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Trends and Issues of Inquiry and Socio-Scientific Issue (SSI) Research in the Last 20 Years: A Bibliometric Analysis

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Trends and Issues of Inquiry and Socio-Scientific Issue (SSI) Research in the Last 20 Years: A Bibliometric Analysis

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Abstract

This study aims to look at research trends on inquiry and socioscientific in the last 2 decades from 2004 to 2023. The PRISMA method is a reference in determining inclusion and exclusion criteria, as many as 449 articles were synthesized using bibliometric analysis. The result synthesis refers to the distribution of articles per year, research themes, affiliations, countries, authors, and productive journals. The inquiry and socioscientific research trends will peak in 2022, affiliated with the University of Wisconsin-Madison and the University of Southampton. Productive country United states and United Kingdom. Best author Laursen S and Zeidler D.L. Productive journal CBE Life Science Education from United Kingdom and International Journal of Science Education from United States.

Introduction

Natural Science is concerned with how to systematically find out about nature, so that Science does not only master a collection of knowledge in the form of facts, concepts or principles but is also a process of discovery (Kurniawan and Fadloli 2016; Lukum 2015; Mashinta S, Masykuri, and Sarwanto 2016). The essence of science includes four main elements, namely attitudes, processes, products, and applications. In science learning, these four elements must work together to prepare a generation that realizes the importance of science and technology so they can think logically, critically, creatively, and be able to reason properly. The orientation of learning in the 21st century also emphasizes the importance of problem-solving skills and critical thinking, creativity and innovation, communication and collaboration skills (Adal and Cakiroglu 2023; de Freitas et al. 2023; Görlich 2019; Krell, Garrecht, and Minkley 2023). 21st century learning can be done using learning approaches and models. 21st century learning emphasizes the integration of multidisciplinary learning contests (Nurtamara et al. 2019). Multidisciplinary learning can be carried out by emphasizing scientific social issues and providing alternative solutions with logical arguments based on scientific investigations through socioscientific learning (Herlanti 2014; Nurtamara et al. 2019; Oliveira, Akerson, and Oldfield 2012; Sermsirikarnjana, Pongsuwat and Kiddee and Pupat 2017; Taber 2022; Yilmaz and Ayaz 2021) and inquiry learning (Chadwick, McLoughlin, and Finlayson 2021; Hasnunidah et al. 2019; Hastuti, Setianingsih, and Widodo 2019; Putra, Widodo, and Jatmiko 2016; Richer, Ritchie, and Marchionni 2009).

Socioscientific is learning that interprets social issues in society related to science in a social aspect. Socioscientific Issue (SSI) emphasizes social phenomena both on a local, national and global scale. The results showed that SSI-based learning can improve student learning outcomes, students' critical thinking skills (Khishfe, 2013; Özden, 2015; Perdana et al., 2020; Zeidler, 2014), argumentation skills (Atasoy et al., 2022; Crippen, 2012; Özden, 2015), reflective assessment and moral development (Herman et al., 2020; Öztürk & Yenilmez Türkoğlu, 2018; Sadler et al., 2004; Topçu et al., 2018). Learning with socioscientific allows students to make direct observations of social environmental problems. The influence of scientific bagground analysis provides a complex picture for students regarding local, social and global issues. This is in line with the information processing proposed by edward A. Feigenbaum (2003) argues that cognitive performance is influenced by the ability to collect, analyze, store, and remember information. Meanwhile, according to Krathwohl (2002), dimensions of students' cognitive abilities depart from the ability to analyze, evaluate, and create.

Science-based inquiry learning stimulates active learning because it allows students to carry out scientific investigations (van Uum et al., 2016). Learning with inquiry is related to the development of students' conceptual understanding (Armellini & De Stefani, 2016; Dunlop et al., 2015; Keselman et al., 2012; Kovanović et al., 2015; G. K. W. Lee et al., 2021). Inquiry learning is oriented towards increasing students' scientific literacy, Wenning (2010) then divides inquiry into 5 levels which include discovery learning, interactive demonstration, inquiry lesson, inquiry lab, and Hypothetical inquiry. According to Wenning (2010) discovery learning is the lowest level of inquiry. The syntax of inquiry learning helps students to interpret social issues scientifically through the stages of observation, manipulation, generalization, verification, and application. Inquiry-based and socioscientific-based learning basically builds students' conceptual understanding and scientific literacy.

Inquiry learning and socioscientific-based learning are popular with researchers to improve students' conceptual understanding and scientific literacy. One of the basic efforts to find out the development of the distribution of research on socioscientific and inquiry is a systematic literature review (Ariyani et al., 2022; Effendi et al., 2021; Ekin & Gul, 2022, 2022; Hidaayatullaah et al., 2021; Hossain et al., 2022; Krull & Duart, 2017; Pradana et al., 2022; Suprapto, Prahani, et al., 2021; Suprapto, Sukarmin, et al., 2021). Literature study provides an initial understanding or initial report related to publication information that is adjusted to the topic in a systematic and procedural manner (Chen & Xiao, 2021; Moher, Liberati, Tetzlaff, & Altman, 2009; Zuhri et al., 2023). Literature study can be done in various ways, such as using VOSviewer analysis. VOSviewer analysis helps visualize the relationship between author, document, year and country (Effendi et al., 2021; Pan et al., 2023; Suprapto, Prahani, et al., 2021; Velez-Estevez et al., 2023).

Literature review research on inquiry has been carried out by several previous researchers such as Yu & Li (2022) regarding inquiry in the last 25 years (1997-2022) stated that the number of publications about inquiry was almost the same from 1997 to 2007. However, 2008 experienced a gradual increase until it peaked in 2021. This study has a weakness in metadata access which allows for bias. It's the same with socioscientific research. However, there is no research showing the distribution of related research on trends in socioscientific research and inquiry learning in the last 20 years directly. Therefore, this study aims to reveal the distribution of research on socioscientific and inquiry over the last 20 years (2004 – 2023). The distribution of research questions about

socioscientific and inquiry research trends is as follows:

Research Questions

RQ1: How is the distribution of "Inquiry Learning" and "Socio-scientific" publications per year in the last twenty years?

RQ2: How is the distribution of themes about socio-scientific and inquiry in the last twenty years?

RQ3: How is the Distribution of documents by affiliation on socio-scientific and inquiry in the last twenty years?

RQ4: How is the Distribution of documents by State on socio-scientific and inquiry in the last twenty years?

RQ5: How is the distribution of author citations on socio-scientific and inquiry in the last twenty years?

RQ6: The most prolific journal distributing Socio-scientific and inquiry in the last twenty years?

Method

Research Design

This systematic review uses a protocol developed by (Zhang et al., 2023) to achieve the proposed objectives. In this study, researchers conducted a comprehensive search of articles on the Scopus database (https://www.scopus.com) by including the keywords "inquiry" and "Socio-scientific". The search results are then collected in CSV form which is then visualized and analyzed with the Vosviewers software.

Research Criteria

Research documents traced by researchers include documents published during the 2008-2023 period, documents in the form of final articles, in English, and containing the keywords "Inquiry" and "Socioscientific". The search results obtained 632 documents with the keyword "socioscientific" and 122,342 documents with the keyword "inquiry". The researcher determines the search criteria aiming to limit and obtain appropriate and comprehensive accurate data. The research criteria then the researcher sets the inclusive and exclusive criteria in the Scopus database. The determination of the research criteria was adopted from previous studies such as. The research criteria can be seen in the table below, which is as follows:

Table 1. Research Criteria

Number	Include Criteria	Exclude Criteria
1	Relevant research includes the words "socio-scientific" and "inquiry" in the title, keywords, and abstract.	Does not include the words "socio scientific" and "inquiry" in the title, keywords and abstract
2	Year of article publication from the period 2004-2023	Publications under 2004
3	Journal in the form of final articles	Article review
4	English	Outside English
5	Article search subject	Book/ Conference Proceedings/ Book chapter
6	All Open Access	Not Open Access

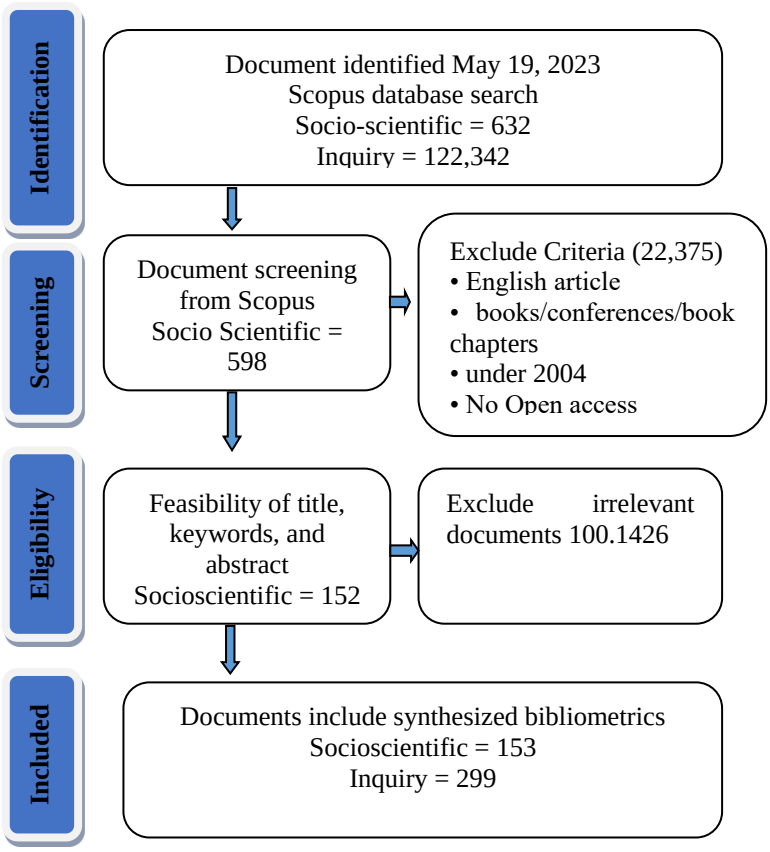

Figure 1. Illustration of the PRISMA Model Research Procedure (Moher, Liberati, Tetzlaff, Altman, et al., 2009)

Data Analysis

Based on the results of the screening, 449 articles were obtained with the keywords "sioscientififi" as many as 152 articles and "inquiry" as many as 297 articles. 449 articles were then analyzed using the VOSviewer application to provide a comprehensive picture of the relationship between documents, authors and the state. VOSviewer analysis also provides an inclusive relationship by visualizing the distribution of documents, thereby helping future researchers.

Results

Annual Distribution of "Inquiry Learning" and "Socioscientific" Publications

Figure 1 illustrates the pattern of inquiry learning and socioscientific research development from time to time. The results of document synthesis were 449 articles which were then analyzed for the distribution of articles from 2004-2023. The results showed that the distribution of articles on inquiry learning experienced significant fluctuations from 2014 to a peak in 2022, while in 2023 there were relatively few, this was because the data obtained was in mid-May 2023. It is possible that researchers' interest in publication in the Inquiry field will experience a significant increase in the future.

Research on socioscientific is relatively new and is being developed based on the potential of local wisdom, culture and culture in people's lives. However, it is possible that the distribution of research on ethnoscience also experiences something similar to research on inquiry learning. The research trend on socioscientific has increased significantly in 2022 with 37 papers identified in the Scopus database.

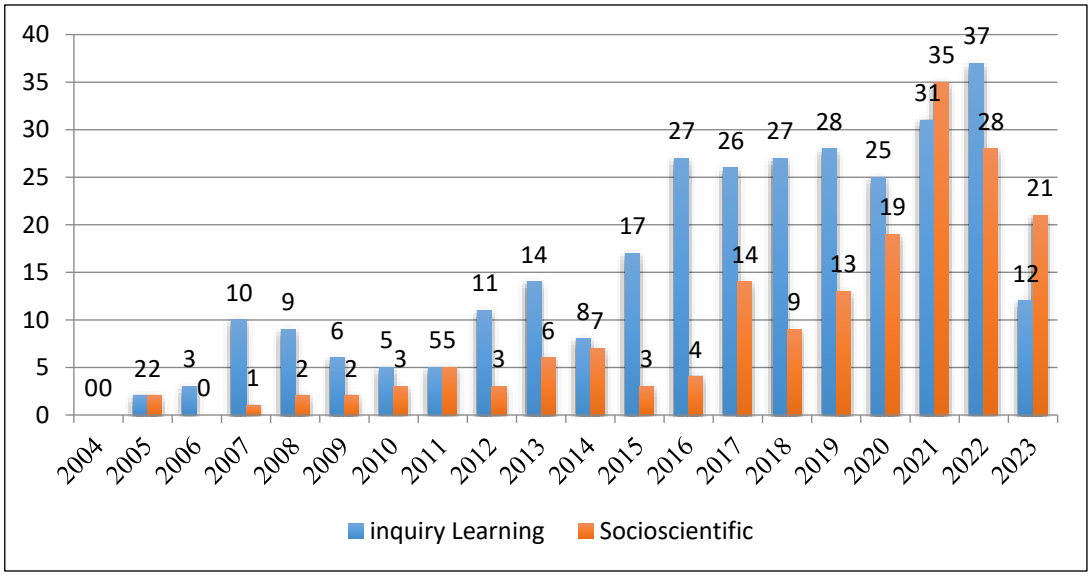

Figure 2. Distribution of Publications per Year

Theme Distribution

The results of the analysis using co-occurrence with all keywords show that research in the field of inquiry consists of 22 main clusters (see figure 2). Whereas in the socioscientific field it consists of 40 clusters, 1996 total link strengths, and 426 identified items (see figure 3).

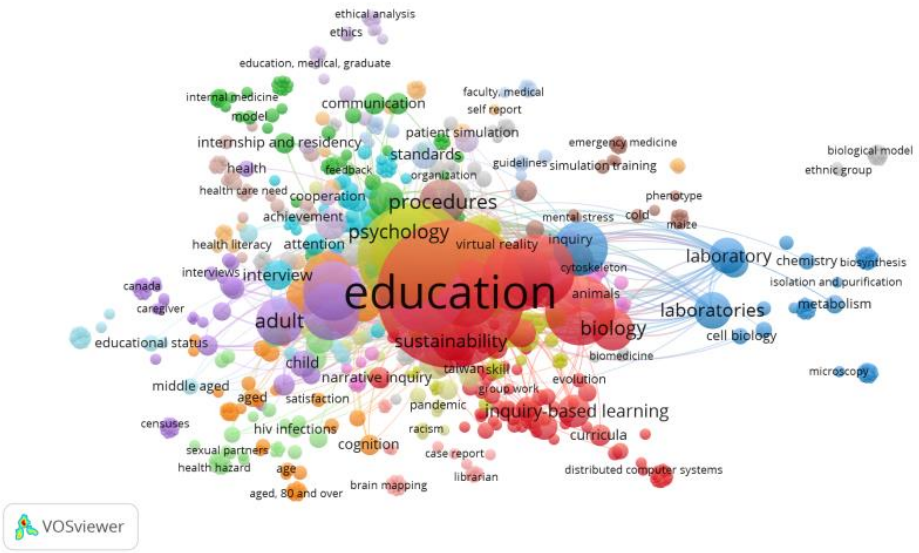

Figure 3. Co-Occurrence of All Keywords in the Inquiry Field

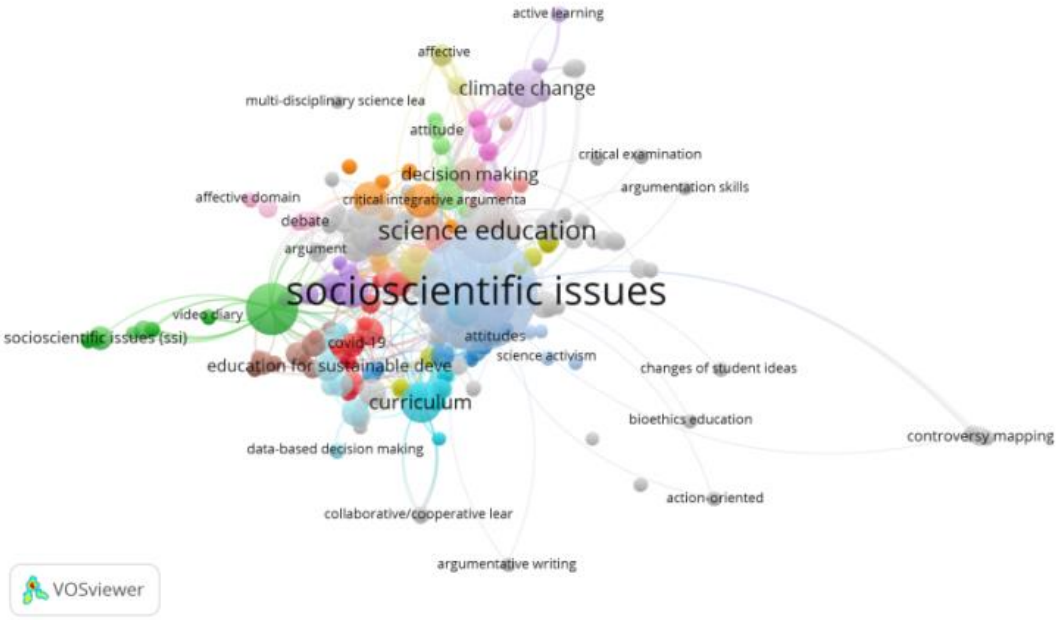

Figure 4. Co-Occurrence of All Keywords in the Socioscientific Field

Document by Affiliate

Table 2 shows that based on the documents owned by the researcher's affiliation, the researcher limits the documents owned by the affiliate to at least 2 documents published in the Scopus database. The results of the analysis show that research in the field of inquiry with the most documents is the University of Wisconsin-Madison with 8 identified documents, then the University of Colorado Boulder and the University of Minnesota twin cities with 6 documents.

Table 2. Documents by Affiliation in the Inquiry Field

Rank	Affiliation	Number of Documents	Country
1	University of Wisconsin-Madison	8	United States
2	University of Colorado Boulder	6	USA
2	University of Minnesota twin cities	6	USA
3	Emory University	5	USA
3	Universiteit Maastricht	5	Netherlands
3	University of California, Berkeley	5	USA
4	University of Washington	4	USA
4	Monash University	4	Malaysia
4	The university of Sydney	4	Australia
4	University of Melbourne	4	Australia
4	University of California, Los Angeles	4	USA
4	Stockholms Universitet	4	Sweden
5	Humboldt-Universitat Zu Berlin	3	Germany
5	Universiteit Van Amsterdam	3	Netherlands

The distribution of the results of documents owned by researchers when viewed from society is seen to be dominated by the USA which consists of the University of Wisconsin-Madison, University of Colorado Boulder, University of Minnesota twin cities, Emory University, University of California, University of Washington, and University of Californian. Then followed by the State of Australia represented by The university of Sydney, University of Melbourne. And several other countries such as the Netherlands (Universiteit Maastricht and Universiteit Van Amsterdam), Malaysia (Monash University), Sweden (Stockholms Universitet), and Germany (Humboldt-Universitat Zu Berlin). While research in the Socioscientific field shows that the University of Southampton and Linnaeus university, Kalmar are productive affiliates producing Scopus publications in the field of ethnoscience with 5 document articles (see table 3).

Table 3. Documents by Affiliation in the Socioscientific Field

Rank	Affiliate	Number of Documents	Country
1	University of Southampton	5	English
2	Linnaeus University, Kalmar	5	Sweden
2	UCL Institute of Education	4	English
2	Goteborgs Universitet	4	Sweden
2	Leibniz Institute For Science And Mathematics	4	Germany
2	Usak University	4	Turkey
3	Ewha Womans University	3	South Korea
3	Universitat De Barcelona	3	Barcelona
3	Karlstads Universitet	3	Sweden
3	Helsingin Yliopisto	3	Finland
3	Wageningen University & Research	3	Netherlands
3	The University of Waikato	3	New Zealand
3	The University of Hong Kong	3	Hong Kong

The distribution of documents owned by affiliates in terms of country, the publication authority on Scopus databases in the socioscientific field is Sweden, represented by Linnaeus University, Goteborgs Universitet, and Karlstads Universitet. Then followed by English (University of Southampton and UCL Institute of Education), and several other countries such as Germany (Leibniz Institute For Science And Mathematics), Turkey (Usak University), South Korea (Ewha Womans University), Barcelona (Universitat De Barcelona) , Findland (Helsingin Yliopisto), Netherlands (Wageningen University & Research), New Zealand (The University of Waikato), and Hong Kong (The University of Hong Kong).

Document by Country

Based on documents owned by the state, researchers limit documents owned by affiliates to at least 5 documents owned by the state and published in the Scopus database. The results of the analysis show that research in the field of inquiry shows that the United States is the most productive country producing 138 articles in the inquiry

field, followed by the United Kingdom with 28 documents, Australia with 26 documents, the Netherlands with 19 documents, Canada with 13 documents, and China with 11 documents.

Table 4. Documents by Country in the Inquiry Field

Rank	Country	Number of Documents	Citation	Total link strength
1	United states	138	4284	18
2	United kingdom	48	765	27
3	Australia	26	378	15
4	Netherlands	19	673	14
5	Canada	13	396	8
6	China	11	37	7
7	Spain	9	63	2
8	Germany	8	97	1
8	Norway	8	111	2
9	Finland	7	104	2
9	Sweden	7	52	3
10	Taiwan	6	59	1
11	Ireland	5	50	6
12	New Zealand	5	12	6
13	South Africa	5	21	3

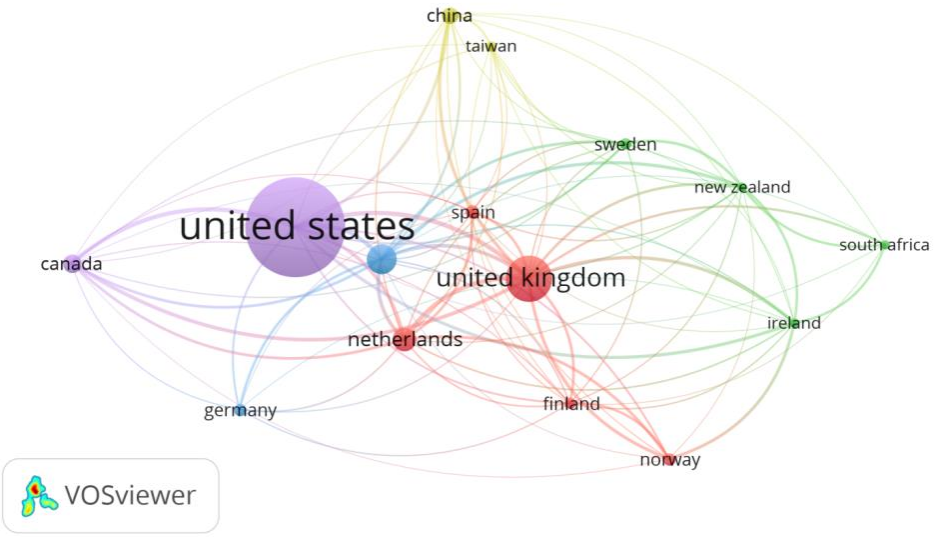

Figure 5. Distribution of Inquiry Articles by Country

When viewed from the number of citations of documents owned by the top countries, it can be seen that the 5 countries with the highest ranking are the United States with 4284 cited Scopus, then the United Kingdom with 765 cited Scopus, the Netherlands 673 cited Scopus, Canada 396 cited Scopus, and Australia with 378 cited Scopus. However, it will be different when viewed from the total link strength where the United Kingdom is ranked first with 27 total link strengths, followed by the United States (18), Australia (15), the Netherlands (14),

and Canada (8).

While research in the socioscientific field shows that the United States is the most productive country producing 32 documents in the Socioscientific field, followed by Turkey with 21 documents, Sweden with 20 documents, Germany with 16 documents, Australia and the United Kingdom each with 11 documents, Spain with 10 documents, and Indonesia 9 documents.

Table 5. Documents by Country in the Socioscientific Field

Rank	Country	Number of Documents	Citation	Total link strength
1	United states	32	900	79
2	Turkey	21	58	24
3	Sweden	20	174	43
4	Germany	16	83	29
5	Australia	11	311	21
5	United kingdom	11	137	31
6	Spain	10	137	28
7	Indonesia	9	32	8
7	Canada	7	48	9
8	France	6	74	5
8	Netherlands	6	33	18
8	South Korea	6	6	8

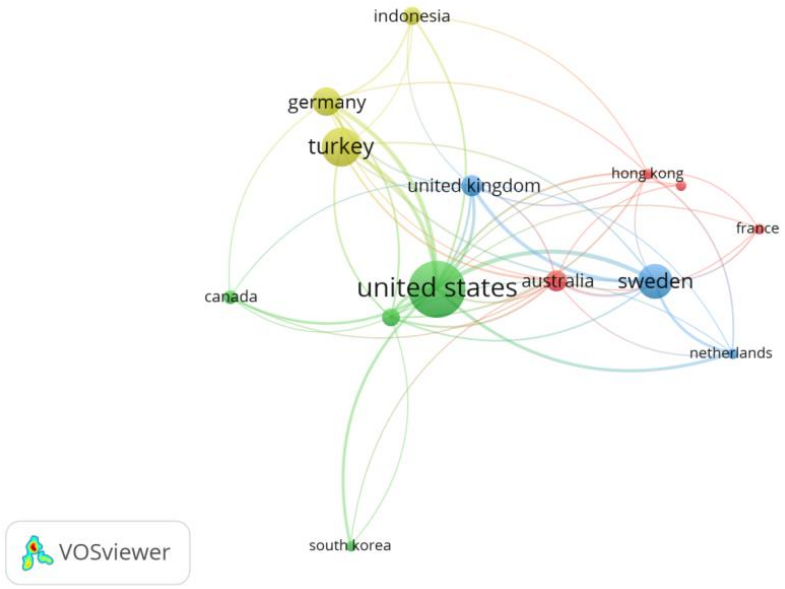

Figure 6. Distribution of Socioscientific Articles by Country

Document Citations by Author (Minimum 50 Citations)

The results of the analysis of the best authors in the inquiry field with a minimum of 50 citations on Scopus can

be seen that the 5 best authors consist of Laursen S., Liston C., Thiry H., Graf J.(2007) with cited Scopus 257, followed by (Gormally et al., 2012) 164 cited, (DeHaan, 2009) 132 cited, (Kovanović et al., 2015) 121 cited, (Corwin et al., 2018) 89 cited (see Table 6).

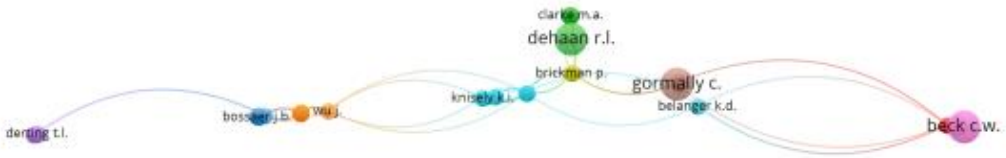

Figure 7. Citation of the Author in the Field of Inquiry

Whereas in the socioscientific field the 5 best writers consisted of Zeidler D.L., Sadler T.D., Simmons M.L., Howes E.V. (2005; 556), Dawson V.M., Venville G. (2010; 116), Evagorou M., Jimenez- Aleixandre M.P., Osborne J. (2012; 89), Furberg A., Ludvigsen S. (2008; 59), and Tidemand S., Nielsen J.A. (2017; 53).

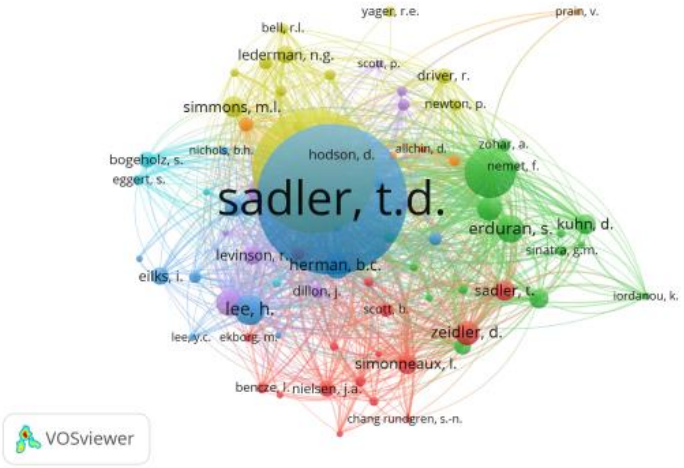

Figure 8. Author Citations in the Socioscientific Field

The Most Productive Journal

The most productive journals that publish socioscientific fields in the Scopus database with a minimum of 5 documents owned and a minimum of 50 citations consist of the International Journal of Science Education with 16 documents and 430 cited Scopus. Then followed by Science and Education (12; 106), Research In Science Education (8; 170), Eurasia Journal of Mathematics, Science and Technology Education (7; 33), Journal of Research In Science Teaching (6; 91) , and Asia-Pacific Science Education (5; 9), Education Sciences (5; 22), Cultural Studies of Science Education (7; 41).

When viewed from the number of citations, the International Journal of Science Education is the most cited journal with the number of Scopus citations ranging from 430, then Research in Science Education with 170 citations,

Science and Education 106 citations, and the Journal of Research in Science Teaching 91 citations.

Table 8. Productive Journals Publish Inquiry

Rank	Journals	Number of Documents	Citation	Country
1	International Journal of Science Education	16	430	United Kingdom
2	Science and Education	12	106	Netherlands
3	Research In Science Education	8	170	Netherlands
4	Eurasia Journal of Mathematics, Science and Technology Education	7	33	Turkey
5	Journal of Research In Science Teaching	6	91	United states
6	Asia-Pacific Science Education	5	9	Netherlands
7	Education Sciences	5	22	Switzerland
8	Cultural Studies of Science Education	5	41	Netherlands

Based on the results of the analysis with a minimum requirement of 5 documents and 50 citations in Scopus, when viewed from the state, the Netherlands has made a major contribution to publications in the socioscientific field represented by Science and Education, Research in Science Education, Asia-Pacific Science Education, and Cultural Studies of Science Education. Then United Kingdom (International Journal of Science Education), United States (Journal of Research in Science Teaching), Turkey (Eurasia Journal of Mathematics, Science and Technology Education), and Switzerland (Education Sciences). The Netherlands is the country that is the most productive in producing publications in the socioscientific field in the Scopus database. However, when viewed from the most citations, the United Kingdom (International Journal of Science Education) is the country that is the most productive as a reference and reference.

Table 9. The Productive Journal Publishes Socioscientific

Rank	Journals	Number of Documents	Citation	Country
1	CBE Life Science Education	51	1492	United States
2	Sustainability	37	189	Switzerland
3	Journal of Research in Science Teaching	8	258	United States
4	British Journal of Educational Technology	5	172	United Kingdom
5	Computers and Education	5	295	United Kingdom

Based on the results of the analysis with a minimum of 5 documents owned and 50 citations in Scopus, when viewed from the state, the United States made a major contribution to publications in the socioscientific field represented by CBE Life Science Education (51; 1492 cited by Scopus) and the Journal of Research in Science Teaching (8; 258 cited by Scopus). Then the United Kingdom by the British Journal of Educational Technology (5; 172 cited by Scopus) and Computers and Education (5; 295 cited by Scopus). Then the third was occupied by the State of Switzerland by the journal Sustainability with 5 documents and 189 cited by Scopus. The United States and the United Kingdom are the countries that contribute the most. However, when viewed from documents and citations by Scopus, the most cited journals are CBE Life Science Education.

Discussion

The distribution of articles on inquiry learning experienced a significant fluctuation from 2014 to a peak in 2022. Meanwhile, relatively few were found in 2023, this is because the data obtained was in mid-May 2023. 2022 with 37 papers identified in the Scopus database. The distribution of articles on inquiry learning has experienced a significant fluctuation from 2014 to a peak in 2022. It is possible that interest in the publication of researchers in the field of inquiry will experience a fluctuation in the future. Inquiry has a direct impact on students' ability to become researchers and directly involved in investigations of science issues that encourage the development of new knowledge concepts.

Research on socioscientific is relatively new and is being developed based on the potential of local wisdom, culture and culture in people's lives. However, it is possible that the distribution of socioscientific research is a center of attention for researchers considering the current research trends are sustainability development, global warming, and the environment. The research trend on socioscientific has increased significantly in 2022 with 37 papers identified in the Scopus database. The interest of researchers in conducting research on socioscientific (Chen & Xiao, 2021; Cian, 2020; Eggert et al., 2017) and inquiry (Chen & Xiao, 2021; Larsen et al., 2022; Roni et al., n.d.; Zuhri et al., 2023) as well as being able to improve scientific literacy skills (Aulia et al., 2018; Fan et al., 2020; Herman et al., 2021; Uskola et al., 2021).

Learning by using these two models has a significant impact on students' cognitive abilities. Research Results (Putra et al., 2016) shows that learning with inquiry encourages students' scientific literacy skills. While research (Dawson & Venville, 2010) encourage students' epigenetic abilities in scientific argumentation. This allows both models to thoroughly examine scientific entities in essence. In general, science as an entity that uses evidence to construct a verifiable explanation and predict natural phenomena, as knowledge is also constructed through a scientific process. Another definition states that science reveals about the empirical universe, what is the origin of the universe/facts. Researchers actively recommend strategies for teaching science through inquiry and socioscientific.

The documents owned by the research affiliation (table 2) in the field of inquiry with the most documents were the University of Wisconsin-Madison with 8 identified documents, then the University of Colorado Boulder and the University of Minnesota twin cities with 6 documents. The distribution of the results of documents owned by researchers when viewed from society looks to be dominated by the USA which consists of the University of Wisconsin-Madison, University of Colorado Boulder, University of Minnesota twin cities, Emory University, University of California, University of Washington, and University of Californian. Then followed by the State of Australia represented by The university of Sydney, University of Melbourne. and several other countries such as the Netherlands (Universiteit Maastricht and Universiteit Van Amsterdam), Malaysia (Monash University), Sweden (Stockholms Universitet), and Germany (Humboldt-Universitat Zu Berlin). Whereas in the Socioscientific field, the University of Southampton and Linnaeus University, Kalmar became productive affiliates producing Scopus publications in the socioscientific field with documents of 5 articles.

Documents owned by the State with a minimum of 5 documents in the field of inquiry, the United States being the most productive country producing documents in the field of inquiry as many as 138 articles, followed by the United Kingdom with 28 documents, Australia with 26 documents, the Netherlands with 19 documents, and Canada with 13 documents. However, when viewed from the number of citations of documents owned by the top countries, it can be seen that the 5 countries with the highest ranking are United States 4284 cited Scopus, then United Kingdom 765 cited Scopus, Netherlands 673 cited Scopus, Canada 396 cited Scopus, and Australia with 378 cited in Scopus. However, it will be different when viewed from the total link strength where the United Kingdom is ranked first with 27 total link strengths, followed by the United States (18), Australia (15), the Netherlands (14), and Canada (8). While research in the socioscientific field shows that the United States is the most productive country producing 32 documents in the Socioscientific field, followed by Turkey with 21 documents, Sweden 20 documents, Germany 16 documents, Australia and the United Kingdom each with 11 documents, Spain 10 documents, and Indonesia 9 documents.

Developed countries such as the United States, United Kingdom, and the Netherlands have already promoted inquiry and socioscietology as effective learning models for building laws, principles, and scientific concepts. Inquiry and socioscientific learning by making real phenomena from everyday life a concern in science learning today. This allows students to make scientific discoveries (Brown, 2015; Elam et al., 2019; Herman et al., 2017). Through the process of scientific discovery it encourages students to have special attention and helps students' cognitive development towards long team memory which makes learning meaningful (Ageliki Nicolopoulou, 1993; Bell et al., 2011; Feldman, 2004; Uludağ & Semra Erkan, 2023).

The best writers in the field of inquiry with a minimum of 50 Scopus citations can be seen that the 5 best writers consist of Laursen S., Liston C., Thiry H., Graf J. (2007) with cited Scopus 257, followed by (Gormally et al., 2012) 164 cited, (DeHaan, 2009) 132 cited, (Kovanović et al., 2015) 121 cited, (Corwin et al., 2018) 89 cited. In the socioscientific field, the 5 best writers consist of Zeidler D.L., Sadler T.D., Simmons M.L., Howes E.V. (2005; 556), Dawson V.M., Venville G. (2010; 116), Evagorou M., Jimenez- Aleixandre M.P., Osborne J. (2012; 89), Furberg A., Ludvigsen S. (2008; 59), and Tidemand S., Nielsen J.A. (2017; 53).

The most productive journals that publish socioscientific fields in the Scopus database with a minimum of 5 documents owned and a minimum of 50 citations consist of the International Journal of Science Education with 16 documents and 430 cited Scopus. Then followed by Science and Education (12; 106), Research in Science Education (8; 170), Eurasia Journal of Mathematics, Science and Technology Education (7; 33), Journal of Research in Science Teaching (6; 91) , and Asia-Pacific Science Education (5; 9), Education Sciences (5; 22), Cultural Studies of Science Education (7; 41).

When viewed from the number of citations, the International Journal of Science Education is the most cited journal with the number of Scopus citations ranging from 430, then Research in Science Education with 170 citations, Science and Education 106 citations, and Journal of Research in Science Teaching 91 citations. Results analysis with a minimum of 5 documents owned and 50 citations in Scopus, when viewed from the state, the Netherlands made a major contribution to publications in the socioscientific field represented by Science and Education,

Research In Science Education, Asia-Pacific Science Education, and Cultural Studies of Science Education. Then United Kingdom (International Journal of Science Education), United States (Journal of Research in Science Teaching), Turkey (Eurasia Journal of Mathematics, Science and Technology Education), and Switzerland (Education Sciences). The Netherlands is the country that is the most productive in producing publications in the socioscientific field in the Scopus database. However, when viewed from the most citations, the United Kingdom (International Journal of Science Education) is the most productive country which is used as a reference and reference.

Conclusion

The distribution of articles on inquiry learning experienced a significant fluctuation from 2014 to a peak in 2022 and the trend of research on socioscientific experienced a significant increase in 2022 with 37 papers identified in the Scopus database. research in the field of inquiry with the most documents is the University of Wisconsin-Madison and research in the field of Socioscientific shows the University of Southampton and Linnaeus university. The United States being the most productive country produced 138 articles in the inquiry field and 32 articles in the Socioscientific field. the best writers in the field of inquiry are Laursen S., Liston C., Thiry H., Graf J. (2007) with cited Scopus 257 and socioscientific are Zeidler D.L., Sadler T.D., Simmons M.L., Howes E.V. (2005; 556). The productive journal in the inquiry field is the International Journal of Science Education from the United Kingdom and in the socioscientific field is CBE Life Science Education from the United States.

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