

Mapping of Linguistic Diversity Research Themes: A Review

Mega Firdaus

English Language Education Department
Universitas Nahdatul Ulama Sidoarjo
Sidoarjo 61218, Indonesia
megafirdaus@unusida.ac.id

Elsa Rosyidah

Environmental Engineering Department
Universitas Nahdlatul Ulama Sidoarjo
Sidoarjo 61218, Indonesia
elsarosyidah@unusida.ac.id

Hadi Ismanto

Basic Education Department
Universitas Negeri Malang
Malang 61218, Indonesia
hadi.ismanto.1921039@students.um.ac.id

Agung Purnomo

Entrepreneurship Department
BINUS Business School Undergraduate Program
Bina Nusantara University
Jakarta 11480, Indonesia
agung.purnomo@binus.ac.id

Abstract

This research purposes to present a thorough knowledge map of the intellectual structure of linguistic diversity based on the dataset collected from the Scopus database. The study used the bibliometrics method to examine research data and used the Scopus search results analysis service and the VOSviewer tool to use it. The Scopus database provided research data on 2,395 academic papers published between 1976 and 2020. The United States, Max Planck Institute for Psycholinguistics, and Mikkonen, K. were revealed as the most productive countries, research institutes, and individual researchers in linguistic diversity studies. The most intensive subject area and sources of publications in linguistic diversity studies were social sciences and the Journal of Multilingual and Multicultural Development. The simulation results show that there were four patterns of collaborative research groups. To characterize the body of knowledge generated from the forty-four years of publishing, this study presented a convergence axis classification consisting of linguistic diversity studies.: Bilingual Education, Anthropology of Culture, Interpersonal Communication, Cultural Diversity, and Computational Linguistic, as BICAC Research Themes.

Keywords

Bibliometric, Bilingual Education, Intellectual Structure, Linguistic Diversity, Research Themes.

1. Introduction

In certain nations, people speak more than one official and unofficial version of the language (Rizova et al., 2020). In an increasingly worldwide world, it is necessary to embrace linguistic variety in speech-language pathology and cultural (Verdon et al., 2016). The 'absorption of language' and the more inevitable nature of the 'language' of social action in the modern world (Brubaker 2014, 3), linguistic diversity is highly important today (Arnaut et al. 2015; Vertovec dan Wessendorf 2006).

Multilingualism or linguistic diversity, is at the center among several diverse communities. Linguistic diversity can play an important role as language input for children who grow up in a multilingual society and most importantly can shape children's understanding of the role of language in socio-cultural contexts, their sensitivity to sociolinguistic variations, and the development of metalinguistic skills (Mohanty, 2019; Ochs & Schieffelin, 2017). The tremendous diversity of the world's most widely spoken mother tongues is explored through extensive descriptions of the four primary dialects' distinctions in vowels, consonants, tones and semi-vowels diphthongs (Pham & McLeod, 2016).

Human multilingualism is associated with several groups, does not appear to be considered a crucial element of one's identity creation, according to linguistic diversity studies, rather than being defined as an ability in addition to the main language used in community, it is described as a skill (Sinkeviciute, 2020). This can be found in a variety of contextual factors because multilingualism is viewed as a valuable but not essential skill, whereas monolingualism dominates social interaction (Canagarajah, 2007; Duchêne & Heller, 2012; Hinton, 2016; Jaspers, 2015; Rubino, 2010; Shin, 2019).

UNESCO recognizes that "the most efficient resource for maintaining and developing tangible and intangible heritage is language," and encourages all countries to "support multilingual learning and linguistic diversity to foster a thorough understanding of cultural cultures and linguistic all over the world, as well as create unity based on tolerance, conversation and understanding (Mohsin, 2003). Besides that, in particular, previous studies on linguistic diversity has also been limited to one country (He & Yu, 2017). Despite offering a big visual map shown on a national scale time after time utilizing data of numerous published research, there hasn't been much coverage of linguistic diversity. There's been no explicit explanation of the substantial beneficial connection with relationships, scholars, and the influence of scholarly works.

The bibliometric method is one of the approaches for viewing studies in general. Bibliometrics is an approach that uses a compound of statistical and mathematical tools to measure and analyze scholarly references. Bibliometrics is a statistical tool used to assess bibliometric data such as peer-reviewed journal articles, reports, reviews, books, periodicals, conference proceedings, and other related publications. Bibliometric methods have been frequently used to demonstrate the connection between quantitative approaches and the study domain (IGI Global, 2021). What is the mapping and trend of linguistic diversity research using visual bibliometric analysis? is one of the research topics proposed in this study. This study aims to visually study mapping and research trends in the field of linguistic diversity on an international scale from the perspective of bibliometric reviews.

There are multiple sections to this scientific article. The study's background, questions, and aims are discussed in the first section of the introduction. In the second half of the technique, the scientific strategy used in the investigation is detailed. The research findings are described in the results and discussion section, while the major aspects of the research are summarized in the fourth section. Finally, there are acknowledgments and references.

2. Research Methods

A huge literature database was subjected to bibliometric analysis in this study. This survey contained crucial keywords related to a linguistic diversity study in order to find and identify similar works in the global Scopus database. Academics perceive the Scopus database as a reliable source of scholarly publications, hence it was used as the major source of information.

To obtain relevant data from the Scopus database, this study employed the terms "linguistic diversity" in the title, abstract, and author keywords. Data mining is limiting to annual data to acquire completely publicized data for a period of twelve months each year. The following option for a search query is used in data mining ("linguistic diversit*" OR "diversity of linguistic") AND PUBYEAR < 2021 as of November 2020. In this step, we found 2,395 papers spanning the last 44 years, from 1976 to 2020. The Scopus result data has been extracted in CSV dataset format at this point in the research (Firdaus & Purnomo, 2021).

The Scopus website has a feature called Analyze Search Results that presents bibliometric data from selected articles. We used this method to assess and visualize academics', institutions', and countries' publishing output. You can also

use this tool to keep track of the number of annual publications and citations, as well as the percentage of subject categories and source materials (Purnomo, Rosyidah, et al., 2020; Purnomo, Sari, et al., 2020).

The researcher then utilized the version of the 1.6.16 VOSviewer to perform co-occurrence and co-authorship studies on the documents acquired. This research combined co-authorship analysis with the author's analysis component and the complete computation systematic technique using VOSviewer to create a worldwide network of collaborating researchers. VOSviewer was utilized in this research to generate a network of keyword maps for research topics, as well as a thorough co-occurrence analysis, keyword association analysis, and a completely scientific computational method (Ranjbarsahraei & Negenborn, 2017; van Eck & Waltman, 2010). Microsoft Excel was used to create and tabulate simple statistics and tables. The study findings were then summarized and triangulated.

3. Results and Discussion

In the field of linguistic diversity, this section discusses the increasing outcomes of data based on most productive organizational affiliation, personal researcher, yearly documents, and map research.

3.1 Linguistic Diversity Research's Most Productive Organizational Affiliations

Linguistic diversity have been studied by 160 related organizations. Max Planck Institute for Psycholinguistics, Netherlands is a higher education institution that studies linguistic diversity publications (n = 33). Then there's University of Melbourne, Australia (n = 32), The University of Texas at Austin, United States (n = 27), Radboud Universiteit, Netherlands (n = 27), The Australian National University, Australia (n = 24), University of Toronto, Canada (n = 23), The University of Queensland, Australia (n = 22), The University of Sydney, Australia (n = 21), Helsingin Yliopisto, Finlandia (n = 19) and La Trobe University, Australia (n = 19).

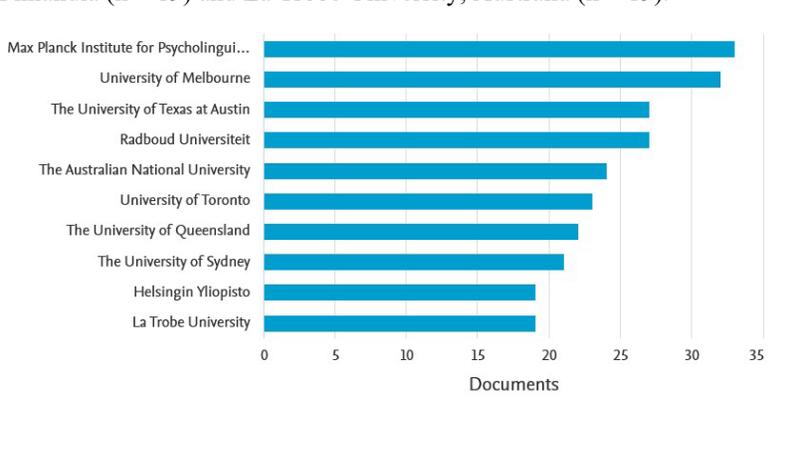


Figure 1. Affiliation with an Institution Annual Publication of Linguistic Diversity

The 10 institutions from Australia and the Netherlands were shown to be among the most productive research organization affiliates in the linguistic diversity study. This is since Australia and Netherlands has always supported development and research, notably in the field of linguistic diversity. In general, research on linguistic diversity is carried out by a number of countries and is not dominated by a single country. Max Planck Institute for Psycholinguistics, Netherlands is the institution that contributes the most to linguistic diversity research because Max Planck Institute for Psycholinguistics is the institution that houses researcher Stephen C. Levinson. Stephen is the fifth researcher in this field (Casillas et al., 2021, 2020; Holler & Levinson, 2019)

3.2 Most Individual Researcher in Linguistic Diversity Research

There were 159 researchers who studied linguistic diversity on their own. The researcher with the most publications in the discipline of linguistic diversity was Kristina Mikkonen from University of Oulu, Finland (n = 12). Dan Dediu from Université Lumière Lyon 2, Lyon, France is on the case (n = 11); Kathleen Heugh from University of South Australia, Adelaide, Australia (n = 10); Maria Kääriäinen from The Finnish Centre for Evidence-Based Health Care: A JBI Centre of Excellence, United States (n = 9); Stephen C. Levinson from Max Planck Institute for Psycholinguistics, Nijmegen, Netherlands (n = 9); Sharynne McLeod from Charles Sturt University, Bathurst, Australia (n = 9); Shlomo Weber from Organization of the Petroleum Exporting Countries (OPEC) (n = 9); Piet Van Avermaet from Universiteit Gent, Ghent, Belgium (n = 8); Tove Skutnabb-Kangas from Roskilde Universitet,

Roskilde, Denmark (n = 7); and Anna Maria Tuomikoski from Oulun seudun ammattikorkeakoulu, Oulu, Finland (n = 7).

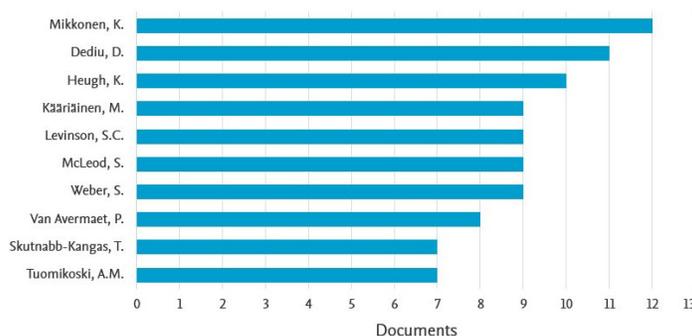


Figure 2. Linguistic Diversity Publication Researcher with the Most Individual

The most productive individual researchers in the linguistic diversity study are largely from Finland and Australia, as can be shown. Kristina Mikkonen of the University of Oulu, Finland, was the author of the most publications in the field of linguistic diversity, and she is also one of the twelfth most productive research affiliates in linguistic diversity studies. Kristina Mikkonen is most recognized for his linguistic diversity writing (Korhonen et al., 2019).

3.3 Linguistic Diversity Publications in the Most Productive Nation

There are 109 countries that have studied linguistic diversity. In terms of linguistic diversity publications, the United States was the leading research nation (n = 765) and then there was Australia (n= 267). United Kingdom (n = 266), Germany (n = 129), Spain (n = 125), Canada (n = 106), Netherlands (n = 100), France (n = 89), Italy (n = 63), and the next countries to join were South Africa (n = 57). In terms of linguistic diversity publication, the United States, Australia, and the United Kingdom are the most active countries.

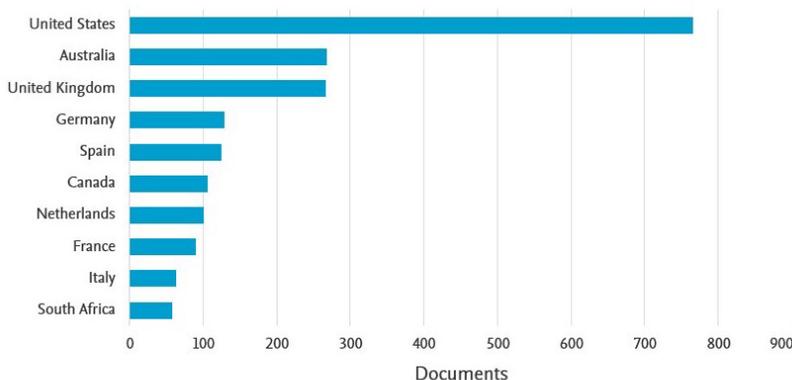


Figure 3. Organizational Affiliation Number of Annual Publication of Linguistic Diversity

In relative to developing countries, developed countries with a high human development index and a particularly supportive research ecosystem dominated linguistic diversity publications. United States has a 0.924 HDI ranking. The United States of America is a developed country with a population of 331,449,281 in 2021, and the world's third most populous country (World Population Review, 2021). Because great language diversity is still a major feature of the U.S. population, the United States was the leading research nation in linguistic diversity. Individuals aged five and older who spoke a language other than English at home totalled more than 60 million, or more than 20% of the U.S. population aged five and older, according to the Census Bureau's American Community Survey (ACS) from 2009 to 2013 (Bagheri & Driever, 2018).

3.4 Linguistic Diversity Research Frequency as a Subject Area

Research on linguistic diversity has been conducted on a wide range of topics. The subject with the most international publications in linguistic diversity research is social sciences (n = 1,855, or 44.2 percent). Arts and humanities (n = 1,082, or 25.8%), psychology (n = 227, or 5.4%), medicine (n = 192, or 4.6%), computer science (n = 95, or 2.3 percent), agricultural and biological sciences (n = 92, or 2.2 percent), health professions (n = 91, or 2.2%), and biochemistry, genetics and molecular biology (n = 84, or 2.0 percent) were the next most popular.

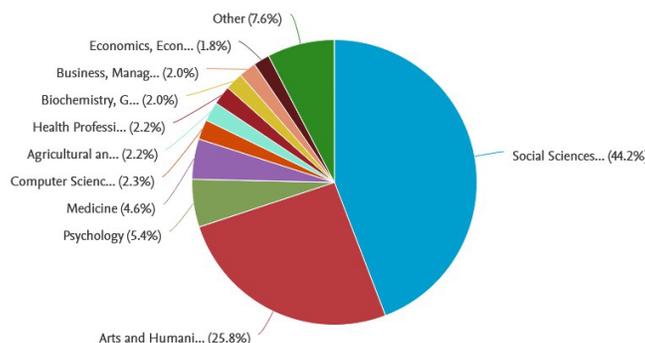


Figure 4. Linguistic Diversity Research Frequency as a Subject Area

Modern linguistic diversity is the result of a collaboration between the social sciences, the arts, and the humanities. Social sciences for education purposes. This is one of the reasons why linguistic diversity study is dominated by the social sciences, arts, and humanities.

3.5 Linguistic Diversity Documents Publication Sources by Year

Research on linguistic diversity has been published by 139 sources. “Journal of Multilingual and Multicultural Development”, SJR 1.03 (n = 37); “Current Issues in Language Planning”, SJR 0.89 (n = 21); “Language Policy”, SJR 1.75 (n = 20); “Language and Education”, SJR 1.02 (n = 19); “International Journal of the Sociology of Language”, SJR 0.43 (n = 18); “International Journal of Bilingual Education and Bilingualism”, SJR 1.27 (n = 17). The SCImago Journal Rating (SJR) assigns a value to journals based on the subject area, quality, and reputation of the journals, as well as their average prestige per publication. The most productive green product research journals have medium SJR values, ranging from 0.17 to 1.92 (SJR: Scimago Journal & Country Rank, 2021).

Table 1. Number Source of Linguistic Diversity Research

Scientific journals	SJR	Article
Journal of Multilingual and Multicultural Development	1.03	37
Current Issues in Language Planning	0.89	21
Language Policy	1.75	20
Language and Education	1.02	19
International Journal of the Sociology of Language	0.43	18
International Journal of Bilingual Education and Bilingualism	1.27	17

3.6 Annual Publications of the Linguistic Diversity Sector

Each year, the number of articles on linguistic diversity study published around the world is increasing. With 245 publications in 2020, Figure 5 shows the highest peak in publishing. Since 1976, researchers have been researching linguistic diversity, according to reports. In 2020, there will be 245 documents in the linguistic diversity research, compared to 217 in 2019, 194 in 2018, 185 in 2017, 165 in 2016 and 159 in 2015.

The surge in research related to linguistic diversity in 2020 cannot be separated from the influence of the COVID 19 virus outbreak that began to hit the world in 2019. The novel coronavirus outbreak that made international headlines in January 2020 in Wuhan, China's Hubei region, and the disease it caused have yet to be named. COVID-19 has since

become a global pandemic, and the disease's name has changed from not even existing prior to February 11, 2020 (“Naming the coronavirus disease (COVID-19) and the virus that causes it,” 2020) to the great majority of the world's eight billion people's vocabulary. “COVID-19” may well take the crown as the vocabulary item that has gained the most traction in the shortest length of time in the language repertoire of the greatest number of individuals (Piller et al., 2020).

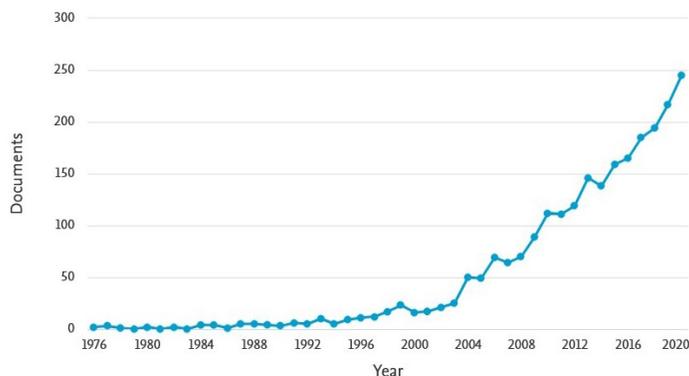


Fig. 5. Annual Publications of the Linguistic Diversity Sector

3.7 Documents Cited on Linguistic Diversity

Table 2. Linguistic Diversity Publication Document Cited

Document title	Authors	Year	Source	Cited by
A pedagogy of multiliteracies: Designing social futures	Courtney B Cazden	1996	Harvard Educational Review 66(1), pp. 60-92	2806
The myth of language universals: Language diversity and its importance for cognitive science	Evans, N., Levinson, S.C.	2009	Behavioral and Brain Science 32 (5), pp. 429-448	863
Diversity as a concept and its measurement	Patil, G.P., Taillie, C.	1982	Journal of the American Statistical Association 77(379), pp. 548-561	430
Mapping human genetic diversity in Asia	Abdulla, M.A., Ahmed, I., Assawamakin, A., (...), Xhao, G., Zilfalil, B.A.	2009	Science 326(5959), pp. 1541-1545	404
English-medium teaching in European higher education	Coleman, J.A.	2006	Language Teaching 39(1), pp. 1-14	393

Based on the linguistic diversity cited the paper “A pedagogy of multiliteracies: Designing social futures” by Courtney B Cazden was the highest document. Courtney B Cazden from Harvard University, United States.

3.8 Research Theme Map

The map of research themes is a search for linguistic diversity research based on published keyword correlations. For the study theme map's green product, the design of the linguistic diversity keyword scheme was examined and

presented using the VOSViewer application. Sixteen repeats were required for the minimal minimum of keyword-related articles. As a result, 7,393 keywords were identified that meet the criterion, out of a total of 114.

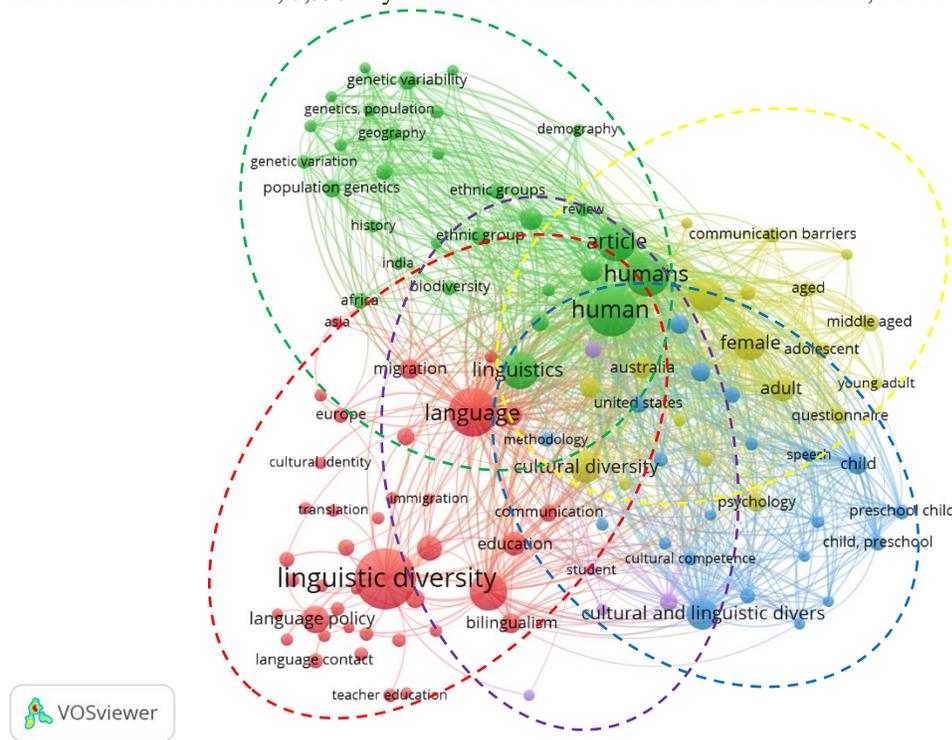


Figure 6. Map of Research Themes

As shown in Figure 6, five research subject groups for international academic publication of linguistic diversity have been condensed and abbreviated as BICAC themes based on research keywords.

1. Bilingual education cluster (red). This cluster contains bilingual education themes. bilingualism, communication, culture identity, culture, diversity, intercultural communication, language, language attitudes, language contact, language diversity, language ideologies, language planning, language policy, multiculturalism and multilingualism. The majority of these terms were connected to this cluster.
2. Anthropology of cultural clusters (green). This cluster contains anthropology of cultural themes. demography, ethnic group, gene frequency, genetic variability, genetic variation, geography, genetics, population, history, humans, language ability, linguistics a population genetics. This cluster was dominated by the factors of anthropology of cultural. Many of these terms are related to long-term anthropology of cultural in some way.
3. Interpersonal communication cluster (blue). This cluster contains interpersonal communication themes. language development, language test, literacy, speech, speech disorder, speech-language pathology, ethnology, cultural competence and cultural competency.
4. Cultural diversity cluster (yellow). The keyword of adult, communication barrier, human experience, information processing, perception and psychology dominated cultural diversity cluster.
5. Computational linguistic cluster (purple). This cluster contains computational linguistic themes. This cluster was dominated by connected learning, students, and teachers. A few of these keywords are related to computational linguistics.

3.9 Network of Authorship

Several research groups have looked into linguistic diversity studies. The authorship network map was created using the VOSViewer software, which is based on the linguistic diversity researcher system. Three publications were one of the requirements for a minimum collection of research articles per author. As a result, only 58 academics out of 4,408 were found to meet the requirements. In linguistic diversity research publications, there were four community collaboration networks among foreign academics, as shown in figure 7.

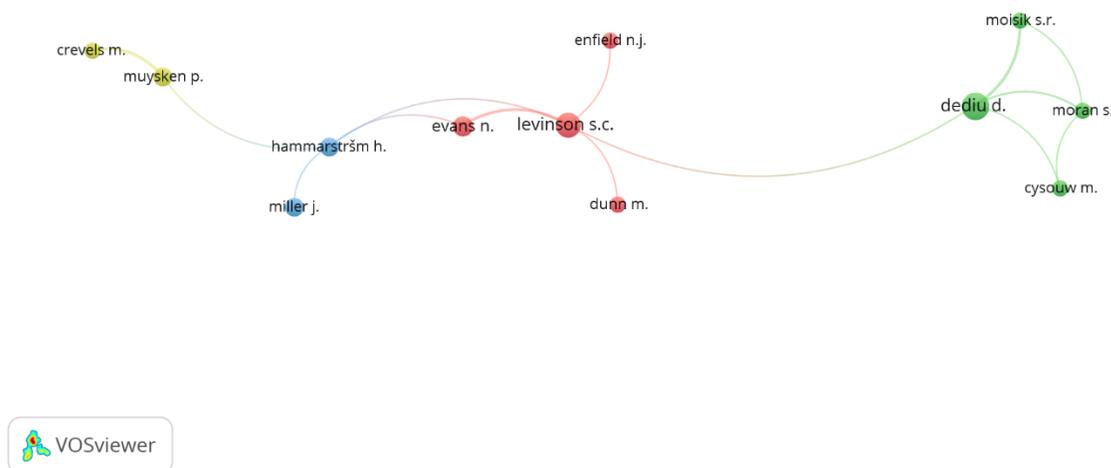


Figure 7. Map of Authorship Network

Crevels, M. and Muysken, P. were part of the red cluster. They're from Netherlands. Hammarstrom, H., and Miller, J. are in the blue cluster. They are from Sweden and Peru. The red cluster which contains Evans, N., Levinson, S.C., Dunn, M. and Enfield, N.J. They are from Australia and Netherlands. The green cluster which contains Dediud, D., Moisik, S.R., Moran, S. and Cysouw, M. They are from Netherlands and Germany.

4. Conclusion

According to the statistics, the number of worldwide publications on linguistic diversity, maps, and visual trends has been increasing on a yearly basis. The Max Planck Institute for Psycholinguistics in the Netherlands was the most active research institution, with 33 papers published in linguistic diversity journals. With 12 articles in the linguistic diversity journal, Kristina Mikkonen from University of Oulu, Finland has the most publications. With 1,855 documents, social sciences was the most extensively researched field in the linguistic diversity publication (44.2 percent). With 37 papers and a 1.03 SJR rank, the Journal of Multilingual and Multicultural Development was the most widely published source on linguistic diversity. With 245 papers published worldwide in the subject of linguistic diversity research in 2020, 2020 was the year with the most academic publications. The works of Courtney B Cazden received the most citations in 1996, with 2,806 "A pedagogy of multiliteracies: Designing social futures" papers cited in the journal "Harvard Educational Review." Four groups of researchers collaborate on the publication of linguistic diversity.

In this study, the convergence axis is used to categorize the body of knowledge developed over the period of forty-four years of academic publication in terms of knowledge contributions: Bilingual Education, Anthropology of Culture, Interpersonal Communication, Cultural Diversity, and Computational Linguistic, as BICAC research themes. Practical studies are necessary to define broad backgrounds and disciplines, as well as study gaps, as a result of defining important issues in the linguistic diversity sector, and there is a greater awareness of the need for them. All of this will pave the way for fresh research on the disciplines' lack of sophisticated knowledge and analysis. Linguistic diversity ability to contribute to education, social science and entrepreneur are all topics that are often researched.

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Biography / Biographies

Mega Firdaus is a junior researcher of the English Language Education Department at the Universitas Nahdlatul Ulama Sidoarjo, Sidoarjo, Indonesia. Ms. Mega is a member of the Indonesian bibliometric research group managed by Agung Purnomo.

Elsa Rosyidah is head of the Institute for Research and Community Services and a faculty member of the Environmental Engineering Department at the Universitas Nahdlatul Ulama Sidoarjo, Sidoarjo, Indonesia. She earned an Associate of Agricultural Technology from IPB University, Indonesia; a Bachelor of Agricultural Technology in Agricultural Engineering from Brawijaya University, Indonesia; and a Master of Environmental Science from Universitas Padjadjaran, Indonesia. Mrs. Elsa is currently pursuing a Ph.D. in Environmental Engineering at Institut Teknologi Sepuluh Nopember, Indonesia. She is part of the 10,000 Women Entrepreneurship Partnership Global Cohort of The U.S. State Department, Goldman Sachs, & Thunderbird, School of Global Management. She has published several journals, books, and conference papers.

Hadi Ismanto is researcher and vice rector at Universitas Nahdlatul Ulama Sidoarjo, Sidoarjo, Indonesia. He earned a Bachelor from Universitas Islam Negeri Sunan Ampel Surabaya, Indonesia; and a Master of Education from Universitas Negeri Surabaya, Indonesia. Mr. Hadi is currently pursuing a Ph.D. in Primary Education at Universitas Negeri Malang, Indonesia.

Agung Purnomo is a researcher and faculty member of the Entrepreneurship Department, BINUS Business School Undergraduate Program at the Bina Nusantara University, Malang Campus, Malang, Indonesia. He earned a Bachelor of Agriculture in Horticulture from Brawijaya University, Indonesia; and a Master of Business Administration in Creative and Cultural Entrepreneurship from Institut Teknologi Bandung, Indonesia. Mr. Agung is currently pursuing a Ph.D. in Management Science at Universitas Airlangga, Indonesia. He has published several journals and conference papers using bibliometric methods in collaboration with multidisciplinary researchers.