Halliday (2007:358) argues that educational linguistics is aimed at working towards a language-based theory of teaching/learning.

Educational linguistics encompasses a wide range of themes. Spolsky (2003: 503; cited in Hult, 2008:20) has put forth broad areas, including first or second language pedagogy and the teaching of reading, spelling, writing, listening, and speaking. Halliday (2007: 354-355) has outlined a tentative and schematic list of activities, including studying school textbook language [how learners engage; how writers write], describing textbook registers [the languages of subjects], general model of bilingualism (individual and societal), functional grammar and discourse [stylistics; media studies; language of science, politics, etc.], and foreign languages in school. Hult (2008:20-21) points out that the range of themes is great, with the core ones like linguistically and culturally responsive education, literacy development, acquiring a language, language assessment, and educational language policy (as a part of wider national language planning). Uccelli and Snow (2008: 628) have outlined the major lines of work comprising educational linguistics as using language in classrooms, literacy development, language learning, planning language use in educational settings, and assessing language knowledge. More recently, Spolsky (2022) claimed that most of Pennycook's (2002) list of subfields within critical applied linguistics, i.e. language policy, critical bilingualism, language awareness, critical multilingualism, antiracist education, and critical language education which are all concerned with language teaching, are related to and derived from critical pedagogy and hence, can be labelled as educational linguistics.

Having established an understanding of the intricate and interwoven relationship between linguistics and education, as well as the common themes that connect these two domains alongside the broader field of educational linguistics, and given the necessity for a comprehensive and integrated review of past research conducted in the overlapping areas of linguistics and education, we aim to do a bibliometric and scientometric analysis of global scientific outputs published at the interface of the two fields of linguistics and education. It should be noted that bibliometric analysis is a research method applied in many subject fields. Alan Pritchard (1969: 348) first introduced the word bibliometrics, defining it as "the application of mathematical and statistical methods to books and other media of communication". This quantitative technique is usually used to map scholarly literature, revealing patterns and trends. Bibliometric study is a method that

enables researchers to perceive the research status of a field of study (Xu, Yu & Wang, 2019; Tang et al, 2018).

2-Literature Review

Numerous studies have used a bibliometric approach to analyze various dimensions and aspects of publications in the field of linguistics and their relationship with other fields, including education. The research background can be divided into three categories. Some of them specifically examined and analyzed the pulications trend and bibliographic characteristics of linguistic documents, including, Arik (2015), Mohsen, Fu, and Hu (2017), Lei and Liao (2017), Sun, Wang & Feng (2021), Yan and Zhang (2023) and Lee (2023). Others examined and analyzed bibliometrics of publications in various fields of linguistics, including, applied linguistics (Lei and Liu, 2019), multilingualism (Lin and Lei , 2020), sociolinguistic (Yudistira et al, 2024), and Systemic Functional Linguistics (Zhao, Ni, and Zhao, 2025). The third category includes research that examined and analyzed bibliometrics in linguistics and education, including, Firdausi et al (2021) and Asriati et al. (2024). Therefore, this section only refers to studies that examined and analyzed bibliometrics of the interaction between linguistics and education.

Firdausi et al (2021) examined the intellectual structure of educational linguistics research. The purpose of this research was to present a thorough knowledge map of the intellectual structure of educational linguistics based on the dataset collected from the Scopus database. Use the VOSViewer tool and Scopus's analyze search queries function to examine and display data. This research examined 166 scientific papers published between 1961 and 2020. According to the research, the Kazan Federal University and Dearden, J. had the most active affiliated institutions and individual researchers in educational linguistic publication. Social science, and the journal Calidoscopio were the most studied and disseminated outlets of educational linguistics research. The simulation results show that there were three categories of researchers who cooperate. This research suggests a categorization of educational linguistics research subjects requires the identification of a base of knowledge gained over fifty-six years of published simulation: Human, Education, Computational Linguistics, Language Learning, Identity, Language Policy, and Bilingual Education, as HECLILB research themes. Asriati et al. (2024) conducted a bibliometric analysis of the interaction between education and linguistics (2015-2023). Using data harvested from Google Scholar and analyzed through the VOSviewer software, the research provides insights into the most influential publications, collaboration networks, and the thematic focus of the literature. The methodology involved collecting 309 relevant documents, including journal articles, books, and conference proceedings. The data were screened and analyzed using bibliometric techniques, focusing on keyword co-occurrence and citation analysis. This approach allowed for the identification of six major research clusters within the fields of linguistics and education, ranging from systemic functional linguistics to the impact of the COVID-19 pandemic on English language teaching. Key findings show a significant growth in research output over the analyzed period, with systemic functional linguistics emerging as a dominant methodology. The study also highlights increasing collaboration among researchers and a strong focus on language education, teacher training, and higher education trends. Yudistira et al (2024) conducted a bibliographic analysis of sociolinguistic research in the past

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decade (2013 to 2023). A total of 242 sociolinguistic publications were identified. The annual growth rate was found to be 7.63% and each publication received an average of five citations. The United States proved to be the most productive country, contributing 52 articles. The study also used concept co-occurrence analysis to set research priorities in the field of sociolinguistics. The United States and the United Kingdom are the most frequent collaborators in writing studies. This study highlights the significance of sociolinguistics, which pertains to the examination of language within the context of society. The study of the intricate correlation between language and society has the potential to offer solutions to significant contemporary social issues.

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A review of the bibliometric research related to linguistics, education, and the intersection of the two on a global scale revealed that only one study, namely the research by Asriati et al. (2024), is directly relevant to the present research. However, unlike the study by Asriati et al. (2024), which was conducted over a short period of just nine years and solely based on the Google Scholar database, the current study attempts to analyze data regarding the articles on the interface between linguistics and education based on datasets obtained from the Web of Science (WoS) over 50 years, between 1970 and 2024, using the VOSviewer software. More specifically, the following research goals are to be addressed in the present study:

1. To examine the status of published articles on linguistics and education;
2. To identify the highly-cited articles on linguistics and education;
3. To identify the top authors in the field of linguistics and education;
4. To identify the top universities and institutes publishing articles on linguistics and education;
5. To identify the core journals and influential sources;
6. To visualize the map of core journals and influential sources;
7. To identify the top countries publishing articles on linguistics and education;
8. To visualize the map of the top countries publishing linguistics and education articles;
9. To visualize the keywords co-occurrence map of linguistics and education articles.

3-Methodology

This study adopted descriptive and explorative methods. This study employed a bibliometric approach to analyze the literature related to linguistics and education. The bibliometric analysis "provides a quantitative method for reviewing and investigating extant literature in a given field" (Mou et al., 2019).

First, the database of Web of Science Core Collection was retrieved on March 15, 2025, based on the following search strategy:

(((TS=("linguistics")) AND TS=("education")) AND DOP= (1970-01-01/2024-12-29))

To be specific, the purpose of the retrieval was to search the articles related to education and linguistics that were published between 1970 and 2024. A total of 2915 articles were identified by the queries, and their bibliometric information, including article titles, journal titles, publishing years, keywords, abstracts, citations, etc., was downloaded for the follow-up analyses. For Uniformity, the opinions of experts in the field were used, and in some cases, the Google search

engine was used to identify some concepts and the full form of abbreviations. During the data standardization stage, the following changes were made to the vocabulary:

- The plural and singular forms of words were unified. Countable words were made plural, and words that preferred the singular form were made singular. For example: beliefs turned into "belief", and so on.
- Abbreviations were written in full. of course, in some cases, identifying the full form was simply not possible and required a search in the specialized field of the word. For example: CLIL turned into "Content and Language Integrated Learning", and so on.
- Meaningless and incomprehensible words were removed from the vocabulary, for example:
- Synonyms such as "corpora" and "corpus" became one.
- Adjectives, adverbs, and words that had a very general meaning were removed, for example: history, decision making, and so on.
- Long terms were broken down into several shorter words or phrases. Such as blockchain technology turned into blockchain, and so on.

Second, the general characteristics in the area of education and linguistics were detected based on the bibliometric information after using the "analyze results" function of the database of Web of Science Core Collection. It includes the publication trend, main publication venues, author, country, and publication. Third, having been cleaned and converted into the appropriate format, the data was imported into the VOSviewer software for further processing. VOSviewer is a tool for "displaying large bibliometric maps in an easy-to-interpret way" (Van and Waltman, 2010). VOSviewer was used to generate network maps that illustrate the clustering and structure of the research field, revealing critical areas of focus within linguistics and education.

4-Findings

4-1-Publication trend of articles on linguistics and education: The publication trend of articles on linguistics and education is presented in Table 1.

Table 1. Number of articles published on linguistics and education

	Publication year				Publication year		
1	1973	1	0.034	21	2006	10	0.343
2	1977	1	0.034	22	2007	22	0.755
3	1984	1	0.034	23	2008	27	0.926
4	1978	1	0.034	24	2009	37	1.269
5	1987	1	0.034	25	2010	50	1.715
6	1991	1	0.034	26	2011	56	1.921
7	1992	3	0.103	27	2012	45	1.544
8	1993	2	0.069	28	2013	71	2.436
9	1994	6	0.206	29	2014	83	2.847
10	1995	5	0.172	30	2015	160	5.489
11	1996	4	0.137	31	2016	166	5.695
12	1997	10	0.343	32	2017	210	7.204
13	1998	8	0.274	33	2018	260	8.919
14	1999	3	0.103	34	2019	260	8.919
15	2000	9	0.309	35	2020	287	9.846
16	2001	8	0.274	36	2021	265	9.091
17	2002	5	0.172	37	2022	259	8.885
18	2003	12	0.412	38	2023	271	9.297
19	2004	11	0.377	39	2024	272	9.331
20	2005	12	0.412				

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As shown in Table 1, there was a relatively ascending trend in the number of articles published on linguistics and education from 1973 to 2024. The number of articles reached from 1 in 1973 to 83 in 2014, 160 in 2015, 287 in 2020, and 272 in 2024. In the following, Figure 1 reveals the research trend and citations towards linguistics and education more clearly. As is clear from the figure, the growth of article publication and the number of citations received were on an upward trend.

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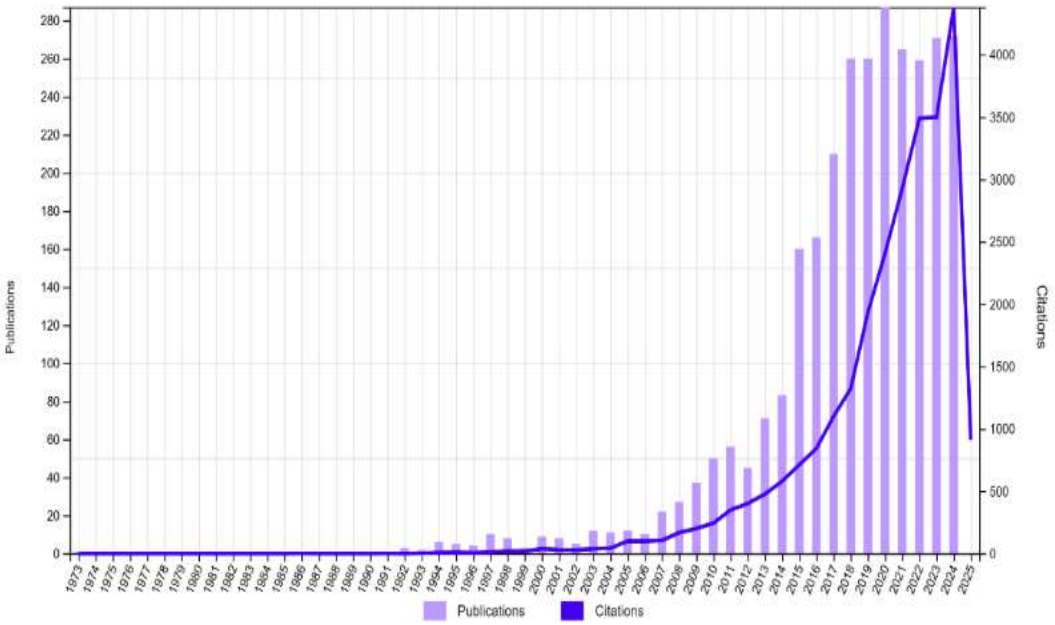

Figure 1. Trend of publication of articles and citations in the interaction of linguistics and education

4-2-Highly-cited articles on linguistics and education: To identify the highly-cited papers in the field of linguistics and education, we examined the top papers with the most citations.

Table 2. Highly-cited articles on linguistics and education

rank	Title	Author(s)	year	publication	rage citations per year	total citation
1	Clarifying translanguaging and deconstructing named languages: A perspective from linguistics	Otheguy, R; García, O and Reid, W	2015	Applied Linguistics Review	86.0	946
2	A Transdisciplinary Framework for SLA in a Multilingual World	Atkinson, Dwight, et al	2016	Modern Language Journal	62.4	624
3	Shortcut learning in deep neural networks	Geirhos, Robert, et al	2020	Nature Machine Intelligence	93.1	559
4	Motivation - Reopening the Research Agenda	crookes,G, and schmidt , R.W	1991	Language Learning	12.1	524
5	The Flowering of Positive Psychology in Foreign Language Teaching and Acquisition Research	Dewaele et al	2019	Frontiers in Psychology	53.4	374
6	Embodiment as a unifying perspective for psychology	Glenberg, AM	2010	Wiley Interdisciplinary Reviews-Cognitive Science	22.1	355
7	Varieties of Knowledge Elicitation Techniques	Cooke, NJ	1994	International Journal of Human-Computer Studies	9.81	314
8	The Multi/Plural Turn, Postcolonial Theory, and Neoliberal Multiculturalism: Complicities and Implications for Applied Linguistics	Kubota, R	2016	Applied Linguistics	27.6	276
9	Qualitative Interviews in Applied Linguistics: From Research Instrument to Social Practice	Talmy, S	2010	Annual Review of Applied Linguistics	13.6	219
10	Study Quality in Sla: an Assessment of Designs, Analyses, and Reporting Practices in Quantitative L2 Research	Plonsky, L	2013	Studies in Second Language Acquisition	15.7	205
11	Neo-hymesian linguistic ethnography in the United Kingdom	Rampton, B	2007	Journal of Sociolinguistics	10.7	205

Table 2 shows the 11 most-cited articles on linguistics and education. These eleven articles can be broadly categorized into five interrelated thematic clusters. First, "theoretical reconceptualizations of language and multilingualism" are

central to Otheguy, García & Reid, who challenge the notion of named languages through the lens of translanguaging, and to Atkinson et al., who propose a transdisciplinary framework for second language acquisition (SLA) in multilingual contexts. Second, "critical sociolinguistic and postcolonial perspectives" are reflected in Kubota's analysis of the multi/plural turn and its intersections with neoliberal multiculturalism and postcolonial theory. Third, "methodological reflections and innovations" appear in Talmy's discussion of qualitative interviews as social practices and Plonsky's evaluation of study quality, research designs, and reporting standards in quantitative SLA research. Fourth, "cognitive and computational approaches" are represented by Geirhos et al., who examine shortcut learning in deep neural networks, Glenberg's argument for embodiment as a unifying perspective in psychology, and Cooke's comparative review of knowledge elicitation techniques. Finally, "positive psychology in language education" is explored by Dewaele, Chen, Padilla & Lake, who highlight the growing influence of positive psychological constructs in foreign language teaching and acquisition research. It should also be noted that the paper of Otheguy, García, and Reid (2015) entitled "Clarifying translanguaging and deconstructing named languages: A perspective from linguistics" is the most highly-cited article, receiving 946 citations. The purpose of this article is to explain the importance and relevance of translanguaging to schools interested in the linguistic and intellectual growth of bilingual students, as well as minority communities involved in language preservation and revitalization efforts.

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4-3-Top authors in the fields of linguistics and education: Regarding the authors in the fields of linguistics and education, the findings revealed that 5875 authors were involved in the intersection of linguistics and education. The names of the top 18 authors, along with the article specifications, are presented in Table 3.

Table3. top authors in the area of linguistics and education

Rank	Author	Affiliation	Country	Frequency	Percent
1	Lim, Jason Miin-Hwa	UCSI University	Malaysia	12	**0.412**
2	Pikhart, Marcel	University of Hradec Kralove	Czech Republic	10	**0.343**
3	Pomortseva, Nadezhda	Kazan Federal University	Russia	9	**0.309**
4	Troyan, Francis John	Ohio State University	USA	9	**0.309**
5	Klimova, Blanka	University of Hradec Kralove	Czech Republic	8	**0.274**
6	da Silva Júnior, Silvio Nunes	Universidade Federal de Alagoas	Brazil	7	**0.240**
7	Silva, Wagner Rodrigues	Universidade Federal do Tocantins	Brazil	7	**0.240**
8	Charity Hudley, Anne	Stanford University	USA	7	**0.240**
9	De Costa, Peter	Michigan State University	USA	6	**0.206**
10	Mallinson, Christine	University of Maryland, Baltimore County	USA	6	**0.206**
11	Morozova, Tatiana V	Kazan Federal University	Russia	6	**0.206**
12	Hu, Guangwei	Hong Kong Polytechnic University	Thailand	5	**0.172**
13	Kellogg, David	Vygotsky Res Community	South Korea	5	**0.172**
14	Bobyreva, Natalia N.	Kazan Federal University	Russia	5	**0.172**
15	Yu, Zhonggen	Beijing Language and Culture University	China	5	**0.172**
16	Ji, Meng	University of Western Australia	Australia	5	**0.172**
17	Walsh, Steve	University of New Mexico	USA	5	**0.172**
18	Zhang, Xiaodong	Beijing Foreign Studies University	China	5	**0.172**

Table 3 shows that among the authors, Lim, Jason Miin-Hwa from UCSI University, Malaysia, published 12 articles and has the highest number of documents in this field. After him, Pikhart, Marcel from the University of Hradec Kralove, Czech Republic, published 10 articles, and Pomortseva, Nadezhda from Kazan Federal University, Russia, and Troyan, Francis John from Ohio State University, USA, published 9 articles. The names of other authors active in the intersection of linguistics and education, along with the number of articles, are listed in Table 3.

4-4-Top journals and influential sources in the area of linguistics and education: In total, 1341 journals and influential sources are used in the production of articles in the field of linguistics and education. Table 4 presents the top ten journals and influential sources.

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Table 4. Top journals and influential sources in the area of linguistics and education

Rank	Journals And Influential Sources	Frequency	Percent
1	INTED Proceedings	70	2.401
2	Eurasian Journal of Applied Linguistics	65	2.230
3	EDULEARN Proceedings	54	1.852
4	Journal Of Language Teaching and Learning	38	1.304
5	Linguistics And Education	38	1.304
6	Language And Education	35	1.201
7	Procedia Social and Behavioral Sciences	32	1.098
8	International Journal of Bilingual Education and Bilingualism	31	1.063
9	ICERI Proceedings	29	0.995
10	System	29	0.995

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Table 4 shows the ten leading journals and specific resources in the field of linguistics and education. According to Table 4, "INTED Proceedings" ranks first with 74 articles (2.401%) of the total articles. It is followed by "Eurasian Journal of Applied Linguistics" with 65(2.230%) articles and "EDULEARN Proceedings" with 54(1.852%) articles. The names of other journals can be seen in Table 4.

4-5-Top countries publishing articles on linguistics and education: In total, 111 countries contributed to the production of articles in the field of linguistics and education. Table 5 presents the top twenty countries.

Table5. The top countries in the field of linguistics and education

Rank	Country	Frequency	Percent
1	USA	497	17.050
2	Peoples R China	298	10.223
3	Russia	291	9.983
4	Brazil	225	7.719
5	England	202	6.930
6	Australia	176	6.038
7	Spain	144	4.940
8	Canada	94	3.225
9	Turkey	75	2.573
10	Germany	63	2.161
11	Ukraine	58	1.990
12	Iran	53	1.818
13	South Africa	51	1.750
14	Sweden	51	1.750
15	Malaysia	48	1.647
16	Indonesia	47	1.612
17	Italy	43	1.475
18	Japan	43	1.475
19	France	39	1.338
20	Poland	39	1.338

According to Table 5, the United States ranks first with 497 (17.05%) articles. Then China with 298 (10.22%) and Russia with 291 (9.98%) articles are in the second and third places. The names of other leading countries in the production of articles in this field can be seen in Table 5. A co-authorship map of the countries is presented in Figure 2.

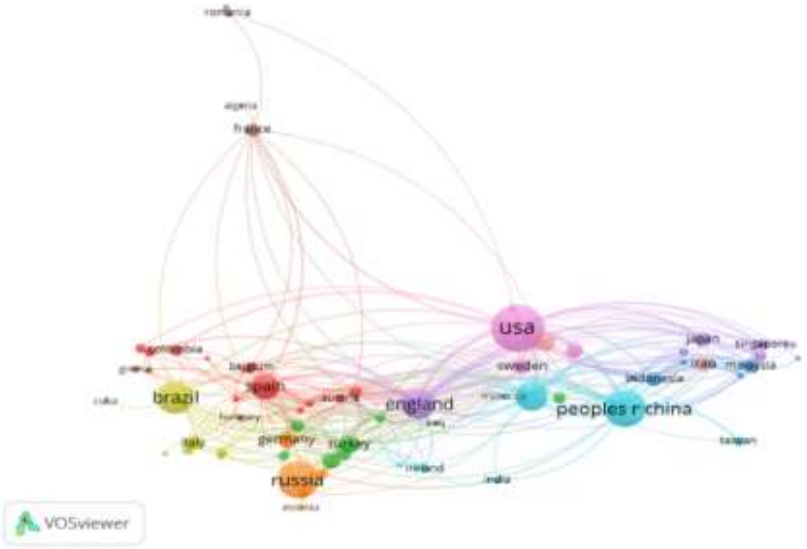

Figure 2. The co-authorship map of the countries

69 countries with a threshold of 5 were entered into VOSviewer software, and the data were analyzed. The size of the circle indicated the number of published articles. As shown in the map, the United States, China, Russia, England, Brazil, and Spain were the world's top countries in publishing articles on linguistics and education. Lines connecting the countries indicated co-authorship. When the two countries connected to each other by one line, they collaborated on the publication of an article. Therefore, the thickness of the line represented a high level of cooperation between countries. As shown in the map, there was scientific cooperation between the United States and most countries. The United States had the most scientific cooperation with China, England, Australia, and Japan.

4.6. Top universities and institutes publishing articles in linguistics and education

In total, 2380 university/institute contributed to the production of articles in the field of linguistics and education. Table 6 presents the top ten university/institute.

Table 6. Top universities/institutes publishing articles in linguistics and education

Rank	Country	Country	Frequency	Percent
1	Kazan Federal University	Russia	81	2.778
2	Ministry of Education, Science of Ukraine	Ukraine	52	1.783
3	University of London	UK	38	1.303
4	University of Sydney	Australia	35	1.200
5	University System of Ohio	USA	33	1.132
6	University System of Georgia	USA	30	1.029
7	Peoples Friendship University of Russia	Russia	28	0.960
8	State University System of Florida	USA	28	0.960
9	University of California System	USA	27	0.926
10	Stockholm University	Sweden	24	0.823

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According to Table 6, “Kazan Federal University” ranks first with 81 (2.77%) articles. Then “Ministry of Education Science of Ukraine” with 52 (1.78%) and “University of London” with 38 (1.30%) articles are in the second and third places. The names of other leading universities/institute in the production of articles in this field can be seen in Table 6. A co-authorship map of the top-ranked universities/institute is presented in Figure 3.

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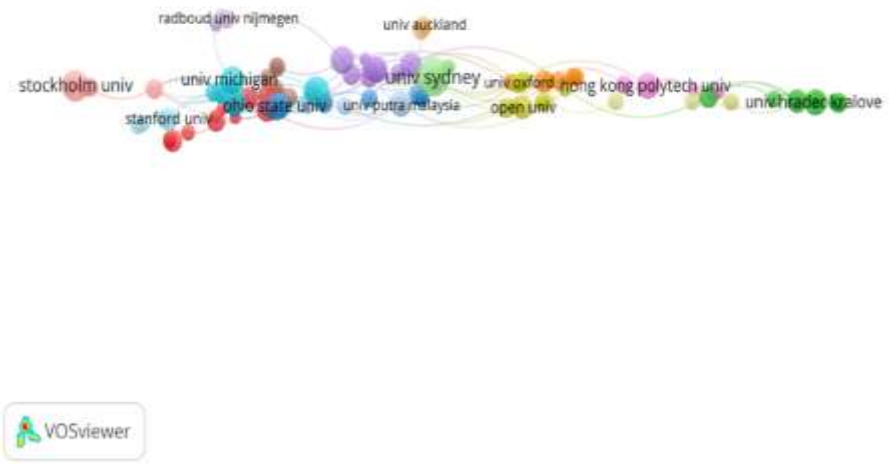

Figure 3. The co-authorship map of the universities/institutes

163 universities/institutes with a threshold of 5 were entered into VOSviewer software, and the data were analyzed. The size of the circle indicated the number of published articles. As shown in the map, the University of Sydney, Stockholm University, Ohio State University, University of Michigan, and Hong Kong Polytechnic University were the world's top universities/institutes in publishing articles of linguistics and education. Lines connecting the countries indicated co-authorship. When the two universities/institute connected by one line, they collaborated on the publication of an article. Therefore, the thickness of the line represented a high level of cooperation between universities/institutes. As shown in the map, there was scientific cooperation between the University of Sydney and most universities/institutes. The University of Sydney had the most scientific cooperation with the university of Queensland, Macquarie University, and the University of Technology, Sydney.

4-7-Ranking linguistics and education research keywords based on co-occurrence analysis: The 9341 keywords from 2915 articles indexed in WOSCC were classified and analyzed (Table 7). The top 20 keywords indicate the terms that researchers used most often during the study period.

Table7. Top 20 linguistics and education articles keywords based on co-word analysis (1973-2024)

Rank	Keywords	Frequency	Rank	Keywords	Frequency
1	linguistics	257	11	Discourse analysis	47
2	education	166	12	Academic writing	43
3	Systemic functional linguistics	131	13	Teaching	39
4	Corpus linguistics	129	14	Identity	39
5	Applied linguistics	113	15	Language policy	39
6	Higher education	112	16	Literacy	37
7	Teacher education	79	17	Translanguaging	36
8	Language	67	18	Bilingualism	32
9	Multilingualism	50	19	Discourse	31
10	Language education	49	20	Critical discourse analysis	31

As can be seen in Table 7, the keyword “linguistics” is a high frequency keyword with a frequency of 257. The terms “education”, “systemic functional linguistics”, “corpus linguistics” and “applied linguistics” ranked second to fifth with frequencies 166 ,131, 129 and 113, respectively. The results indicate that researchers pay more attention to these keywords in this period.

4-8-Word co-occurrence network analysis and identification of thematic clusters: After preparing a co-word matrix based on a threshold of 8, the keywords were ranked from highest to lowest. The top third of the total is the hottest topics. The hot topics based on frequency were revealed with the VOSviewer (Figure 4). In this figure, the size of each node indicates its weight among keywords, the colors represent clusters that are formed, and the width of each line represents the relationship between keywords. Topics with the highest frequency of co-occurrence are at the center of the network. Keywords around them are less frequent. The larger the size (i.e., frequency) of each node (keyword), the more important the keyword in its network.

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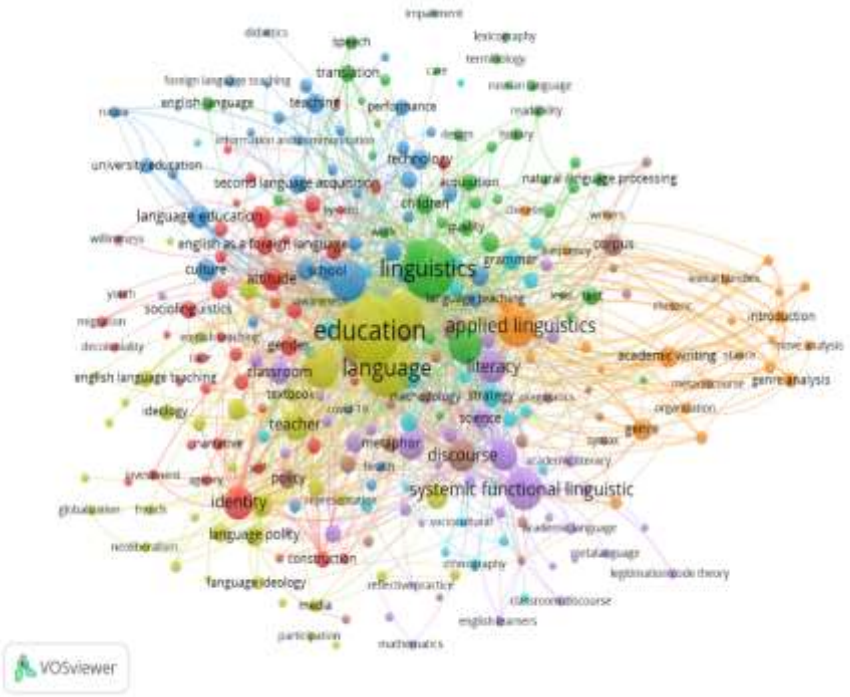

Figure 4. The network structure of high-frequency keywords in linguistics and education (1970-2024)

The clusters in Figure 4 are grouped based on their thematic similarities, with each cluster representing a distinct area of focus, as in the following:

- "Language" and "Education", the central cluster named as Language-Education and acting as a hub which is connected to all other clusters, represents the core themes of language and education. It includes keywords related to teaching methodologies, classroom environments, teacher roles, and second language acquisition. The presence of terms like `information and communication` suggests a focus on how language is used in educational settings.
- "Linguistics" and "Translation", upper-right cluster entitled as Linguistics-Translation, focuses on theoretical and applied aspects of linguistics, including translation, speech, and terminology. The inclusion of `technology` and `natural language processing` indicates a connection to computational linguistics and modern applications of linguistic theories.
- "Applied Linguistics" and "Academic Writing", lower-right cluster named as Applied Linguistics-Academic Writing, emphasizes the practical applications of linguistics, particularly in academic contexts. Keywords such as `academic writing`, `genre analysis`, and `discourse` suggest a focus on how language is used in academic settings and written communication.
- "Identity" and "Language Policy", lower-left cluster named as Identity-Language Policy, explores social and cultural aspects of language, focusing on identity, language policies, and factors influencing language use (e.g., motivation, culture, migration, gender).
- "Foreign Language Teaching" and "University Education", the upper-left cluster named as TFL-University Education, focuses on the teaching

of foreign languages, particularly in university settings, showing that foreign language instruction is a significant component of higher education. Keywords such as `didactics` and `performance` indicate a focus on teaching methodologies and assessment practices.

To show the density and structure of keyword frequency and the degree of aggregation of these words, hot spots in this area were drawn using VOSviewer software. As can be seen in Figure 5, the concentration points of keywords in the field of "education and linguistics" and the rate of use of specialized keywords are displayed as thermal hotspots. The keywords in the orange range were actually the most frequently used in this domain. As you move from orange to yellow, green, and blue, you see a decrease in keyword density and move towards keywords that are adjacent to clusters.

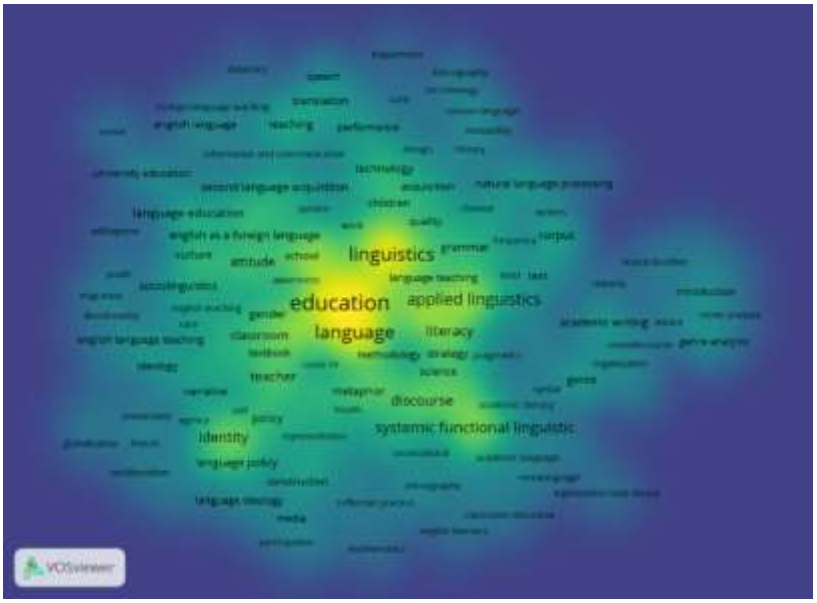

Figure 5. Thematic density of keywords in "linguistics and education" (1970-2024)

4-9-The structure of the linguistics and education research based on cluster analysis: After cleaning and filtering, the data were entered into VOSviewer software, and with a threshold of 8, 279 keywords were analyzed and 8 clusters were identified, which are presented in Table 8. Table 8 shows the top 10 keywords in each cluster along with their co-occurrence status, links, and overall link strength. It also shows the number of keywords in each cluster, their total occurrence, total links, and total links strength. As can be seen in Table 8, cluster 4 is the richest cluster with 38 keywords and a co-occurrence count of 1812, 2407 links, and 6512 total link strength. This cluster contains the keywords education, language, English, and higher education.

Table 8. Top 10 keywords with high co-occurrence, links and total link strength in each cluster

Cluster 1/46 keywords	**Total Occurrences / 893**	**Links/ 2128**	**Total Link Strength/ 3482**	
Rank	Keyword	Occurrences	Links	Total Link Strength
1	identity	103	144	408
2	attitude	51	109	227
3	learner	47	111	258
4	English as a foreign language	34	78	139

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5	foreign language	34	64	102
6	gender	34	61	86
7	Spanish	30	73	116
8	sociolinguistics	30	50	74
9	second language	29	67	128
10	construction	28	64	127
Cluster 2/41 keywords Total Occurrences/ 1109 Links/ 1808 Total Link Strength/ 3382				
Rank	Keyword	Occurrences	Links	Total Link Strength
1	linguistics	321	223	960
2	corpus linguistics	133	132	280
3	communication	55	93	174
4	children	38	75	142
5	model	37	99	148
6	translation	32	42	99
7	acquisition	29	80	137
8	text	29	71	115
9	quality	25	45	73
10	computational linguistics	21	27	31
Cluster 3/39 keywords Total Occurrences/ 996 Links/ 1976 Total Link Strength/ 3617				
Rank	Keyword	Occurrences	Links	Total Link Strength
1	student	161	192	681
2	language education	52	76	162
3	culture	46	84	177
4	motivation	44	102	196
5	school	40	99	184
6	university	39	75	144
7	teaching	39	53	100
8	technology	38	89	150
9	impact	34	84	148
10	second language acquisition	33	80	124
Cluster 4/38 keywords Total Occurrences/ 1812 Links/ 2407 Total Link Strength/ 6512				
Rank	Keyword	Occurrences	Links	Total Link Strength
1	education	447	251	1504
2	language	295	248	1146
3	English	187	198	779
4	higher education	150	156	430
5	teacher	89	128	351
6	multilingualism	55	108	234
7	discourse analysis	53	109	184
8	language policy	45	65	130
9	bilingualism	42	67	121
10	perception	38	92	170
Cluster 5/38 keywords Total Occurrences/ 942 Links/ 1812 Total Link Strength/ 3281				
Rank	Keyword	Occurrences	Links	Total Link Strength
1	systemic functional linguistics	155	131	405
2	literacy	95	132	337
3	knowledge	88	135	363
4	teacher education	79	132	268
5	classroom	54	122	253
6	translanguaging	36	82	161
7	science	36	69	117
8	bilingual education	29	57	91
9	reflection	23	60	88
10	multimodality	22	33	47
Cluster 6/28 keywords Total Occurrences/ 489 Links/ 1554 Total Link Strength/ 2376				
Rank	Keyword	Occurrences	Links	Total Link Strength
1	pedagogy	50	107	220
2	strategy	41	122	229

3	grammar	37	86	137
4	context	29	95	150
5	vocabulary	28	77	126
6	experiences	27	73	121
7	writing	23	77	123
8	assessment	22	71	107
9	engagement	22	75	105
10	comprehension	19	57	81
Cluster 7/26 keywords Total Occurrences/ 558 Links/ 1123 Total Link Strength/ 2366				
Rank	Keyword	Occurrences	Links	Total Link Strength
1	applied linguistics	174	174	596
2	genre	46	80	184
3	academic writing	43	66	146
4	genre analysis	22	35	95
5	psychology	20	58	87
6	introduction	18	39	102
7	English for academic purposes	17	40	80
8	qualitative research	16	29	50
9	chinese	15	63	81
10	organization	15	40	70
Cluster 8/25 keywords Total Occurrences/ 561 Links/ 1076 Total Link Strength/ 1866				
Rank	Keyword	Occurrences	Links	Total Link Strength
1	discourse	98	146	384
2	instruction	53	114	242
3	corpus	46	73	142
4	policy	38	85	171
5	curriculum	32	74	114
6	metaphor	32	40	62
7	cognition linguistics	31	37	50
8	belief	30	79	137
9	semantics	19	31	47
10	methodology	18	42	49

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5-Conclusion

The purpose of this study was to quantify the characteristics of publications in the field of education and linguistics in the 1970-2024 period. For this purpose, the Web of Science citation database was selected. WoS is a reliable citation index with a rich archive and coverage of the most globally significant publications to date. WoS does not necessarily index the largest number of journals in all the different scholarly fields, but it provides oversight of a sufficient amount of high-quality literature, and it can be extremely useful to procure an indicator of citation that properly represents all the trends of a given discipline (Ellegaard &Wallin, 2015). The statistical population was limited to research, review, and conference articles, as these types of documents provide a comprehensive, concise, and complete picture of studies in this field. A total of 2915 articles were retrieved and analyzed using the bibliometric approach and VOSviewer and Excel software in terms of criteria such as highly cited articles, top authors, leading countries, core journals, top universities and institutions, top keywords, and subject clusters. The results of the study showed that the trend of publication of articles and citations received from 1970 to 2024 was accompanied by continuous growth. Lim, Jason Miin-Hwa from UCSI University, Malaysia, was recognized as the top author with the publication of 12 articles. INTED Proceedings was the top journal with 70 articles. The United States was the leading country with 497 articles. The co-authorship network of the United States showed that it had the most collaborations

with China, the United Kingdom, and Australia. Kazan Federal University had the most article production among universities and institutions, with 81 articles.

The results show that “linguistics” was the most common keyword in linguistics and education research from 1970 to 2024. The above result is precisely consistent with the results of Lima et al.'s (2022). This is not surprising, considering that most researchers use information systems to compile, process, and analyze their data. Cluster analysis can reveal the intellectual structure of linguistics and education research. Here, the process led to the emergence of 8 thematic clusters. The keyword clustering analysis indicates several key themes and trends at the interface of the two fields of linguistics and language education. Cluster 1 highlights the importance of "identity," "attitude," and "gender" in language learning, particularly in contexts involving English as a foreign language (EFL). These keywords suggest the pivotal role played by sociocultural factors in shaping learners' experiences (Norton, 2013). Cluster 2 focuses on the prominence of "corpus linguistics," "linguistics," and "communication," indicating a strong tendency toward empirical and data-driven methodologies in linguistic research. Cluster 3 centers around "motivation," "culture," and "language education," suggesting that affective and cultural dimensions are integral to successful language learning in schools and universities. Cluster 4 focuses on broader educational systems, with keywords like "education," "higher education," and "language policy." This suggests a macro-level approach to understanding language teaching and learning. This aligns with Spolsky’s (2004) work on language policy and planning, which explores how institutional and governmental policies shape language education. Cluster 5 highlights "systemic functional linguistics" (SFL), "literacy," and "teacher education," pointing to the application of SFL in literacy development and classroom practices. Furthermore, the prominence of "translanguaging" reflects recent work by García and Wei (2014) on multilingual practices in education. Cluster 6 centers on "pedagogy," "strategy," and specific language skills such as "grammar" and "vocabulary," indicating a practical focus on teaching methods. Cluster 7 emphasizes "applied linguistics," "genre," and "academic writing," highlighting the importance of disciplinary communication practices (Paltridge, 2001). Cluster 8 focuses on "discourse," "instruction," and "policy," suggesting an interest in how discourse shapes educational practices and policy-making.

The keyword clustering analysis reveals thematic overlaps and interconnections among clusters. Both clusters 1 and 3 emphasize sociocultural and affective dimensions of language learning. Clusters 2 and 7 focus on linguistic analysis and its applications. Clusters 3 and 4 address educational systems, but from different perspectives. Themes in cluster 5, which highlight SFL and literacy and are applied in teacher education and classroom instruction, overlap with Cluster 6 (pedagogical strategies) and Cluster 8 (discourse and policy). Both clusters 4 and 8 address macro-level issues such as language policy, curriculum design, and educational reform. Clusters 7 and 8 focus on discourse, but Cluster 7 applies it to academic writing, while Cluster 8 explores its role in shaping educational practices and policies. Themes in clusters 1 and 5 converge in discussions of how language practices shape learner identities and classroom interactions. The interconnections among clusters demonstrate the interconnectedness of micro-level (e.g., identity, motivation) and macro-level (e.g., policy, discourse) factors in linguistics and education. Regarding the interrelatedness of linguistics and education, Carlson (2009: 250) argues that

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linguistics is as important and essential to the educational curriculum as biology. She points out that "biology is the scientific study of life. Linguistics is the scientific study of language. Leaving out either one would be leaving out the scientific study of ourselves and our experience".

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