8 Artikel LPP 5599

by Nadi Suprapto

Submission date: 05-Feb-2022 10:27AM (UTC+0700)
Submission ID: 1755293033
File name: 8_Suprapto_2021_LPP_5599.pdf (1.59M)
Word count: 5638
Character count: 32732

6-2021

Research Trend on Ethnoscience through Bibliometric Analysis (2011-2020) and The Contribution of Indonesia

Nadi Suprapto
Universitas Negeri Surabaya, nadisuprapto@unesa.ac.id

Binar Kurnia Prahani
Universitas Negeri Surabaya

Utama Alan Deta
Universitas Negeri Surabaya

Research Trend on Ethnoscience through Bibliometric Analysis (2011-2020) and The Contribution of Indonesia

Nadi Suprapto[1*], Binar Kurnia Prahani[2], Utama Alan Deta[3]

[1,2,3]Universitas Negeri Surabaya, Physics Education Program, Surabaya, Indonesia,
*nadisuprapto@unesa.ac.id

Abstract: This paper aims to analyze the scientific trend of research on ethnoscience through bibliometric study and to explore how the contribution of Indonesian researchers in the Scopus database from 2011 to 2020. The sample was composed of 536 documents in total. The results revealed that scientific publication on ethnoscience has been increasing. The USA contributed the most documents on ethnoscience as well as Indonesia's institutions dominated in this area. Indeed, Indonesia put its two representative's institutions: Universitas Negeri Semarang and Universitas Negeri Yogyakarta, among the big ten institutions in the world. All Indonesian documents produced by teacher-producing universities and public universities. The USA and Indonesia have also contributed to the most productive authors of ethnoscience. Then, the visualization of research trend on ethnoscience resulted in three primary clusters: (1) ethnoscience management in the world, (2) ethnoscience in relating to academic domain, anthropology, history, and other social sciences, (3) ethnoscience in connecting with data collecting process, and one secondary cluster: ethnoscience in relating to its effect, lack, and benefit to society as a participant. The research findings could aid related researchers to recognize the trend of ethnoscience research globally and recommend directions for further research.

Keywords: *ethnoscience, bibliometric study, research trend, Scopus, Indonesia*

1. Introduction

The word ethnoscience comes from the word *ethnos* (Greek), which means nation, and *Scientia* (Latin) means knowledge (George, 1991; Moriolkosu, Handayani, & Sunarso, 2020; Suprapto, Prahani, & Cheng, 2021). Therefore, ethnoscience is the knowledge possessed by a cultural community. Its emphasis on indigenous and distinctive knowledge of a cultural community (Suprapto, Prahani, & Cheng, 2021). In other words, ethnoscience is a branch of cultural studies that seek to understand how natives understand their nature. Indigenous people usually have an ideology and philosophy of life that influence them to survive. On this basis, it can be stated that an ethnoscience is a new form of ethnography. Through ethnoscience, cultural researchers will build grass-root theories and do not have to adopt western cultural theories that are not necessarily relevant. Ethnoscience research on cultural phenomena is always based on *ethno* and folk. The presence of ethnoscience will indeed give fresh air to cultural research (Spradley, 2001). Although this is not a new thing, because previously they have known *verstehen* (understanding), it still gives a new face to cultural research. Because, indeed, many cultural researchers have systematically made use of ethnoscience studies. Indeed, there is no common opinion regarding the term ethnoscience among researchers. Some call cognitive anthropology, ethnographic semantics, and descriptive semantics (Spradley, 2001). These various terms arise because each expert gives different emphases, but the essence is to seek a scientific level of cultural studies.

Every society experiences growth and development due to needs that change from time to time. In this development, various problem-solving processes occur for a better and more prosperous life through technology. The development of science and technology cannot be separated from positive and negative impacts. On the one hand, the application of science and technology has given birth to various innovations to improve the welfare of human life. However, on the other hand, the application of science and technology has also exploited natural resources to pursue production without considering long-term survival, such as what happened to the impact of the destruction of the natural environment, which resulted in various natural disasters such as

prolonged drought, floods, forest fires, air pollution, all of which only produce misery for the people at large.

The environment, both physical and socio-cultural, can make a specific contribution to students' learning experiences. These experiences can be in the form of thought patterns (cognitive domains), attitudes (affective domains), and behavioral patterns (psychomotor domains). Scientific concepts developed at school did not run smoothly because they were strongly influenced by social factors, especially intuitive knowledge about the world environment (life-word). This knowledge is built up during childhood and is socialized and encultured by others (such as parents and peers). Ogawa stated that one of the intuitive sciences is social or cultural science, or it is also called indigenous science (Ogawa, 1999; Suprapto, Prahani, & Cheng, 2021). Furthermore, other researchers signaled that original science is related to scientific knowledge acquired through oral culture in a long occupied place (Snively & Corsiglia, 2001).

Ethnoscience learning is very relevant to the foundation of the 2013 curriculum development philosophy. The 2013 curriculum was developed using a philosophy, namely, 1) education is rooted in national culture to build the life of the present and future nation. 2) Students are creative heirs of the nation's culture. 3) Education is aimed at developing intellectual and intelligence academic brilliance through education in scientific disciplines. 4) Education to build a better present and future life than the past with various intellectual abilities, communication skills, social attitudes, care, and participation to build a better life for the community and nation. The success of the learning process at school is strongly influenced by the cultural background of the students or the community where the school is located.

Research on ethnoscience have been conducted by many authors around the world, for example in USA (Davison & Miller, 1998), Brazil (Sotero, Alves, Arandas, & Medeiros, 2020), Germany-Indonesia (Zidny & Eilks, 2020), Indonesia (Sudarmin, Zahro, Pujiastuti, Anhar, Zaenuri, & Rosita, 2019; Wati, Yuberti, Saregar, Fasa, & Aziz, 2021). However, there is a few studies that focused on research trend of ethnoscience and the use of bibliometric analysis.

Research trend on ethnoscience

Despite the importance of ethnoscience, there have been few attempts to gather data about the worldwide scientific production of ethnoscience. Bibliometric analysis provided a precise method to evaluate the contribution of a paper to the advancement of knowledge (Chen & Ho, 2015; Yang, Sun, & Liu, 2017). Bibliometric indicators, including research fields, document sources, publication outputs, document sources, language sources, distribution of countries and institutions, top authors, number of citations, and author keywords, have been frequently used to analyze the trends (Chen & Ho, 2015; Dong, Xu, Luo, Cai, & Gao, 2012; Yang et al., 2017). The purpose of this study is to analyze the trends of ethnoscience research in the last ten years (2011-2020) in order to help educational researchers, comprehend the landscape of global ethnoscience.

Research Questions

This study focused on the research trend on ethnoscience on interval 2011-2020 with six research questions:

a) To what extent did the profile of publication output of ethnoscience in 2011-2020?
b) To what extent did the distribution of publication of ethnoscience across countries and institutes in the world?
c) Who were the top authors in researching of ethnoscience in the world?
d) How did the publication patterns of ethnoscience in 2011-2020?
e) How did the visualization results of the research trend of ethnoscience?
f) To what extent did the contribution of Indonesian authors on researching ethnoscience in 2011-2020?

2. Research Method

The study followed the guidance of bibliometric study (Dong et al., 2012; Kulakli & Osmanaj, 2020; Yang et al., 2017). The first author has also experienced in conducting a bibliometric analysis (Supraptc Sukarmin, Puspitawati, …, & Mubarok, 2021). The researchers utilized Scopus database, since this source includes the journals and conference proceedings that are considered mor elevant by the scientific communities, as well as for their constancy and periodicity. The research was initiated by performi an online searching during 22-28 April 2021. The complete steps were illustrated on Figure 1. The researchers performed an online searching by inputting "ethnoscience" on the title, key words, and abstract (field of discipline) from 2011 to 2020.

Figure 1. Five steps in conducting bibliometric analysis
(Masitoh et al., 2021; Schmeisser, 2013; Setyaningsih, 2018)

It was 5 6 documents fulfilled the searching criteria of 1147 doc ents of whole years (see Figure 2). The data were documented in the form of the (*.ris*) and (*.csv*). Subsequently, these records were processed in different programs or bibliometric and network analysis: Microsoft Excel and *VOSviewer*. *VoSViewer* softwa was used to figure out the research trend on ethnoscience (van Eck & Waltman, 2020). The investigation was conducted to analyze the research trends that cluding characteristics of publication out-puts, document sources, language sources, distribution of countries and institutions, distribution of outpu in subject categories, top authors, top citations, and publication trends from 2011 to 2020. The co-occurrence of keywords was carried out with *VOSviewer*, which uses a Visualization of Similarities algorithm (VOS) as an alternative to multidimensional scaling (Putri et al., 2021).

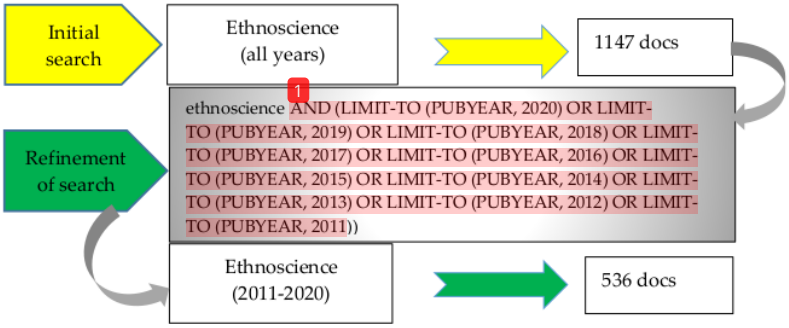


Figure 2. Illustration of initial and refinement search

3. Results

Publication Output, Document Sources, and Language Sources

There were 536 papers associated with ethnoscience research in the Scopus database, including 5 document sources (journal, book, conference proceeding, book series, and trade journal). The publications devoted to ethnoscience research throughout 2011 to 2020 are demonstrated in Figure 3 and Figure 4. The number of documents of ethnoscience across the year was increased significantly. It was less than 30 documents before 2010 and more than 30 documents of each year in 2011-2020. Even though, it was fluctuated in duration 2013-2018,

however the trend was increased in 5 decades. The term ethnoscience first appear in 1967 in American Behavioral Scientist, by Werner (1967). It can be predicted that the number of articles in 2021-2025 will increase dramatically.

Meanwhile, the number of articles based on sources indicated the dominance of articles in the journal (324 documents). It was followed by a book (164) and conference proceeding (39). The book series and trade journal accounted for the fewest sources of documents.

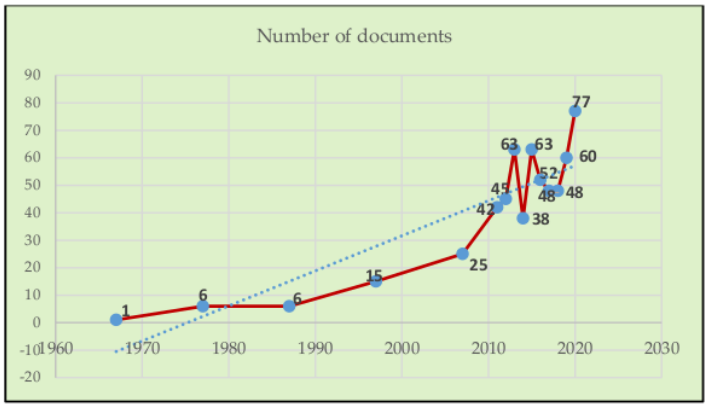


Figure 3. The number of documents on ethnoscience from the beginning (1967) and the last ten years (2011-2020)

Furthermore, out of a total of 536 documents, most articles used English as the language of articles (497 documents or 92%). The rest documents were using French (3%) and Portuguese (1.5%). While it was in a small number, the documents used Spanish, Italian, Polish, Chinese, Russian, German, Indonesian, and Norwegian with a percentage less than 1% (see Figure 5).

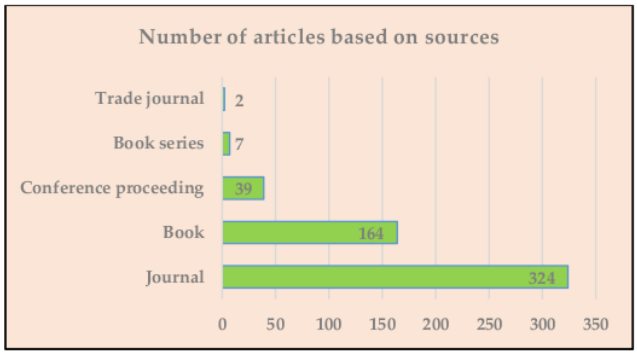


Figure 4. The number of articles of ethnoscience based on source categories

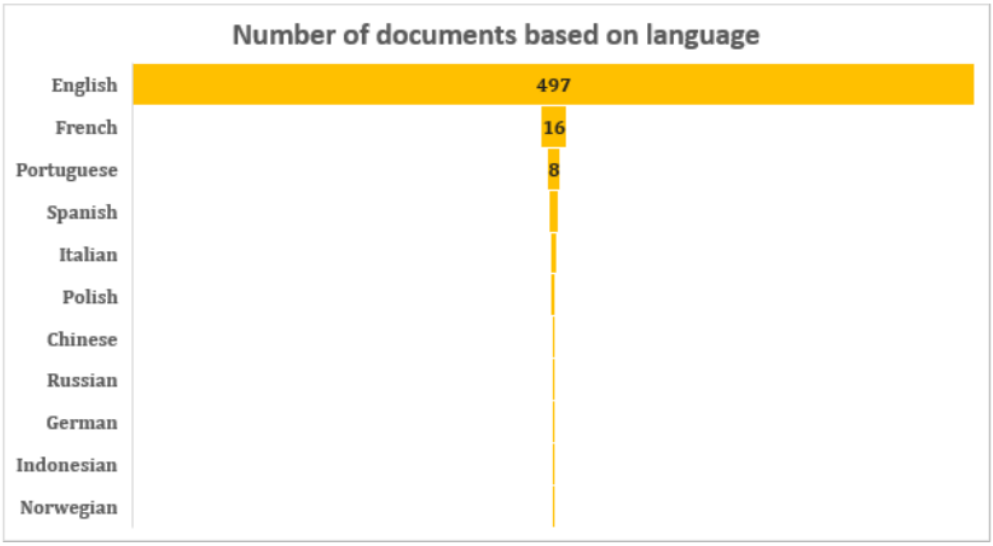
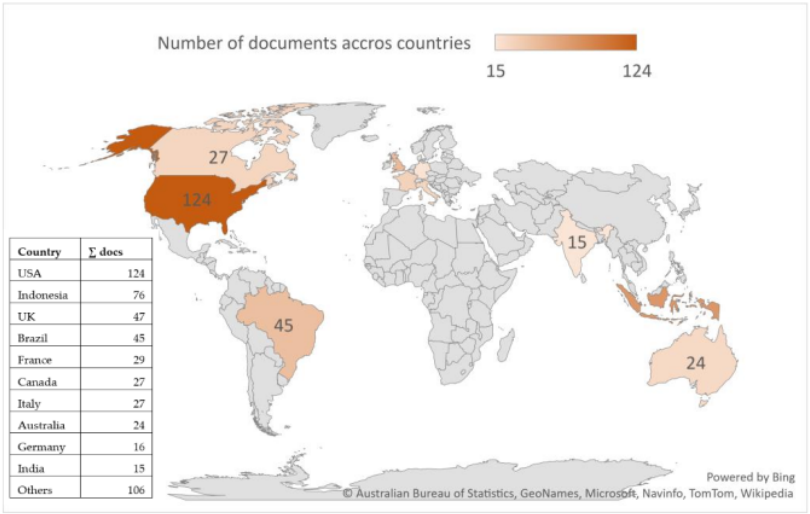


Figure 5. The percentages of articles on ethnoscience based on language during 2011-2020

Publication Distribution of Countries and Institutes

Based on the number of documents across countries, it was clear the dominance of the USA with 124 documents from 2011 to 2020. The countries such as Indonesia, UK, and Brazil contributed to this topic with 76, 47, and 45 documents, respectively. Meanwhile, with almost the same number, France, Canada, Italy, and Australia contributed documents between 20-30. The rest of the ten countries that contributed the most to research on ethnoscience were Germany and India.



Country	∑ docs
USA	124
Indonesia	76
UK	47
Brazil	45
France	29
Canada	27
Italy	27
Australia	24
Germany	16
India	15
Others	106

Figure 6. Number of documents based on countries 2011-2020

The number of documents of ethnoscience (2011-2020) across the institution could be seen in Table 1. Indonesia places its two institutions in the first and sixth rank. Universitas Negeri Semarang (UNNES), Indonesia has ranked first with 20 documents and was followed by the

Università Cattolica del Sacro Cuore, Italy. Meanwhile, other institutions were dominated by Brazil and the USA.

Table 1. Number of documents of ethnoscience (2011-2020) across institution

No	Institution	Number of Documents
1	*Universitas Negeri Semarang*, Indonesia	20
2	*Università Cattolica del Sacro Cuore*, Italy	14
3	*Universidade de Sao Paulo* – USP, Brazil	11
4	University of Alberta, Canada	11
5	*CNRS Centre National de la Recherche Scientifique*, France	9
6	*Universitas Negeri Yogyakarta*, Indonesia	8
7	*Universitatea Alexandru Ioan Cuza*, Romania	7
8	Indiana University Bloomington, USA	7
9	*Universidade Federal Rural de Pernambuco*, Brazil	6
10	University of California, Riverside, USA	6

Top Authors in Researching of ethnoscience

In terms of most productive authors, Figure 6 indicates the top ten authors in researching on ethnoscience. Sudarmin, Graffigna, Sandu, Sumarni, Olson, Barello, Chirazi, Mannion, Murrieta, Prado, Shapiro and Wiyanto were the most productive authors in this topic. Generally, the performance of authors in line with the top citation of the article all years, as indicated in Table 2 For example, Ingold (1718). Meanwhile, Table 3 depicts the top citation of articles in the duration of 2011-2020. It was listed that Ingold (2011), Atran (2011), Wilson & Sperber (2012), van Dijk (2014), Sinkovics & Alfoldi (2012) resulted in their articles as the top 5 citations in 2011-2020.

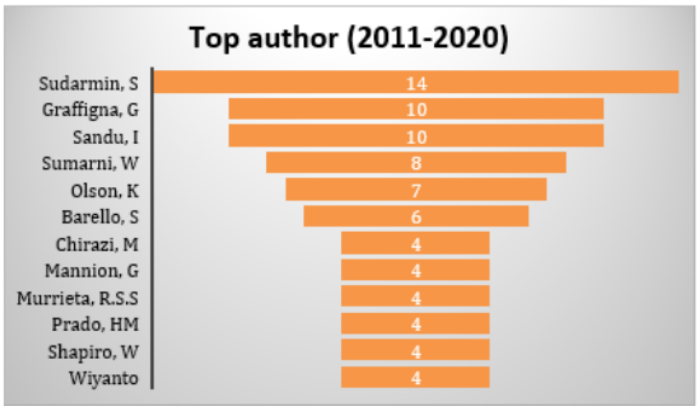


Figure 7. Top authors in researching of ethnoscience during 2011-2020

Table 2. Top citation of article of all years

Author (s)	Journal	∑ citations
Ingold (2011)	Being Alive: Essays on Movement, Knowledge and Description pp. 1-270, Book	1718
Agrawal (1995)	velopment and Change, 26(3), pp. 413-439	1070
Lee (1989)	MIS Quarterly: Management Information Systems, (1), 33-50	765
Atran (2011)	In Gods We Trust: The Evolutionary Landscape of Religion, In Gods We Trust: The Evolutionary ndscape of Religion, pp. 1-364	665
Wezel et al. (2009)	Agronomy for Sustainable Development, 29(4), pp. -515	425
Brown (1975)	Advances in Child Development and Behavior, (C), 103-1	410
Jarvis & Pavlenko (2007)	Crosslinguistic influence in language and cognition, in Crosslinguistic Influence in Language and Cognition, pp. 1-287	370
Rousseau & Tijoriwala (1998)	Journal of Organizational Behavior, 19(SUPPL.), pp. 679-695	355
Ingold (2006)	Ethnos, 71(1), pp. 9-20	345
Wilson & Sperber (2012)	Meaning and Relevance, pp. 1-382	332

Table 3. Top citation of article/document of 2011-2020

Author (s)	Sources	∑ citations
Ingold (2011)	Being Alive: Essays on Movement, Knowledge and escription, pp. 1-270	1718
Atran (2011)	In Gods We Trust: The Evolutionary Landscape of Religion, pp. 1-364	665
Wilson & Sperber (2012)	Meaning and Relevance, pp. 1-382	332
van Dijk (2014)	Discourse and knowledge: A Sociocognitive Approach, pp. 1-400	126
Sinkovics & Alfoldi (2012)	Management International Review, 52(6), 817-845	124
Altieri (2018)	Agroecology: The Science of Sustainable riculture, Second Edition, pp. 1-433	123
Fowles (2013)	An Archaeology of Doings: Secularism and the udy of Pueblo Religion, pp. 1-306	112
Alves & Souto (2015)	Ethnobiology and Conservation, 4(2015),1	100
Devente et al. (2016)	Ecology and Society, 21(2),24	92
Kemp & Regier (2012)	Science, 336(6084), 1049-1054	80

Publication Patterns: Source Titles (Journal or Proceeding)

Table 4 illustrates the most contribution journal or proceeding on the research of ethnoscience. Journal of Physics Conference was a leading conference series that which contains articles about ethnoscience. Meanwhile, Journal Ethnobiology & Ethnomedicine and Journal

Pendidikan IPA Indonesia were the leading journal that was covering this topic in their content. The remaining journals were Ethnobiology & Conservation, Environ. Educ. Res., Int. Encyclopedia Soc. Behav. Scie. Sec. Ed., Revista de Chimie, Routledge Int. Handbook Qual. Nursing Res., A Companion to Cognitive Anthropology, Approaches to Language Culture & Cognition, Biodiversity & Conservation, *Boletim Do Museu Paraense Emilio Goeldi Ciencias Humanas*, Current Anthropology, Ethnobiology, etc. (see Table 4).

Table 4. Number of documents of ethnoscience (2011-2020) across source titles

No	Source Titles	Number of documents
1	J. Phys. Conf. Ser.	32
2	J. Ethnobiology & Ethnomedicine	12
3	J. Pend. IPA Indonesia	11
4	Ethnobiology & Conservation	5
5	Environ. Educ. Res.	4
6	Int. Encyclopedia Soc. Behav. Scie. Sec. Ed.	4
7	*Revista de Chimie*	4
8	Routledge Int. Handbook Qual. Nursing Res.	4
9-18	A Companion to Cognitive Anthropology Approaches to Language Culture & Cognition Biodiversity & Conservation *Boletim Do Museu Paraense Emilio Goeldi Ciencias Humanas* Current Anthropology Ethnobiology Forest Ecology & Management Int. J. Scientific & Tech. Res. *J. De La Societe Des Oceanistes* J. Ethnobiology	3

Visualization of Research Trends on ethnoscience based on VoSViewer Software

Among those 536 papers related to ethnoscience research in the Scopus database, the researchers visualized the research trends on this topic assisted with *VoSViewer* software. This effort helps find the novelty of the research on this domain. Figure 8 indicates the whole picture research on ethnoscience. Researchers on the world produced three primary clusters indicated with red, green, and blue) and one secondary cluster (yellow). The first cluster (red color) was ethnoscience management in the world. The second cluster (green) was ethnoscience related to the academic domain, anthropology, history, and other social sciences. The third cluster (blue) was ethnoscience in connecting with the data collecting process. The last cluster (yellow) indicated ethnoscience relating to its effect, lack, and benefit to society as a participant.

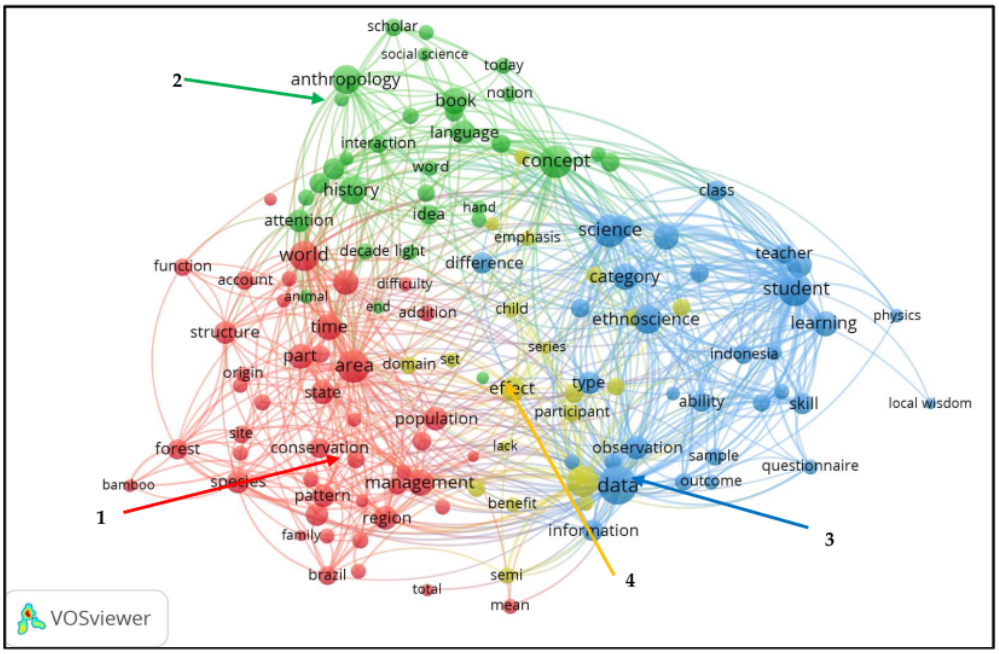


Figure 8. The whole picture of research on ethnoscience during 2011-2020

If we broke down into the specific connection among variables to capture the trend and novelty of researching ethnoscience, we found some findings. Figure 9a emphasized that research on ethnoscience in the educational domain. It related to student, class, school, and learning. Indonesian researchers examined this point more—meanwhile, science and ethnoscience connect with other specific domains, as illustrated in Figure 9b.

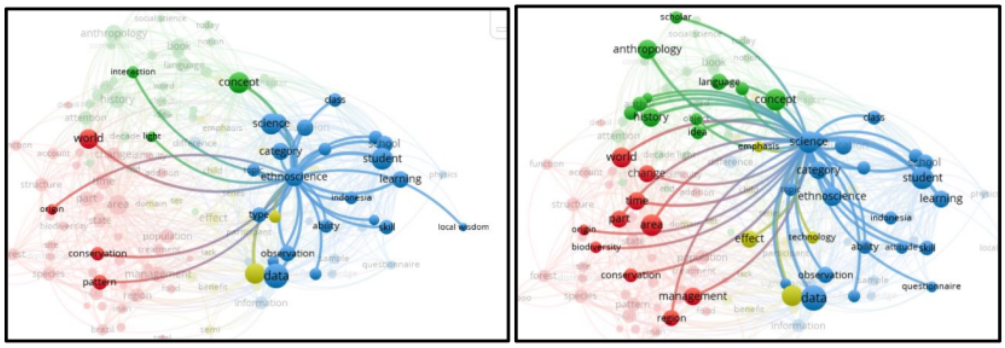


Figure 9. (a) Ethnoscience in educational domain; (b) science, ethnoscience, and other academic domains

The dominance of social sciences and humanity branch such as anthropology, history, language and culture gave impact on the research on ethnoscience during 2011-2020 period (Figure 10). It has also possible to involve sociology that covers the interaction and structure among object, people, and living things.

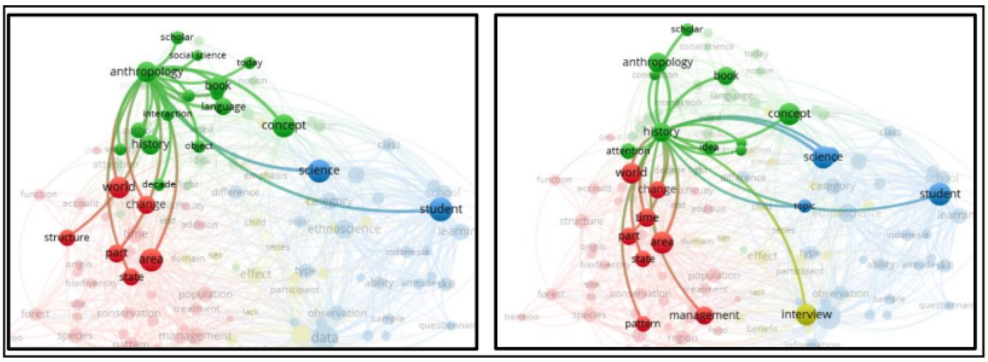


Figure 10. The dominance of social sciences in influencing research on ethnoscience

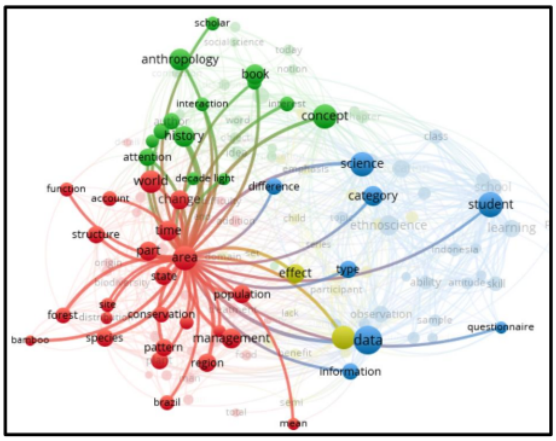


Figure 11. Research focus on ethnoscience in some area in the world

Research on ethnoscience around the world emerged from conservation in the forest, some plants (such as bamboo) and species in some area to manage some information and data related to studies of ethnoscience and how it integrates with the several academic domains as indicated in Figure 11. The map was also informed us of research on ethnoscience, consider the history and timeline-based. On the other hand, Figure 12 illustrated various data collecting in researching ethnoscience, such as observation, interview, questionnaire, semi-structured interview. It means research on ethnoscience used both quantitative and qualitative paradigm. Completely, there were some occurrent key words support the data collection process: ability, attitude, skill, learning, science, physics, school, treatment, population, category, concept, management, pattern, type, and effect. Furthermore, the term Indonesia and Brazil have also dominated as the keyword in researching ethnoscience (Figure 13).

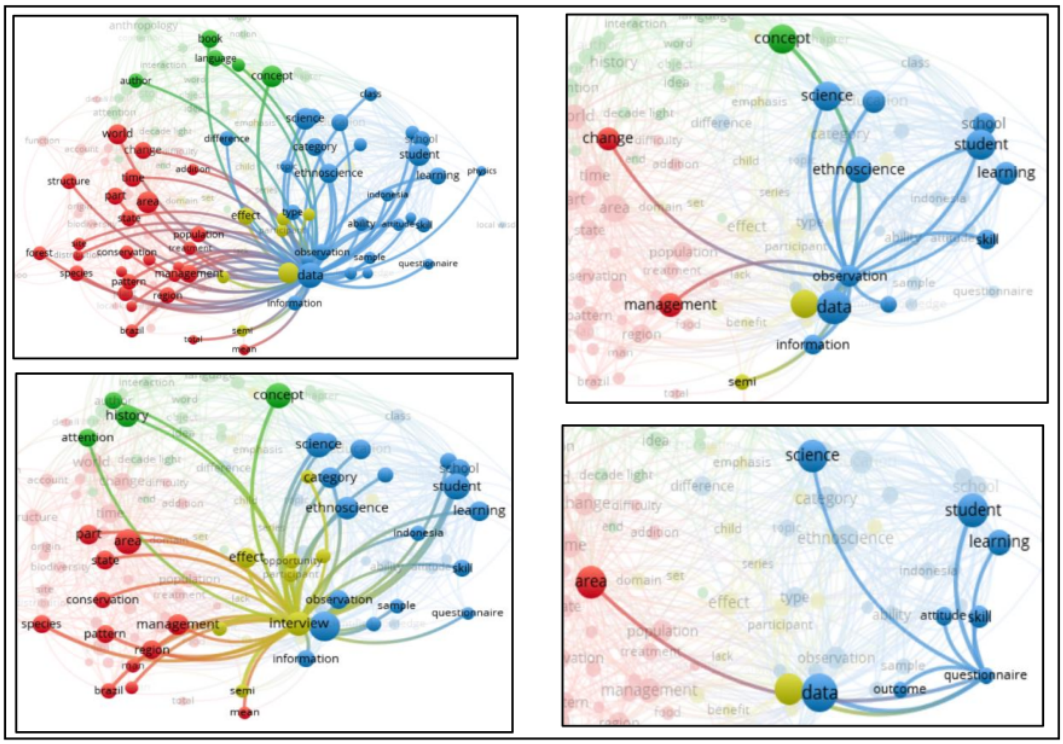


Figure 12. Research on ethnoscience based on data collection

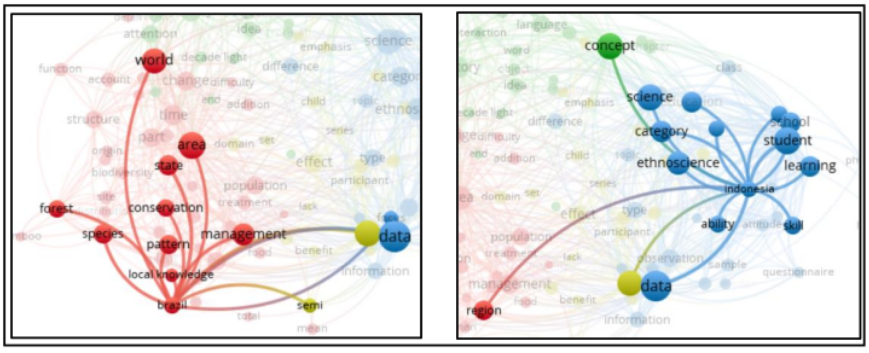


Figure 13. Brazil and Indonesia dominated in searching keyword

Figure 14 showed the top researcher and its cluster in researching ethnoscience. There were six dominant groups of authorships: Sumarni *et al*., Graffigna *et al*., Murrieta *et al*., Sandu *et al*., Belmain *et al*., and Albuquerque *et al*. W Sumarni, a researcher from Indonesia, have become a leader among all clusters. Her co-authorship included Setiawan and Atmojo. On the other hand, Grafiggna was the most influenced researcher on ethnoscience in 2011-2020, which is indicated by the largest circle.

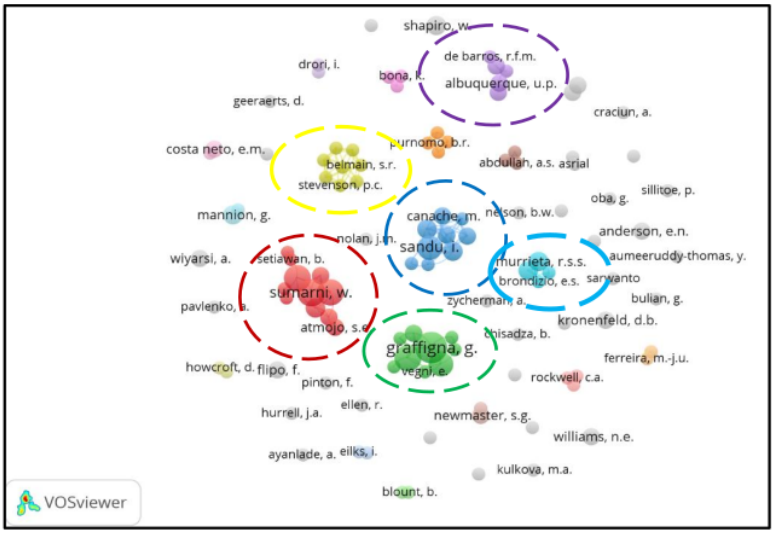


Figure 14. Top authors and co-authorships and the most influenced authors on ethnoscience

The Contribution of Indonesian Researchers on ethnoscience

In total, Indonesia contributed 76 documents related to ethnoscience in the last ten years from a total of 536 documents. Of this number, it was 37 belongs to the proceedings or the results of the conference paper, while the remaining 39 is in the form of journal papers.

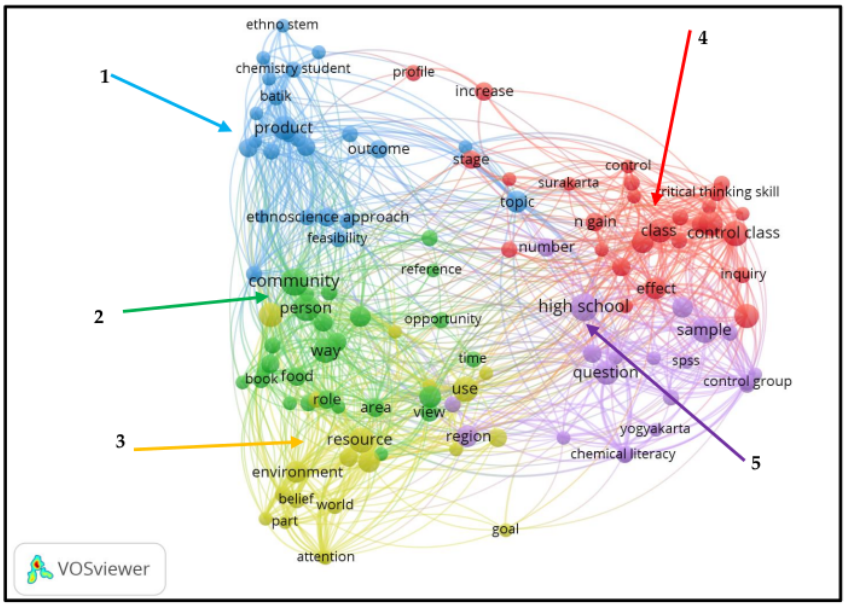


Figure 15. The whole picture research on ethnoscience performed by Indonesian researchers during 2011-2020

If researchers in the world produced 4 clusters related to trends research on ethnoscience, then there were five clusters produced by Indonesian researchers. The first cluster (red color) was ethnoscience in relating to critical thinking and inquiry. Meanwhile, the second cluster (yellow) was ethnoscience related to its resource, environment, belief, person and attention. Then, the third cluster (green) was ethnoscience in connecting with community, food, area, view, and role. Then, the fourth cluster (purple) was ethnoscience in connecting with chemical literacy and high school. The last cluster (blue) indicated ethnoscience under its ethnoscience approach, product, *etnostem*, *batik*, and feasibility.

Table 5. Number of documents of ethnoscience among Indonesian institution (2011-2020)

No	University	Number of documents
1	*Universitas Negeri Semarang*	20
2	*Universitas Negeri Yogyakarta*	8
3	*Universitas Sebelas Maret*	6
4	*Universitas Padjadjaran*	4
5	*Universitas Negeri Padang*	4
6	*Universitas Negeri Surabaya*	3
7	*Universitas Negeri Jakarta*	3
8	*Universitas Jambi*	3

Table 5 illustrates how the rank of Indonesian institution in producing documents on ethnoscience. All the top eight are teacher-producing universities and public universities in Indonesia. Universitas Negeri Semarang is the top university on researching of ethnoscience. Meanwhile, Figure 14 depicts the top Indonesian researchers on ethnoscience and their co-authorships. It lists that the name such as Sumarni (8) and Sudarmin (7) were the most productive authors in this topic from Indonesia.

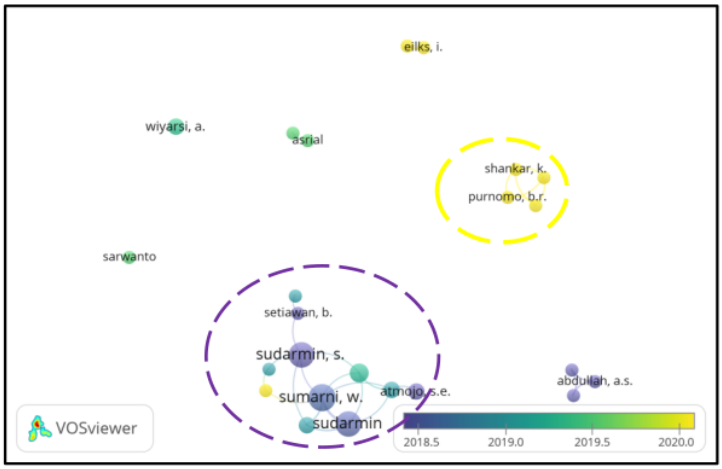


Figure 16. Top Indonesian researcher on ethnoscience and co-authorships

It was no different rank from the world in terms of ethnoscience from Indonesia (2011-2020) across source titles, Journal of Physics Conference was a leading conference series which contains articles about ethnoscience. Meanwhile, for the journal category, *Jurnal Pendidikan IPA Indonesia*, which is also from Indonesia, is also superior in producing ethnoscience documents.

Table 6 also indicates that Indonesia's contribution to research on ethnoscience is more in the proceedings than in the journal.

Table 6. Number of documents of ethnoscience from Indonesia (2011-2020) across source titles

No	Name of Journal or Conference	Number of documents
1	Journal of Physics Conference Series	32
2	*Jurnal Pendidikan IPA Indonesia*	11
3	International Journal of Scientific and Technology Research	3
4	Applied Mathematics and Information Sciences	2
5	International Journal of Evaluation and Research in Education	2
6	IOP Conference Series Earth and Environmental Science	2
7	Journal of Turkish Science Education	2
8	*Opcion*[¥]	2
9	Universal Journal of Educational Research[¥]	2
10	Advanced Science Letters	1

Note: [¥]The journal was discontinued from Scopus in 2020

4. Discussion

The term ethnoscience first appears in 1967 in American Behavioral Scientist, by Werner (1967). The number of documents of ethnoscience across the year was increased significantly. It was less than 30 documents before 2010 and more than 30 documents each year in 2011-2020. Even though it fluctuated in duration 2013-2018, the trend increased in 5 decades. It can be predicted that the number of articles in 2021-2025 will increase dramatically.

Based on the number of documents across countries, it was clear the dominance of the USA with 124 documents from 2011 to 2020. Countries such as Indonesia, UK, and Brazil contributed to this topic with 76, 47, and 45 documents. Indonesia places its two institutions in the first and sixth rank. Universitas Negeri Semarang (UNNES), Indonesia, has ranked first with 20 documents and was followed by the *Università Cattolica del Sacro Cuore*, Italy. Meanwhile, other institutions were dominated by Brazil and the USA.

Sudarmin, Graffigna, Sandu, Sumarni, Olson, Barello, Chirazi, Mannion, Murrieta, Prado, Shapiro and Wiyanto were the most productive authors. Meanwhile, with 1718 citations, Ingold was the most authors with the top citation of the article all years. It was listed that Ingold (2011), Atran (2011), Wilson & Sperber (2012), van Dijk (2014), Sinkovics & Alfoldi (2012) resulted in their articles as the top 5 citations in 2011-2020. Journal of Physics Conference was a leading conference series that contains articles about ethnoscience. Meanwhile, Journal Ethnobiology & Ethnomedicine and Journal Pendidikan IPA from Indonesia were the leading journals covering this topic in their content.

Researchers in the world produced three primary clusters and one secondary cluster. The first cluster was ethnoscience management in the world. The second cluster was ethnoscience related to the academic domain, anthropology, history, and other social sciences. The third cluster was ethnoscience in connecting with the data collecting process. The last cluster indicated ethnoscience relating to its effect, lack, and benefit to society as a participant.

If we broke down into the specific connection among variables to capture the trend and novelty of researching on ethnoscience, then we found some findings:

1. Research on ethnoscience in the educational domain related to student, class, school, and learning. Indonesian researchers more examined this point.

2. Science and ethnoscience are connecting with other specific domain.
3. Research on ethnoscience around the world emerged from conservation in the forest, some plants and species in some area to manage some information and data related to studies of ethnoscience and how it integrates into the several academic domains.
4. Research on ethnoscience considers the history and timeline-based.
5. Various data were collected in researching ethnosciences, such as observation, interview, questionnaire, and semi-structured interview.
6. The term Indonesia and Brazil have also dominated as the keyword in researching ethnoscience.

There were six dominant groups of authorships: Sumarni *et al*., Graffigna *et al*., Murrieta *et al*., Sandu *et al*., Belmain *et al*., and Albuquerque *et al*. as the top researcher and its cluster in researching ethnoscience. Woro Sumarni, a researcher from Indonesia, has become a leader among all clusters (Sumarni, & Kadarwati, 2020; Sumarni, Sudarmin, Wiyanto, Rusilowati, & Susilaningsih, 2017). On the other hand, Grafiggna was the most influenced researcher on ethnoscience in 2011-2020.

5. Conclusions

In this work, the authors used bibliometric methods to study the state of research of a particular knowledge area. The development of ethnoscience, identifying the primary sources where research papers are published, the most important countries and institutions where research carried out, the individual top active researchers, the most cited authors in the field, as well as the main topics of interest in ethnoscience were the focus of the study.

The authors indicated some significant points regarding the research on ethnoscience during the period from 2011 to 2020. The number of documents of ethnoscience across the year was increased, which were dominated by articles in the journal. Secondly, the USA contributed the most documents on ethnoscience, and Indonesia's institutions dominated this area. Indeed, Indonesia put its two representative's institutions: Universitas Negeri Semarang and Universitas Negeri Yogyakarta, among the big ten institutions in the world. The USA and Indonesia have also contributed to the most productive authors of ethnoscience. Then, the visualization of research trend on ethnoscience resulted in three major clusters and one minor cluster:

1. Ethnoscience management in the world
2. Ethnoscience in relating to academic domain, anthropology, history, and other social sciences
3. Ethnoscience in connecting with data collecting process
4. Ethnoscience in relating to its effect, lack, and benefit to society as a participant

The research findings could aid related researchers to recognize the trend of ethnoscience research globally and recommend directions for further research.

Acknowledgements

This research was supported by DRPM-*KemdikbudRistek* Indonesia through the scheme *Penelitian Dasar* 2021 with contract number 133/SP2H/LT/DRPM/2021 and SPK B/12084/UN38.9/LK.04.00/2021.

References

Agrawal, A. (1995). Dismantling the divide between indigenous and scientific knowledge. *Development and Change, 26*(3), 413-439.

Altieri, M. A. (2018). *Agroecology: The science of sustainable agriculture, Second Edition*, (pp. 1-433). New York, NY: Routledge.

Alves, R. R. N., & Souto, W. M. S. (2015). Ethnozoology: A brief introduction. *Ethnobiology and Conservation, 4*,1

Atran, S. (2011). *In Gods we trust: The evolutionary landscape of religion*, pp. 1-364. Oxford shire: Oxford Scholarship Online.

Brown, A. L. (1975). The development of memory: Knowing, knowing about knowing, and knowing how to know. In H. W Reese, *Advances in Child Development and Behavior*, 10(C), 103-152. The Netherland: Science direct.

Chen, H., & Ho, Y.S. (2015). Highly cited articles in biomass research: A bibliometric analysis. *Renewable and Sustainable Energy Reviews, 49*, 12-20. https://doi.org/10.1016/ j.rser.2015.04.060

Davison, D. M., & Miller, K. W. (1998). An ethnoscience approach to curriculum issues for American Indian students. *School Science and Mathematics, 98*, 260–265.

De Vente, J., Reed, M. S., Stringer, L. C., Valente, S., & Newig, J. (2016). How does the context and design of participatory decision making processes affect their outcomes? Evidence from sustainable land management in global drylands. *Ecology and Society, 21*(2), 24.

Dong, B., Xu, G., Luo, X., Cai, Y., & Gao, W. (2012). A bibliometric analysis of solar power research from 1991 to 2010. *Scientometrics, 93*, 1101-1117. https://doi.org/10.1007/s11 192-012-0730-9

Fowles, S. M. (2013). *An archaeology of doings: Secularism and the study of pueblo religion, pp. 1-306*. New Mexico: SAR Press.

George, C. (1991). School science and ethnoscience. *Journal of Science and Mathematics Education in South East Asia 14*(2), 27-36.

Ingold, T. (2011). *Being alive: Essays on movement, knowledge and description*. Routledge: New York, USA 2011, pp. 1-270,

Ingold, T. (2006). Rethinking the animate, re-animating thought. *Ethnos, 71*(1), 9-20.

Jarvis, S., & Pavlenko, A. (2007). *Crosslinguistic influence in language and cognition*. New York, NY: Routledge, pp. 1-287

Kemp, C., & Regier, T. (2012). Kinship categories across languages reflect general communicative principles. *Science, 336*(6084), 1049-1054.

Kulakli, A., & Osmanaj, V. (2020). Global research on big data in relation with Artificial Intelligence (A Bibliometric Study: 2008-2019). *International Journal of Online and Biomedical Engineering, 16*(2), 31-46. https://doi.org/10.3991/ijoe.v16i02.12617

Lee, A. S. (1989). A scientific methodology for MIS case studies. *MIS Quarterly: Management Information Systems, 13*(1), 33-50

Masitoh, P. N. A., Latifah, S., Saregar, A., Aziz, A., Suharto, & Jamaluddin, W. (2021). Bibliometric analysis of physics problem solving. *Journal of Physics: Conference Series, 1796*, 012009. doi:10.1088/1742-6596/1796/1/012009

Moriolkosu, A. D., Handayani, S. S. D., & Sunarso, A. (2020). Ethnomathematics and ethnoscience analysis of Aru culture related to mathematics and science concepts at elementary school. *Educational Management*, 163–171.

Ogawa, M. (1999). Science as the culture of scientist: How to cope with scientism?. In pre-conference workshop of annual meeting of the National Association for Research in Science Teaching, Boston, MA

Putri, C. R., Sholeh, S. M., Saregar, A., Anugrah, A., & Susilowati, N. E. (2021). Bibliometric analysis: Augmented reality-based physics laboratory with VOSviewer software. *Journal of Physics: Conference Series 1796*, 012056. doi:10.1088/1742-6596/1796/1/012056

Rousseau, D. M., & Tijoriwala, S. A. (1998). Assessing psychological contracts: issues, alternatives and measures. *Journal of Organizational Behavior, 19*(S1), 679-695.

Schmeisser, B. (2013). A systematic review of literature on offshoring of value chain activities. *Journal of International Management, 19*(4), 390–406.

Setyaningsih, I., Indarti, N., & Jie, F. (2018). Bibliometric analysis of the term 'green manufacturing'. *International Journal of Management Concepts and Philosophy, 11*(3), 315–339.

Sinkovics, R. R., & Alfoldi, E. A. (2012) Progressive focusing and trustworthiness in qualitative research: The enabling role of computer-assisted qualitative data analysis software (CAQDAS). *Management International Review, 52*(6), 817-845.

Snively, G., & Corsiglia. (2001). Discovering indigenous science: Implications for science education. *Science Education, 85*(1), 6–34.

Sotero, M. C., Alves, Â. G. C., Arandas, J. K. G., & Medeiros, M. F. T. (2020). Local and scientific knowledge in the school context: Characterization and content of published works. *Journal of Ethnobiology and Ethnomedicine*, *16*, 2.

Spradley, L. P. (2001). *The ethnographic interview*. New York: Holt, Rinehart, and Winston.

Sudarmin, S., Zahro, L., Pujiastuti, S. E., Asyhar, R., Zaenuri, Z., & Rosita, A. (2019). The development of PBL-based worksheets integrated with green chemistry and ethnoscience to improve students' thinking skills. *Jurnal Pendidikan IPA Indonesia, 8*, 492–499.

Sumarni, W., & Kadarwati, S. (2020). Ethno-stem project-based learning: Its impact to critical and creative thinking skills. *Jurnal Pendidikan IPA Indonesia, 9*, 11–21.

Sumarni, W., Sudarmin, Wiyanto, Rusilowati, A., & Susilaningsih, E. (2017). Chemical literacy of teaching candidates studying the integrated food chemistry ethnosciences course. *Journal of Turkish Science Education*, *14*, 60–72.

Suprapto, N., Prahani, B. K., Cheng, T.-H. (2021). Indonesian curriculum reform in policy and local wisdom: Perspectives from science education. *Jurnal Pendidikan IPA Indonesia*, *10*, 69–80.

Suprapto, N., Sukarmin, Puspitawati, R. P., Erman, Savitri, D., Ku, C.-H, & Mubarok, H. (2021). Research trend on technological pedagogical content knowledge (TPACK) through bibliometric analysis (2015-2019). *International Journal of Evaluation and Research in Education (IJERE), 10*(4), in-press.

van Dijk, T. A. (2014). *Discourse and knowledge: A sociocognitive approach*. Cambridge: Cambridge University Press.

van Eck, N. J., & Waltman, L. (2020). *VOSviewer manual*. Retrieved from https://www.vosviewer.com/documentation/Manual_VOSviewer_1.6.16.pdf

Wati, E., Yuberti, Saregar, A., Fasa, M. I., & Aziz, A. (2021). Literature research: Ethnoscience in science learning. *Journal of Physics: Conference Series, 1796* (012087) doi:10.1088/1742-6596/1796/1/012087

Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., & David, C. (2009). Agroecology as a science, a movement and a practice. A review. *Agronomy for Sustainable Development, 29*(4), 503-515.

Wilson, D., & Sperber, D. (2012). *Meaning and relevance*. Cambridge: Cambridge University Press.

Yang, L., Sun, T., & Liu, Y. (2017). A bibliometric investigation of flipped classroom research during 2000-2015. *International Journal of Emerging Technologies in Learning, 12*(6), 178-186. https://doi.org/10.3991/ijet.v12i06.7095

Zidny, R., & Eilks, I. (2020). Integrating perspectives from indigenous knowledge and Western science in secondary and higher chemistry learning to contribute to sustainability education. *Sustainable Chemistry and Pharmacy*, *16*,100229.

8 Artikel LPP 5599

ORIGINALITY REPORT

18%	13%	14%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	scie-journal.com Internet Source	3%
2	Roberto E. Lopez-Martinez, Gerardo Sierra. "State of research on natural language processing in Mexico — a bibliometric study", Journal of Data, Information and Management, 2021 Publication	2%
3	www.online-journals.org Internet Source	1%
4	www.e3s-conferences.org Internet Source	1%
5	jurnalmahasiswa.unesa.ac.id Internet Source	1%
6	B Jatmiko, T Sunarti, B K Prahani, E Hariyono, Dwikoranto, F C Wibowo, S Mahtari, Misbah, M Asy'ari. "Critical Thinking Skills on Physics Learning during COVID-19 Pandemic: A Bibliometric Analysis using VOSViewer", Journal of Physics: Conference Series, 2021 Publication	1%

7	Hang Wen, Yi Huang. "Trends and performance of oxidative stress research from 1991 to 2010", Scientometrics, 2011 Publication	1 %
8	H N Hidaayatullaah, N Suprapto, E Hariyono, B K Prahani, D Wulandari. "Research Trends on Ethnoscience based Learning through Bibliometric Analysis: Contributed to Physics Learning", Journal of Physics: Conference Series, 2021 Publication	1 %
9	t.alibris.com Internet Source	1 %
10	D Triwahyuningtyas, C Sundaygara, I Widiaty, A B D Nandiyanto, S D Aji, M N Hudha. "Bibliometric analysis of the term 'STEM module'", IOP Conference Series: Materials Science and Engineering, 2021 Publication	1 %
11	doaj.org Internet Source	1 %
12	Submitted to The Maldives National University Student Paper	<1 %
13	Putri Nagres Ari Masitoh, Sri Latifah, Antomi Saregar, Abdul Aziz, Suharto, Wan Jamaluddin. "Bibliometric analysis of physics problem	<1 %

solving", Journal of Physics: Conference Series, 2021
Publication

14	mafiadoc.com Internet Source	<1%
15	Submitted to University of Dammam Student Paper	<1%
16	I Zakhiyah, N Suprapto, W Setyarsih. "Prezi Mind Mapping Media in Physics Learning: A Bibliometric Analysis", Journal of Physics: Conference Series, 2021 Publication	<1%
17	Hikmawati, I W Suastra, N M Pujani. "Local wisdom in Lombok island with the potential of ethnoscience for the development of learning models in junior high school", Journal of Physics: Conference Series, 2021 Publication	<1%
18	dissertations.umi.com Internet Source	<1%
19	Mukhayyarotin Niswati Rodliyatul Jauhariyah, Mita Anggaryani, Ahmad Marzuki. "Research trend on erbium-doped tellurite glasses based on scopus database", E3S Web of Conferences, 2021 Publication	<1%

www.taylorfrancis.com

20	Internet Source	<1%
21	Tan Chung. "Imperialism in Nineteenth-Century China (1)", China Report, 2016 Publication	<1%
22	jurnal.radenfatah.ac.id Internet Source	<1%
23	uzunyolmyo.kocaeli.edu.tr Internet Source	<1%
24	B.A. STOUT. "Overview", Elsevier BV, 1990 Publication	<1%
25	du.ac.in Internet Source	<1%
26	hal.ird.fr Internet Source	<1%
27	ijmmu.com Internet Source	<1%
28	repository.tudelft.nl Internet Source	<1%
29	www.doria.fi Internet Source	<1%
30	Davidson, M.C.. "Development of cognitive control and executive functions from 4 to 13 years: Evidence from manipulations of	<1%

memory, inhibition, and task switching", Neuropsychologia, 2006
Publication

31	Lie Yang, Zhulei Chen, Ting Liu, Zhe Gong, Yingjian Yu, Jia Wang. "Global trends of solid waste research from 1997 to 2011 by using bibliometric analysis", Scientometrics, 2012 Publication	<1 %
32	R R Prayuda, Ratnawulan. "Analysis of students to develop integrated junior high school student books with webbed models integrated with local potential", Journal of Physics: Conference Series, 2019 Publication	<1 %
33	Rômulo Romeu Nóbrega Alves, Wedson Medeiros Silva Souto, Ulysses Paulino Albuquerque. "Ethnozoology", Elsevier BV, 2018 Publication	<1 %
34	online-journals.org Internet Source	<1 %

Exclude quotes	On	Exclude matches	< 3 words
Exclude bibliography	On		