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RESEARCH TRENDS OF ETHNOSCIENCE IN SCIENCE LEARNING FROM 2015-2025: A BIBLIOMETRIC ANALYSIS

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ABSTRACT

Local culture in Indonesia is very diverse, but it is not well utilized, especially in science learning. The objectives of this study are: (1) bibliometric analysis of ethnoscience learning trends in science learning in science learning in 2015-2025, (2) subject areas of ethnoscience learning in science learning, (3) research recommendations on ethnoscience learning in science learning in the future. The method used is bibliometric analysis, the quantity articles of this study is 17 from the search results using the Scopus database Publish or Perish software start from 2015-2025. The data obtained is stored in .RIS form and then analyzed using VOSviewer. The results of the bibliometric analysis show that: (1) there are have three cluster, (2) The subject area is dominated by the type of article and the region of Indonesia, (3) the research recommendation for the future is to focus on integrating the science learning model that is suitable for ethnoscience, researching scientific literacy in ethnoscience learning, and analyzing ethnoscience learning in elementary schools. Based on the results of the research, it is hoped that the next research will examine more deeply about ethnoscience-based learning to improve 21st century skills.

Keywords: *bibliometric analysis, local wisdom, ethnoscience, science learning*

INTRODUCTION

Indonesia has a very diverse culture that can be used as something that can be developed in each region. This diversity can be in the form of local wisdom, culture, and uniqueness in each region (Setianingrum et al., 2023). Culture is everything created by humans such as thoughts, customs, something that has developed, something that has become a habit (Sumarto, 2019). According to Tylor (1920) which includes culture, namely beliefs, morals, arts, customary law and all abilities and habits acquired in society. The forms of culture according to J.J. Hoenigman are: (1) mentifact, which is the form of culture as an idea, idea, value, norm, regulation, and so on, (2) sociofact, which is the form of culture as an activity and action of human beings in society, (3) artefact, which is the form of culture as objects made by humans (Koentjaraningrat, 2009)

Natural and cultural wealth in Indonesia is very abundant (Hidaayatullaah et al., 2021) More than 1,300 ethnicities are owned by Indonesia (Patras et al., 2023). However, the existence of globalization changes cultural values that cause people to lose their love for the homeland and forget their own culture. In addition, students begin to dislike and are not interested in their own culture (Kurniawati, 2017). In addition, the diversity of local cultures in Indonesia is not well utilized in learning, such as the teaching materials used are not associated with local culture (Agusriani & Ramadan, 2024; Hidaayatullaah et al., 2021). Efforts that can be made to deal with the problem are by integrating local culture in science learning (Setianingrum et al., 2023)

Local culture integrated with science learning can increase students' interest in culture (Setianingrum et al., 2023) Then, the local culture in science learning can help students relate learning materials to their daily lives (Sari et al., 2023; Setianingrum et al., 2023) One of the lessons that can be applied to integrate local culture with science learning is ethnoscience. Ethnoscience is to transform original science in society into scientific science so that learning is more contextual (Fiteriani et al., 2021; Khoiri & Sunarno, 2018; Wati et al., 2021) Ethnoscience learning increases students' interest in learning, instills an attitude of love for culture and homeland, makes learning more meaningful and enjoyable

for students, and improves students' cognitive abilities (Ardianti et al., 2023; Puspasari et al., 2019; Rika Ningsih et al., 2020).

In-depth research on ethnoscience on science learning in elementary schools is important to be conducted. This means that the latest research related to ethnoscience, local wisdom, indigenous knowledge science learning needs to be analyzed. Previous research on bibliometric analysis of ethnoscience learning has been carried out, namely: (1) Setianingrum et al (2023) with the findings obtained, namely the bibliometric analysis data base from Scopus in 2019-2023, show that local wisdom in junior high school only focuses on the implications of local wisdom to increase love for culture, (2) Hidaayatullah et al (2021) with the finding that ethnoscience-based physics learning in junior high school can improve students' thinking skills, (3) Jannah et al (2023) with the finding that ethnoscience-based learning is dominated by social science skills. Based on previous research, no one has analyzed in depth the learning of ethnoscience in science learning.

The objectives of this study are: (1) analysis of the results of bibliometric mapping on the trend of ethnoscience learning in science learning in science learning in 2015-2025, (2) subject areas of ethnoscience learning in science learning, (3) research recommendations on ethnoscience learning in science learning in the future. This study focuses on bibliometric analysis of ethnoscience-based learning in science learning with the Scopus database in 2020-2025.

METHOD

The method used is bibliometric analysis. Bibliometric analysis is a quantitative approach that measures, analyzes, and presents bibliometric data in statistical form that is used to understand research trends and the development of a particular research topic (Donthu et al., 2021; Rahmawati & Indriayu, 2022). Through the bibliometric method, it will help track and measure the development of knowledge from various fields of scientific studies that can be used for decision-making and research planning, as well as the development of scientific studies (Butt et al., 2021). The analysis was carried out using

Publish or Perish software and VOSviewer. The database used comes from Scopus from 2015-2025. The keywords used are ethnoscience, local culture, and science learning.

The stages of data collection are: (1) collecting data through PoP by entering keywords and criteria for the year set, (2) determining the number of articles to be collected, which are 200 articles, (3) recording the results of the article collection from the PoP, namely obtaining 17 articles with details of 1 article in 2018, 2 articles in 2020, 1 article in 2022, 3 articles in 2023, 4 articles in 2023, 4 articles in 2024, and 2 articles in 2025, and (4) the data obtained is stored in the form of . RIS. Next, the . RIS was analyzed using VOSviewer software and reviewed from network visualization, overlay visualization, and density visualization.

RESULTS AND DISCUSSION

1. Analysis of The Results of Bibliometric Mapping on Ethnoscience Learning Trends in Science Learning 2015-2025

Based on the results of the analysis through Publish or Perish from the Scopus database, it is shown that there is a development of research on ethnoscience in science learning from 2018-2025. Data were taken based on 17 selected articles. The rapid development of research on ethnossin-based learning in science learning occurs in 2023-2024.

Table 1. Publication Frequency Distribution

Year	Frequency
2018	1
2020	2
2021	3
2022	1
2023	4
2024	4
2025	2

The development of research trends shown in the results of VoSviewer analysis gave rise to three clusters that are in accordance with the keywords that have been set. Three clusters are shown in Figure 1. The red cluster has interrelated terms, namely science learning, analysis, and ethnoscience. The green cluster has interrelated terms, namely study and local wisdom. The blue cluster has interrelated terms namely junior highscool and scientific literacy.

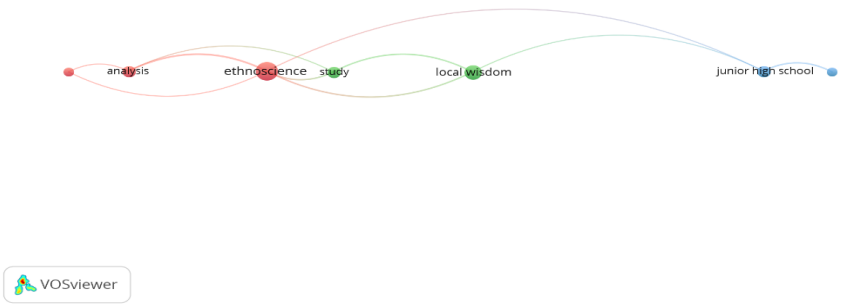
The red cluster can be shown by a study on the analysis of ethnoscience based science learning tools conducted by Nurmaliati (2023). The result of his research is that ethnoscience-based science learning has not been planned, but unconsciously teachers have applied an ethnoscience-based approach and brought up the value of local wisdom in the lesson plan. In addition, Widarti's (2025) research on the analysis of content development in chemical materials related to ethnoscience found that ethnoscience is found in batik-making materials. Batik making is one of the ethnosciences in the field of chemistry. Ethnoscience can also be integrated with traditional foods, surrounding natural phenomena, and local culture. Learning models that can be integrated with ethnoscience are contextual learning, problem-based learning, and project-based learning.

The green cluster can be shown in the research of Misbah et al (2024) on science concept can be analyzed by ethnoscience study. Furthermore, Hikmawati et al (2020) researched local wisdom in Lombok island with the potential of ethnoscience for the development of learning models in junior high school. This study obtained the results that local cultures on group islands such as Sasak Sade Village, Bau Nyale Tradition, Sesek Weaving, Gendang Beleq, and Poteng reket have the potential to have ethnoscience so that they can be used as ethnoscience-based science learning materials.

The blue cluster can be shown in the research of Melyasari (2018) on the validity of teaching material based on ethnoscience batik to increase the ability of scientific literacy for junior high school. In addition, Jufrida et al. (2024) research on how do teachers implementing to increase scientific literacy in junior high school. This study explains that science literacy can increase because problems are closely presented with

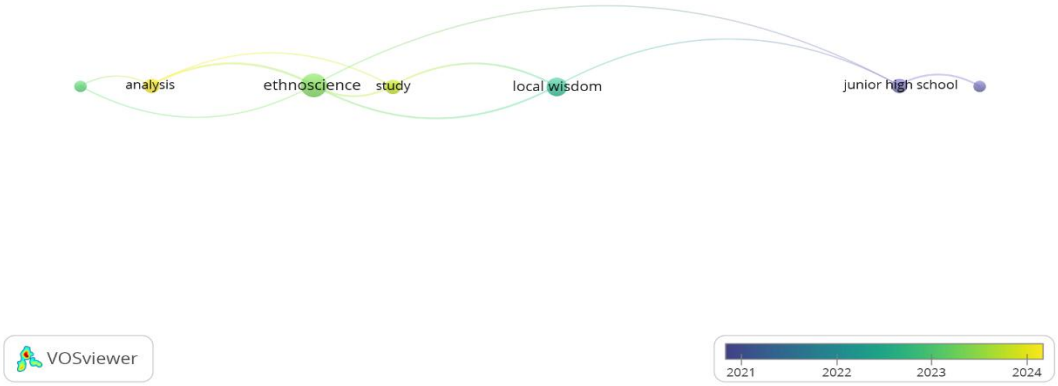
students' daily lives, learning relates scientific knowledge to reality, and learning is contextual. Then, local wisdom that can be associated with ethnoscience, namely *Tangkul* (fishing nets), Lako, and traditional well pulleys.

Figure 1. Network Visualization Results by Keywords



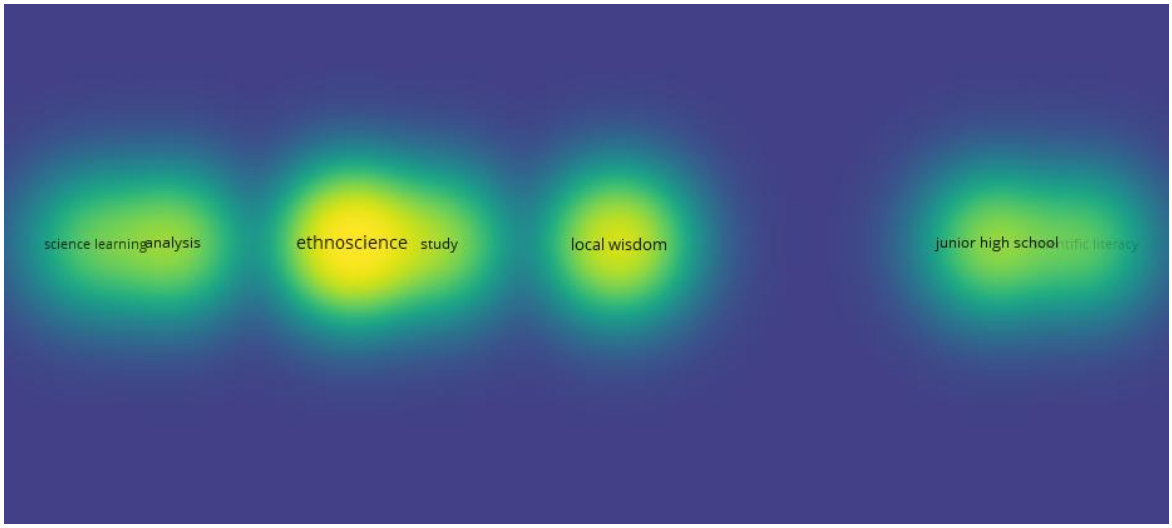
Research trends based on the keywords analysis, study, ethnoscience, and science learning are the latest research trends from 2015-2025. This is indicated by a lighter color (yellow) meaning that the topic is getting newer. This means that research on ethnoscience-based learning and analysis or study of ethnoscience is still an interesting trend to be researched. A visualization of research trends based on the year of publication can be seen in Figure 2.

Figure 2. Research Trends Based on Publication Year Density



As for the results of VoSviewer's analysis of the density of research trends, the keyword scientific literacy is still rare. This is indicated by the color of the scientific literacy keyword which is the darkest among other keywords. This is supported by the results of the Publish or Perish grouping where there are only two articles that discuss scientific literacy in ethnoscience-based learning. The two studies in question are Melyasari (2018) research on the validity of teaching material based on ethnoscience batik to increase the ability of scientific literacy for junior high school and Jufrida (2024) on how do teachers implementing to increase scientific literacy in junior high school. A visualization of the trend frequency can be seen in Figure 3.

Figure 3. Research Trend Density



2. Subject Areas of Ethnoscience Learning in Science Learning

Based on the results of the Publish or Perish analysis, the results were obtained that the type of ethnoscience-based learning articles in science learning was dominated by articles (9 articles), the rest were conference papers (8 articles). Furthermore, based on the regional distribution of 17 selected articles, Indonesia is the only country that is still researching and contributing greatly to research on ethnosciences in 2015-2025. The distribution of article types and regions can be seen in the following table.

Author	Title	Year	Region	Journal	Publication Type
N. Suprapto	Indonesian curriculum reform in policy and local wisdom: Perspectives from science education	2021	Indonesia	Jurnal Pendidikan IPA Indonesia	Article
S. Diliarosta	Reconstruction and scientific explanation of akar kuning (Arcangelisia flava Merr.) from west sumatra as ethnomedicine and source of science learning	2021	Indonesia	Pharmacognosy Journal	Article
Hikmawati	Local wisdom in Lombok island with the potential of ethnoscience for the development of learning models in junior high school	2021	Indonesia	Journal of Physics: Conference Series	Conference Paper
N. Tresnawati	Scientific reconstruction of local plants as the basic materials of Batik Natural Dyes	2020	Indonesia	Journal of Physics: Conference Series	Conference Paper
M. Khusniati	Indigenous science constructs based on Troso woven fabric local wisdom: a study in ethnoscience and ethnoecology	2023	Indonesia	Journal of Turkish Science Education	Article
M. Elvianasti	Exploring Indigenous Knowledge of Traditional Martial Art “Silat Beksi” to Identify Contents and Contexts for	2023	Indonesia	Pegem Egitim ve Ogretim Dergisi	Article

Author	Title	Year	Region	Journal	Publication Type
	Science Learning in Biology Education				
N.N.S. Putu Verawati	Inquiry-Creative Learning Integrated with Ethnoscience: Efforts to Encourage Prospective Science Teachers' Critical Thinking in Indonesia	2022	Indonesia	International Journal of Learning, Teaching and Educational Research	Article
N.S. Melyasari	The Validity of Teaching Material Based on Ethnoscience Batik to Increase the Ability of Scientific Literacy for Junior High School	2018	Indonesia	Journal of Physics: Conference Series	Conference Paper
S. Prayogi	Dynamic blend of ethnoscience and inquiry in a digital learning platform (e-learning) for empowering future science educators' critical thinking	2023	Indonesia	Journal of Education and e-Learning Research	Article
Jufrida	Ethnoscience learning: how do teacher implementing to increase scientific literacy in junior high school	2024	Indonesia	International Journal of Evaluation and Research in Education	Article
Nurmaliati	Analysis of Ethnoscience Based Science Learning Tools	2023	Indonesia	AIP Conference Proceedings	Conference Paper
N. Suprapto	Indonesian curriculum reform in policy and local wisdom:	2021	Indonesia	Jurnal Pendidikan IPA Indonesia	Article

Author	Title	Year	Region	Journal	Publication Type
	Perspectives from science education				
S. Diliarosta	Reconstruction and scientific explanation of akar kuning (Arcangelisia flava Merr.) from west sumatra as ethnomedicine and source of science learning	2021	Indonesia	Pharmacognosy Journal	Article
Hikmawati	Local wisdom in Lombok island with the potential of ethnoscience for the development of learning models in junior high school	2021	Indonesia	Journal of Physics: Conference Series	Conference Paper

3. Research Recommendations on Ethnoscience Learning in Science Learning in the Future

Recommendations that can be offered for ethnosciens-based learning research trends in science learning in the future are to link ethnoscience with learning models that are suitable for science learning. Then, conducting research on students' scientific literacy skills in ethnoscience-based learning. This is in accordance with Widarti (2025) who stated that several learning models that can be integrated with ethnosciences are contextual learning, problem-based learning, and project-based learning. Furthermore, based on the results of VoSviewer, it shows that scientific literacy is a research topic that is rarely carried out in ethnoscience learning. Research on the application of ethnoscience-based learning in elementary schools is also a rare topic based on VoSviewer analysis. Therefore, further research is expected to analyze ethnoscience-based learning in elementary schools, especially in science learning.

CONCLUSION

Based on the results and discussions that have been described, it can be concluded that there are three clusters of discussion of ethnoscience-based learning in science learning. The keywords analysis, study, ethnoscience, and science learning are the latest research trends from 2015-2025, and scientific literacy in ethnoscience learning is still rarely done. Furthermore, the subject area of ethnoscience-based learning in science learning is dominated by the type of article and regional Indonesia. The research recommendations for the future are focusing on integrating science learning models that are suitable for ethnoscience, researching scientific literacy in ethnoscience learning, and analyzing ethnoscience learning in elementary schools.

Based on the conclusions of the research results, it is hoped that the next research will make recommendations that are submitted and analyze in depth with various research support software. Furthermore, bibliometric analysis and systematic literature review can be carried out on ethnoscience-based learning to improve 21st century skills.

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