Pedagogia Jurnal Ilmu Pendidikan

Journal homepage: http://ejournal.upi.edu/index.php/pedagogia

Major Trends in School Library Research : A bibliometric Analysis

*Nur Farissa Binti Baharudin, Erin Carina Jauti, Nur Arfa Binti Basiran, Gema Rullyana, Suci Yanti Ramadhan

*Information Science (Hons) Library Management, College of Computing, Informatics and Media Studies, Universiti Teknologi Mara (UiTM), Puncak Perdana, Malaysia

*Correspondence: E-mail: 2022755423@student.uitm.edu.my

ABSTRACT

This study provides an overview of research related to school libraries from 2010 to 2023. We used bibliometric analysis and text mining on 749 articles from Scopus-indexed journals to examine the impact of factors such as the most productive and influential authors, country and institution, and influential journal sources. We also investigate key trends in the school library research literature and identify active research areas. This research serves as a resource for future research regarding school libraries. Specifically, our results show that the most cited articles come from the United States (45%), followed by Nigeria (7.2%), the United Kingdom (5.1), Australia (4.5), and India (4.0%). The most productive year in terms of the number of articles published was 2021, namely 79 publications. Of the 1264 authors involved in this research, Merga, Margaret Kristin is the most productive author, while the most influential author is Chu, S. K. W., Tse, S. K., & Chow, K., who has been cited by other research 109 times in the Scopus database. Keyword analysis reveals current research trends in the field of school libraries. Hopefully, the results obtained from this research will provide valuable information for researchers to identify future hotspots in school library-related disciplines better.

ARTICLE INFO

Article History:
Submitted/Received 10 Sep 2023
First Revised 07 Oct 2023
Accepted 22 Nov 2023
First Available Online 28 Nov 2023
Publication Date 01 Dec 2023

Keyword:
Bibliometric Analysis,
School Library,
Keywords Analysis.

1. INTRODUCTION

In an era marked by rapid technological advances and continuously evolving educational paradigms, the role of school libraries is a cornerstone in fostering a culture of learning, curiosity, and critical thinking among students. The school library is no longer just a place to access information but also a center for collaboration and knowledge discovery that involves students in an active learning process (Loertscher & Woolls, 2021; Martin, 2020; Todd, 2016).

The modern school library is not just a place to store books but a dynamic space where knowledge meets technology, literacy meets innovation, and information catalyzes intellectual growth. The library is considered a place of "continuous discovery of knowledge" that incorporates student activity in the learning process (Kuhlthau et al., 2015).

Bibliometrics has become a popular research field of study in the world of LIS (Wusu, 2018); interest in bibliometric analysis is increasing in LIS research and for professional practitioners in libraries and universities (Association of College & Research Libraries, 2020). This is driven by the need to redefine the role and expand the competence of the library sector.

One of the most recent bibliometric analyzes in the world of LIS was carried out by Abdullah et al. (2023), In his research, Abdullah analyzed research trends in the world of LIS within the scope of ASEAN from 2018 to 2022. Methodologically, this research used the Scopus All Science Journal Classification Codes (ASJC) to collect a comprehensive collection of relevant publications. From an initial number of 65,822 documents, the search parameters were narrowed to 2768 outputs or 4.2% of total publications in the LIS field. This research provides implications for research and practice in libraries and information, especially in encouraging cross-disciplinary collaboration.

Bibliometric research has been carried out in the context of library trends in educational institutions. One of them is research by Ensslin et al. (2022); this research examines the characteristics of scientific publications that discuss higher education library management from a sustainability perspective through bibliometric analysis to contribute to the development of knowledge and identify opportunities for further research. Widiyanto (2023) , in his research, specifically analyzed data from various bibliometric sources, such as scientific journal databases and citation indexes, to identify publications related to digital libraries within the scope of higher education. This bibliometric study reveals explicitly the trends, developments, and impact of digital libraries in the context of higher education. The analysis results reveal significant evolution over the past few years. There has been a significant increase in publications covering various aspects of digital libraries, including policy, platform development, open access, and the use of big data (Widiyanto, 2023). The trend analysis also highlights the important role of digital libraries in supporting the higher education process, increasing accessibility, and promoting innovation in learning.

There have been no findings regarding bibliometric research that reviews school library research trends in recent years. Understanding trends and dynamics in school library systems is critical for educators, policymakers, and stakeholders aiming to optimize resources and improve educational outcomes. As highlighted by Hicks et al. (2025) in their article entitled "Bibliometrics: The Leiden Manifesto for research metrics," bibliometric analysis plays an important role in helping direct research policy and curriculum development in educational institutions.

The development of a field of science can be known based on the results of bibliometric analysis studies (Istiana, 2022; Moral-Muñoz et al., 2020; Su et al., 2020). One of the main benefits of bibliometric analysis in school library research is the potential to identify emerging topics, contributing researchers, and influential publications. Researchers can identify

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

knowledge gaps and interdisciplinary collaborations by analyzing citation patterns and collaboration networks and monitoring research development trends in the school library context.

This research aims to illuminate critical aspects of the scientific research endeavor, including publication trends, thematic concentrations, institutional affiliations, geographic distribution, and influential contributors to the field. By synthesizing and analyzing a body of scholarly literature, this research aims to uncover the undercurrents that shape the school library research landscape through the lens of bibliometric analysis. This research explores and dives into the diverse dimensions that define contemporary discourse around school libraries, from emerging digital resources to integrating information literacy in school curricula. By describing patterns embedded in scientific discourse, this research will likely provide stakeholders with insights that can be implemented to strengthen the effectiveness, inclusivity, and relevance of school library initiatives.

2. METHODOLOGY

The methodology adopted is exploratory and descriptive, using a bibliometric approach to produce indicators of scientific production. This research uses international publication data sourced from the Scopus database. Documents that meet the requirements are then used as a research data source. This bibliometric analysis focuses on two parts, namely, performance analysis and science mapping.

2.1. Defining Search Keywords

The scope of this research is limited to data in the Scopus database only. Using a trial-and-error approach, a search strategy was developed to extract data from Scopus. The search strategy developed is TITLE-ABS-KEY "school library" OR "school libraries" OR "school librarian".

2.2. Initial Search Results

The search results yielded 2,427 documents with document types Article (1,755), Book chapter (207), Review (185), Conference paper (146), Book (59), Letter (28), Note (28), Editorial (11), Conference review (4), Erratum (2), Short survey (2). All languages, all source types, all stages of publication, and documents are also output without using time range settings.

2.3. Refining the Search Results

Several specific criteria were established to obtain documents suitable for this research. First, the document title contains predefined keywords. Second, it comes from article-type journal sources and has final-stage status. Third, these journals and articles come from the subject area of social sciences. Fourth, written in English. Fifth, documents published from 2010 to 2023. Based on these criteria, 749 articles were obtained from the subject area of social sciences, article document type, journal source, final stage, and in English published from 2010 to 2023.

2.4. Compiling the Initial Data Statistics

Documents that meet the requirements are then used as a research data source. This data was obtained from the Scopus database in 2 types of format, namely Comma Separated Values

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

(CSV) and Research Information System (RIS). Both formats contain important article information, such as citation, bibliographical, and abstract & keywords.

2.5. Analyzing the Data

Data analysis was assisted by Biblioshiny and VOSviewer software to make it easier to read. Both software can provide important information about network metrics and clustering (McAllister et al., 2022; Van Eck & Waltman, 2010). Additional analyses were run in Microsoft Excel based on .csv files extracted from Scopus.

3. RESULTS & DISCUSSION

Based on data obtained from searches using the Scopus database, 749 articles were found with the specified criteria. Figure 1 shows the development of publications from 2015 to 2023.

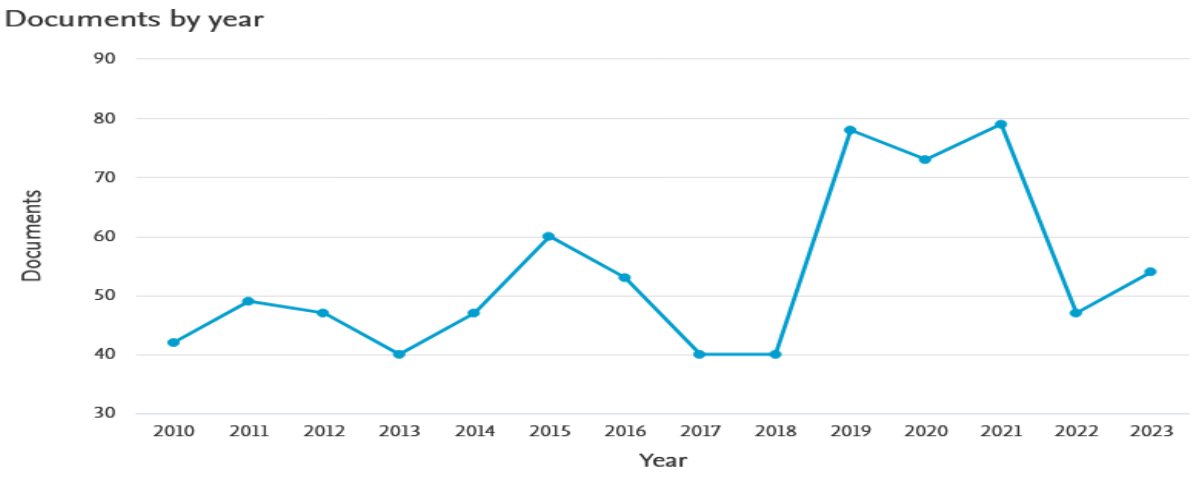


Figure 1. The Development of Research Publications on School Library

Based on bibliometric analysis, researchers developed several publications related to this research. A significant increase in the number of publications occurred in 2019-2021; the highest number occurred in 2021, with 79 publications, and decreased significantly in the following year, with 47 publications.

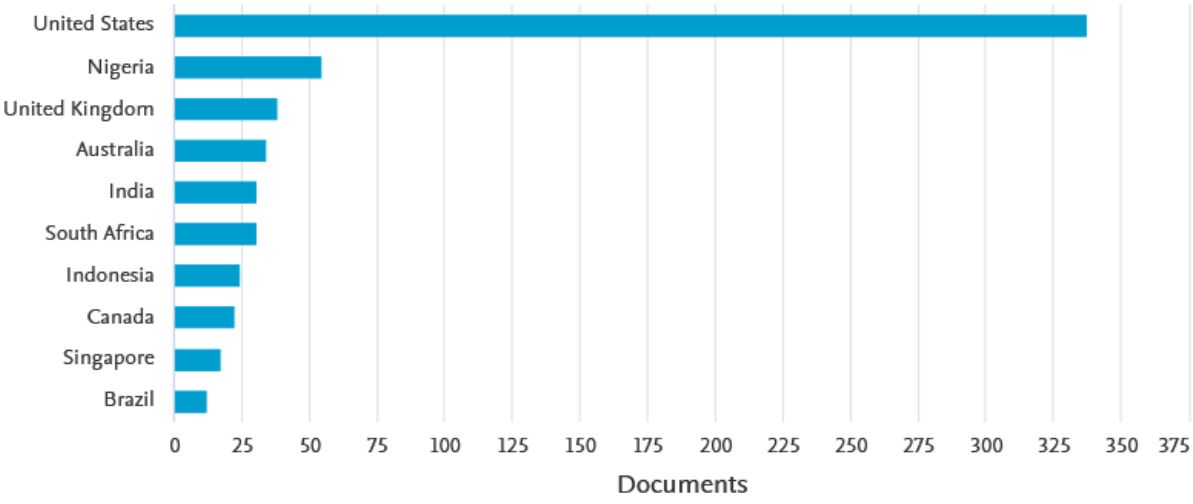


Figure 2. Publication on School Library Research according to Countries

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

Publications of research results on digital libraries were identified, covering 69 countries. Figure 2 shows data related to the top 15 countries producing publications related to school library research. The United States is the most dominant country with several publications 337 (45%). Nigeria is in second place with several publications 54 (7.2%), the United Kingdom is in third position with several publications 38 (5.1), Australia is in position fourth with several publications 34 (4.5), and India is in fifth position with the number of publications 30 (4.0%). Based on this matrix, the United States is the most productive country producing journal article publications related to school libraries.

Furthermore, based on the results of the bibliometric analysis of the affiliates that made the most significant contribution can be seen in Figure 2. Among these affiliates are Old Dominion University (United States) with 24 publications, Florida State University (United States) with 16 publications, University of Maryland, College Park (United States) with 15 publications, University of North Texas (United States) with 15 publications, Nanyang Technological University (Singapore) with 15 publications. Based on this matrix, it can be concluded that institutions from the United States dominate the number of publication productivity, and Old Dominion University (United States) is the affiliate or institution that is most productive in producing journal publications related to school libraries.

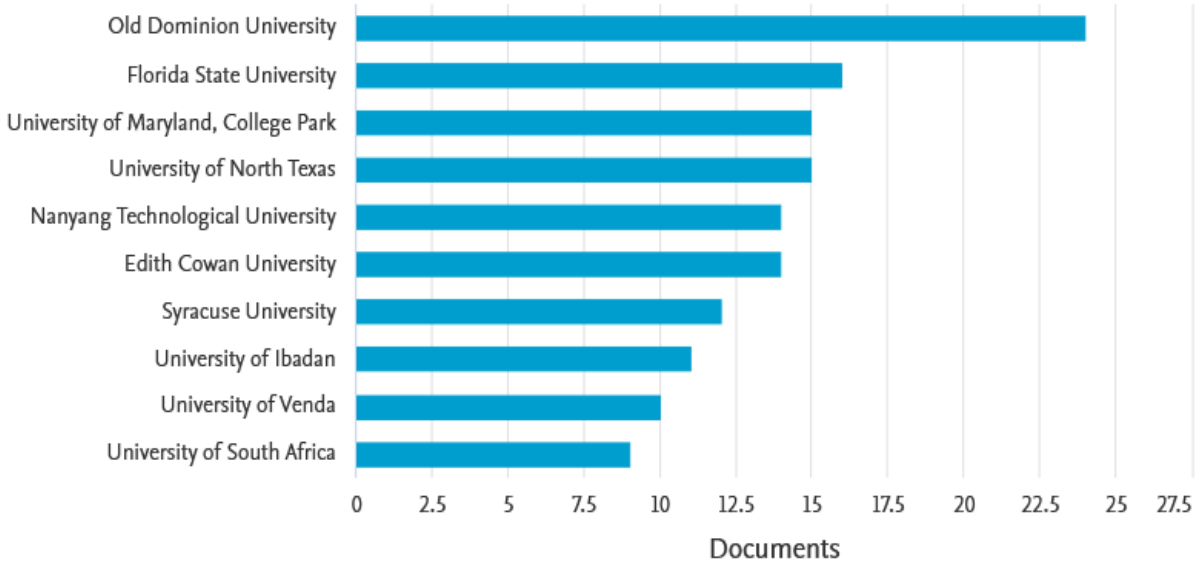


Figure 3. Publication in School Library by Affiliation

3.1. Most Productive and Cited Journals

The sources with the highest number of publications are shown in Figure 4. As can be seen from Figure 4, the International Journal on Digital Libraries (n=198), D-LIB Magazine (n=150), and Science and Technology Libraries (n=28) are listed as sources with the highest number of publications related to digital libraries. It can be concluded from Figure 4 that the International Journal on Digital Libraries has a very important position regarding research on digital libraries.

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

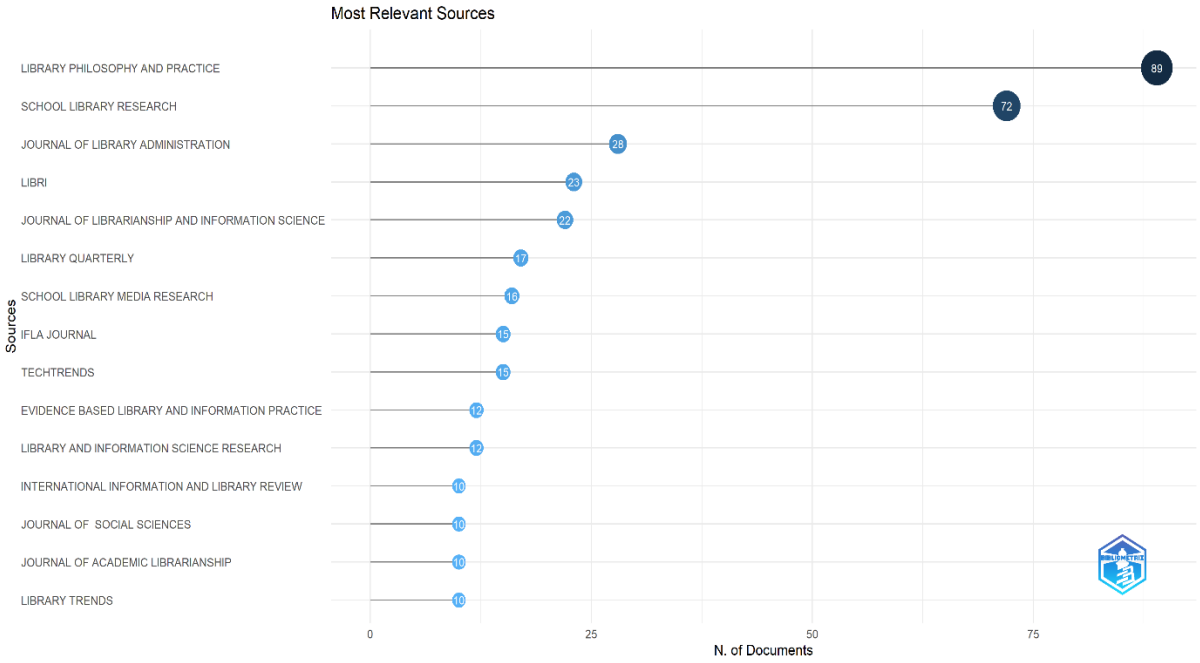


Figure 4. Sources with the highest number of publications in terms on School Library

The most influential (mostly cited) journals are listed in Figure 5 and Table 1. It can be seen that School Library Research (n=401), Library and Information Science Research (n=267) and Techtrend (n=212) are the top three most influential journals. widely quoted or influential.

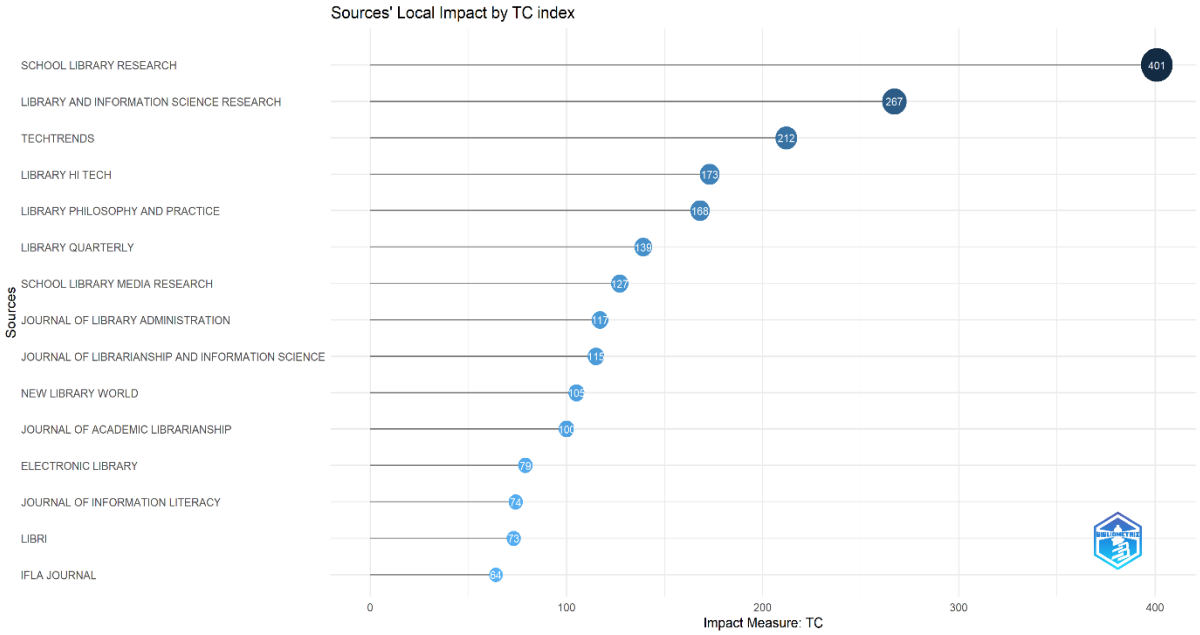


Figure 5. Most cited journals by research on digital libraries

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

Table 2. Most cited journals by research on digital libraries

Title of Journal	h_index	g_index	m_index	TC	NP	PY_start
School Library Research	11	15	0.846	401	72	2012
Library and Information Science Research	7	12	0.467	267	12	2010
School Library Media Research	7	10	0.467	127	16	2010
Techtrends	7	14	0.7	212	15	2015
Journal of Academic Librarianship	6	10	0.4	100	10	2010
Journal of Information Literacy	6	8	0.545	74	9	2014
Journal of Librarianship and Information Science	6	8	0.429	115	22	2011
Journal of Library Administration	6	10	0.75	117	28	2017
Library Philosophy and Practice	6	9	0.4	168	89	2010
Library Quarterly	6	11	0.429	139	17	2011
Libri	6	7	0.429	73	23	2011
Ifla Journal	5	7	0.333	64	15	2010
Library Hi Tech	5	7	0.333	173	7	2010
New Library World	5	10	0.357	105	10	2011
Electronic Library	4	7	0.286	79	7	2011

3.2. Most Productive and Influential Researchers

The number of publications is used to indicate influential documents, while the number of citations is used to indicate influential authors and sources (Donthu, 2021; Martin, 2018). Firstly, influential documents are represented by the top 10 documents with the highest citations obtained from the Scopus database, as shown in Table 1 below.

Tabel 1. Most Influential Researchers

No	Authors	Title	Source	Cites
1	Chu, S.K.W., Tse, S.K., Chow, K.	Using collaborative teaching and inquiry project-based learning to help primary school students develop information literacy and information skills	Library and Information Science Research, 33(2), pp. 132–143	109
2	Moorefield-Lang, H.M.	Makers in the library: Case studies of 3D printers and maker spaces in library settings	Library Hi Tech, 32(4), pp. 583–593	78
3	Oliver, K.M.	Professional Development Considerations for Makerspace Leaders, Part One: Addressing "What?" and "Why?"	TechTrends, 60(2), pp. 160–166	67

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

No	Authors	Title	Source	Cites
4	Hynes, M.M., Hynes, W.J.	If you build it, will they come? Student preferences for Makerspace environments in higher education	International Journal of Technology and Design Education, 28(3), pp. 867–883	56
5	Mersand, S.	The State of Makerspace Research: a Review of the Literature	TechTrends, 65(2), pp. 174–186	47
6	Khan, S.A., Bhatti, R.	Digital competencies for developing and managing digital libraries: An investigation from university librarians in Pakistan	Electronic Library, 35(3), pp. 573–597	45
7	Subramaniam, M.M., Ahn, J., Fleischmann, K.R., Druin, A.	Reimagining the role of school libraries in STEM education: Creating hybrid spaces for exploration	Library Quarterly, 82(2), pp. 161–182	42
8	Hill, V.	Digital citizenship through game design in minecraft	New Library World, 116(7-8), pp. 369–382	41
9	Diekema, A.R., Holliday, W., Leary, H.	Re-framing information literacy: Problem-based learning as informed learning	Library and Information Science Research, 33(4), pp. 261–268	38
10	Ryan, C.L., Hermann-Wilmarth, J.M.	Already on the shelf: Queer readings of award-winning children's literature integration during the COVID-19 pandemic in Kuwait	Journal of Literacy Research, 45(2), pp. 142–172	38

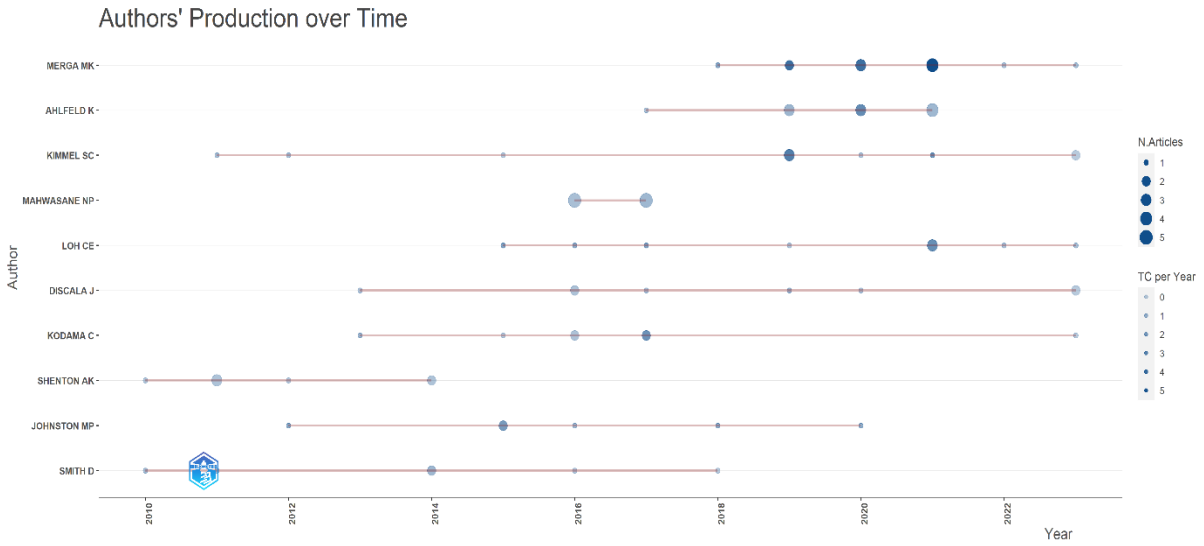
Table 1 shows that the most influential document related to school library studies was written by Chu, S.K.W., Tse, S.K., and Chow, K. titled Using Collaborative Teaching and Inquiry Project-based Learning to Help Primary School Students Develop Information Literacy and Information Skills. This document has been cited by other research 109 times. In second place is Moorefield-Lang, H.M., entitled Makers in the Library: Case Studies of 3D Printers and Maker Spaces in Library Settings. This document has been cited by other relevant research 78 times. Meanwhile, in third place was written by Oliver, K.M., with the title Professional Development Considerations for Makerspace Leaders, Part One: Addressing "What?" and "Why?", which was cited by other relevant research 67 times.

Of the 1264 authors involved in this research, four authors are the most productive authors who have published at least 10 documents related to school library research. Merga, Margaret Kristin is affiliated with The University of Newcastle (Greece), has published 12 publications, and is in first place as the most productive writer. Furthermore, Ahlfeld, Kelly, affiliated with the Bennington-Rutland Supervisory Union (United States), is in second place with 11 publications. Kimmel, Sue C., affiliated with Old Dominion University (United States), took third place, having published 10 publications. Mahwasane, N. P., affiliated with the University of Venda (South Africa), is in fourth place with 10 publications.

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

Tabel 2. Most Productive and Influential Researchers

Authors	Articles	Articles Fractionalized
Merga Mk	12	9.75
Ahlfeld K	11	11.00
Kimmel Sc	10	4.53
Mahwasane Np	10	9.00
Loh Ce	9	4.62
Discala J	8	2.07
Kodama C	7	1.43
Shenton Ak	7	7.00
Johnston Mp	6	3.83
Smith D	6	4.58



Gambar 6. Authors' Production Over Time

In Figure 6, 10 authors of scientific works are listed from search results related to school library publications. Regarding writing productivity, there are only 2 authors who consistently published publications related to school libraries in the last three years, namely Merga (2021=4, 2022=1, 2023=1), followed by Loh Ce, who has 3 papers (2021=3, 2022=1, 2023=1). Note that the larger the circle, the more articles the author published that year. The darker the circle, the more citations are received each year.

3.3. The Keywords Analysis Trend Topics

After the dataset was saved in CSV type using Scopus metadata, it was analyzed using the Vosviewer application by selecting the 'create a map based on text data' data option to create a network or relationship of terms based on text data (Donthu, 2021; Zhou et al., 2022). Keywords are an essential part of scientific publications; important points in articles can be represented through keywords. Keywords can be used to build a logical structure and organization of articles; besides that, using appropriate keywords can increase the visibility of a scientific publication. Systematic analysis of keywords in a particular research field can provide valuable insight into development trends and research differences. Emerging research

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

trends can be identified by analyzing keywords frequently used in scientific publications over a certain period. This can help researchers to understand the current research focus and identify promising research areas for the future.

Keyword co-occurrence analysis is often used to analyze the strength of relationships between different keywords in many documents. By analyzing the co-occurrence relationships of keywords, we can clearly understand the internal composition and structure relationships in a particular academic domain and reveal the research boundaries of that discipline. Thus, keyword co-occurrence analysis has become a standard research method in bibliographic analysis.

A total of 2,088 keywords appeared in a collection of scientific publications from scientific journals about school libraries, with a frequency of more than 5 occurrences that VOSViewer could recognize. The result of the screening was that a total of 65 keywords that met the requirements were identified. Then, we obtain a keyword co-occurrence network with a total link strength of 492, as shown in Figure 8. In Figure 8, each node represents a keyword, the node's size indicates the number of occurrences of the keyword, and the link connecting two nodes represents the relationship between two words key.

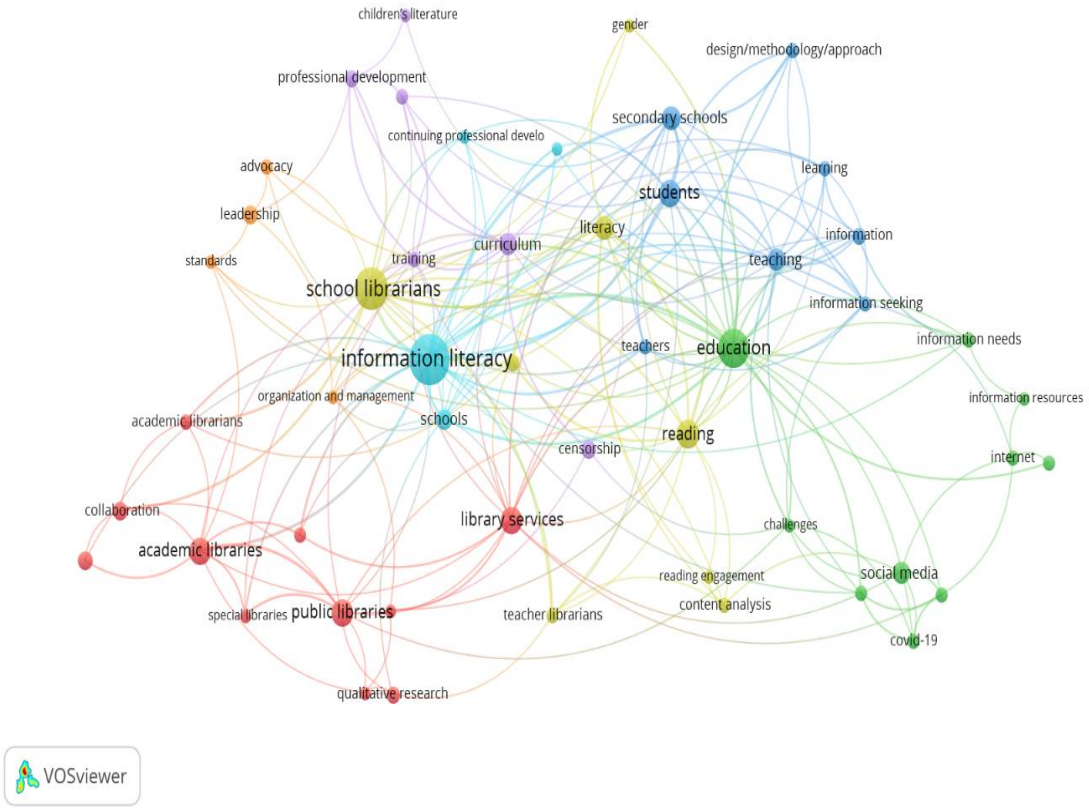


Figure 8. Network Visualization Map of Keywords' Co-occurrence

Figure 8 shows a visualization of the co-occurrence network, which explains the network or relationship between one term and another in school library research in 2010 -2023. A total of 749 articles indexed by the Scopus database can be grouped into 7 clusters, which can be identified through the color of each keyword node. According to the current state of research related to school libraries, the nine clusters are analyzed as follows:

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

Cluster 1 (Red), keywords from the cluster in Figure 8, where "information literacy" appears the most, with a total of 58 occurrences, followed by "School Librarian," with a total of 41 occurrences, followed by "academic libraries," student," and "secondary school."

Cluster 1 (Red), keywords from the cluster in Figure 8, where "information literacy" appears the most, with a total of 58 occurrences, followed by "School Librarian," with a total of 41 occurrences, followed by "academic libraries," student," and "secondary school." On the other hand, "information literacy" in this cluster has the highest total occurrence, meaning that the research results show that school libraries have a vital role in supporting information literacy in schools. By providing access to information, facilitating learning, and organizing information literacy programs, school libraries help students improve their literacy skills (Komariah et al., 2023). This cluster also includes the keywords "academic libraries," "student," and "secondary school." Academic libraries are essential in supporting student success in the context of research on school libraries. By providing access to information, providing training and education, and organizing information literacy programs and activities, academic libraries help students to become independent, critical, and responsible learners (Gonzalez, 2010; Kiviluoto, 2015).

Cluster 2 (green), keywords from the cluster in Figure 8, where "reading" appears the most, with a total of 28 occurrences, followed by "literacy," "information seeking," and "learning." The keyword "reading" in this cluster has the highest total occurrences; this may be because many experts are very interested in exploring the potential of reading, especially those related to literacy, information seeking, and learning. Reading is the foundation for all areas of learning. Good reading skills enable students to understand lesson material, complete assignments, and follow instructions in class. Research has shown that reading is essential to literacy (Koh et al., 2022; Miranda et al., 2022). Therefore, it is essential to explore the potential of reading to facilitate the development of various skills for success in school.

Cluster 3 (Biru), kata kunci dari cluster pada gambar 8, dimana “education” muncul paling Cluster 3 (Blue), keywords from the cluster in Figure 8, where "education" appears the most, with a total of 35 occurrences, followed by "social media," "teaching," "digital libraries," and "technology." The keywords in cluster 3 focus on technology and social media related to school libraries. Apart from that, researchers are also interested in exploring school libraries and learning methods. Research results show that it is essential to understand how school librarians and classroom teachers work together to facilitate learner-centered learning (Koh et al., 2020). Apart from that, the shift to online learning during the 2020 COVID-19 pandemic has also created challenges for librarians to participate in creating online learning spaces (Ramos Eclevia, 2022).

Cluster 4 (Kuning), kata kunci dari cluster pada gambar 8, dimana “Library Service” muncul paling banyak, dengan total 18 kemunculan, diikuti oleh “library instruction”, “qualitative research”, dan “makerspace”. Keywords in this cluster indicate that there is a library service focus. The keyword "library instruction" shows that this cluster also focuses on the education and instructions libraries provide to users. This education can include training in using databases, searching for information, and using various library services. The keyword "qualitative research" indicates that this cluster may be related to qualitative research conducted in libraries. This research may focus on library users' experiences, the effectiveness of library services, or the impact of libraries on communities. The keyword "maker space" suggests that this cluster may be related to the creative space provided by libraries. This space allows users to create and innovate using various technologies and tools.

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

Cluster 5 (Purple), keywords from the cluster in Figure 8, where "public libraries" appear the most, with a total of 19 occurrences, followed by "curriculum," "censorship," and "professional development." This indicates a strong interest in the role of libraries in society, with particular emphasis on ways of developing resources and materials that suit user needs. In addition, there is also curiosity about how libraries can address the issue of censorship and support the professional skills development of librarians. These findings underscore the importance of libraries in supporting education and lifelong learning, as well as the critical role of librarians in filtering information and providing access to diverse knowledge sources (Johnson, 2021). This also reflects libraries' challenges in adapting to changing curriculum needs and a dynamic society. To explore this more deeply, we can see the importance of integrating libraries with educational curricula to ensure relevant and up-to-date learning materials are available to students (Martinez, 2020). Censorship in the library context raises questions about limits on access to information, an essential topic in discussions about intellectual freedom (Simmons, 2022).

Cluster 6 (Purple), keywords from the cluster in Figure 8, where "school librarian" appears the most, with a total of 15 occurrences, followed by "teacher librarian," "librarian," and "reading engagement." Cluster 6 highlights the critical role of school librarians ("school librarians"), which appeared 15 times, showing their critical role in the educational environment. The terms "teacher librarian" and "librarian" also frequently appear, underscoring two essential aspects: the role of librarians as educators and their more traditional role in managing collections. "Reading engagement" indicates a focus on strategies to increase student engagement in reading, a key component of literacy and learning. The existence of school librarians, not only as resource managers but also as educators, plays a vital role in developing students' literacy skills and encouraging reading engagement. Research shows that collaboration between librarians and teachers can improve student learning outcomes, particularly in information literacy and reading engagement (Smith, 2021). Thus, this cluster emphasizes the importance of librarians in supporting students' education and developing a strong reading culture in schools.

Cluster 7 (Light Blue), keywords from the cluster in Figure 8, where "leadership" appears the most, with a total of 9 occurrences, followed by "organization and management" and "standard." "Leadership" was the main keyword in this cluster, with a total of 9 occurrences, followed by "organization and management" and "standard." These findings indicate the importance of effective leadership and management in managing libraries and educational institutions, as well as the importance of standards in ensuring the quality and consistency of services. Library leadership and educational contexts includeinclude directing vision and strategy, managing resources efficiently, and ensuring services meet established standards. Organizational effectiveness often depends on the quality of leadership and management capabilities, which can influence day-to-day operations and long-term goals (Henderson, 2020; Rafi et al., 2022). Therefore, this cluster highlights the importance of developing leadership capabilities among library and education professionals.

Cluster 8 (Chocolate), keywords from the cluster in Figure 8, where "high school student" appears the most, with a total of 5 occurrences, followed by "gender." With "high school student" as the keyword (5 occurrences), followed by "gender," this cluster emphasizes the demographics of high school students and issues related to gender in education. The focus on high school students and gender suggests an interest in understanding how factors such as age and gender identity influence educational experiences and access to resources. Research in this area may aim to identify ways to support all students inclusively, ensuring that school

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

libraries and educational programs respond to the needs of diverse student populations (Green, 2022). This highlights the importance of an equitable and inclusive approach in the development of library collections and learning programs (Dali et al., 2021; Keiser, 2023; Subramaniam et al., 2018).

Cluster 9 (Grey), keywords from the cluster in Figure 8, where "digital literacy" appears as the only keyword in this cluster. This last cluster is unique, because it only displays one keyword. Digital literacy refers to proficiency in using digital media. The development of digital technology has brought many changes in various sectors of life, including school libraries (Suwarto et al., 2022). Digital media platforms, texts, and technology enable pedagogical practices that place students and teachers at the center of an increasingly networked social world. However, this approach also requires the collaboration of various parties, such as teachers and school librarians (Guo & Huang, 2021; Hobbs & Coiro, 2019; Singh et al., 2021).

4. CONCLUSION

The results of this bibliometric study have significant implications for the scientific evaluation of research on school libraries. This bibliometric analysis represents an essential data set from which researchers can gain insight into the contributions of countries, journals, source/publisher titles, document types, and prominent authors in school library research. In addition, it reveals scientific contributions and establishes trends in the research produced. For example, indicators such as a writer's and his country's productivity can be used to show the future progress of his and her country's research productivity. Suppose future analyzes show that their productivity indicators improve compared to the indicators produced in this analysis. In that case, this indicates the significant progress the authors and their countries achieved in increasing research productivity in school libraries. Likewise, other findings, such as citations, can be confirmed in future research. Another conclusion concerns the possibility of identifying research trends. Hopefully, this research can help future researchers develop research in school libraries.

REFERENCES

Abdullah Sani, M. K. J., Shari, S., Sahid, N. Z., Shaifuddin, N., Abdul Manaf, Z., & van Servellen, A. (2024). ASEAN Library and Information Science (LIS) research (2018–2022): A bibliometric analysis with strategies for enhanced global impact. *Scientometrics*, *129*(1), 95-125.

ACRL. (2020). Academic Library Impact: Improving Practice and Essential Areas to Research. ACRL.https://www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/booksanddigitalresources/digital/9780838989649_OA.pdf.

Dali, K., Bell, N., & Valdes, Z. (2021). Learning and change through diversity, equity, and inclusion professional development: Academic librarians' perspectives. *The Journal of Academic Librarianship*, *47*(6), 102448.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of business research*, *133*, 285-296.

Ensslin, L., Dutra, A., Ensslin, S.R., Moreno, E.A., Chaves, L.C. and Longaray, A.A. (2022), "Sustainability in library management in higher education institutions: a bibliometric

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

analysis", *International Journal of Sustainability in Higher Education*, Vol. 23 No. 7, pp. 1685-1708.

Gonzalez, L. J. (2010). Major gifts funding for academic libraries, 2003 to 2007. *Library Leadership & Management*, *24*(3), 64-69.

Green, T., & Webb, A. (2022). Inclusive practices in high school libraries: Meeting the needs of diverse learners. *School Library Research, 25*, 1-22.

Guo, J., & Huang, J. (2021). Information literacy education during the pandemic: The cases of academic libraries in Chinese top universities. *The Journal of Academic Librarianship*, *47*(4), 102363.

Henderson, K. (2020). Leadership and management in education: Developing effective schools. *Educational Management Administration & Leadership, 48*(5), 867-882.

Hicks, D., Wouters, P., Waltman, L., De Rijcke, S., & Rafols, I. (2015). Bibliometrics: the Leiden Manifesto for research metrics. *Nature*, *520*(7548), 429-431.

Hobbs, R., & Coiro, J. (2019). Design features of a professional development program in digital literacy. *Journal of Adolescent & Adult Literacy*, *62*(4), 401-409.

Hodonu-Wusu, J. O., & Lazarus, G. N. (2018). Major trends in LIS research: A bibliometric analysis. *Library Philosophy and Practice*, 1873.

Istiana, P. (2022). Analisis bibliometrik perkembangan penelitian bidang ilmu geografi. *BACA: JURNAL DOKUMENTASI DAN INFORMASI*, *43*(2), 69-80.

Johnson, D. (2021). The evolving role of public libraries in the digital age. *Library Trends, 69*(4), 687-705.

Keiser, B. (2023). Collection management for youth: Equity, inclusion, and learning. *Education Libraries (Online)*, *46*(1), 1-4.

Kiviluoto, J. (2015). Information literacy and diginatives: Expanding the role of academic libraries. *IFLA journal*, *41*(4), 308-316.

Koh, K., Ge, X., & Petrella, J. B. (2022). Librarian-Teacher Co-Teaching and the role of school librarians in facilitating inquiry and maker learning. *School Library Research*, *25*.

Komariah, K., Suwandi, S., & ST Y, S. (2023). The Implementation of Post-Covid-19 Pandemic school literacy in senior high schools. *International Journal of Instruction*, *16*(3), 377-394.

Kuhlthau, C. C., Maniotes, L. K., & Caspari, A. K. (2015). *Guided inquiry: Learning in the 21st century*. Bloomsbury Publishing USA.

Lee, A. (2019). Censorship challenges in public libraries: Strategies and considerations. *Library Management, 40*(8), 526-539.

Loertscher, D. V., & Woolls, B. (2021, March). The information literacy movement of the school library media field: A preliminary summary of the research. In *IASL Annual Conference Proceedings* (pp. 337-366).

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

Loh, C. E., Gan, S., & Mounsey, S. (2022). What do children want to read? A case study of how one primary school library supported reading for pleasure. *Journal of Library Administration*, *62*(7), 931-945.

Martin, J. (2020). Job satisfaction of professional librarians and library staff. *Journal of Library Administration*, *60*(4), 365-382.

Martinez, R. & Gomez, E. (2020). Curriculum integration and the role of the school librarian: A review of the literature. *Journal of Information Science, 46*(3), 324-334.

Martín-Martín, A., Orduña-Malea, E., & López-Cózar, E. D. (2018). Author-level metrics in the new academic profile platforms: The online behaviour of the Bibliometrics community. *Journal of informetrics*, *12*(2), 494-509.

McAllister, J. T., Lennertz, L., & Atencio Mojica, Z. (2022). Mapping a discipline: a guide to using VOSviewer for bibliometric and visual analysis. *Science & Technology Libraries*, *41*(3), 319-348.

Miranda, C. C. D., Braga, D. S., & Cavalcanti, A. P. C. (2022). Do school libraries and reading rooms matter for student learning?. *Educação e Pesquisa*, *48*.

Moral-Muñoz, J. A., Herrera-Viedma, E., Santisteban-Espejo, A., & Cobo, M. J. (2020). Software tools for conducting bibliometric analysis in science: An up-to-date review. *Profesional de la Información*, *29*(1), 1-20.

Rafi, M., Jian Ming, Z., & Ahmad, K. (2022). Estimation of the knowledge management model for performance measurement in university libraries. *Library Hi Tech*, *40*(1), 239-264.

Ramos Eclevia, M. (2022). Librarians' competencies in teaching information literacy in the online environment. *Journal of Library & Information Services in Distance Learning*, *16*(1), 2-19.

Simmons, H. & Reynolds, L. (2022). *Professional development for librarians: Adapting to a changing landscape. Journal of Library Administration, 62*(1), 1-21.

Singh, J., Steele, K., & Singh, L. (2021). Combining the best of online and face-to-face learning: Hybrid and blended learning approach for COVID-19, post vaccine, & post-pandemic world. *Journal of Educational Technology Systems*, *50*(2), 140-171.

Smith, J., & Darrow, L. (2021). *Collaboration between librarians and teachers to enhance student literacy. Journal of Literacy Research, 53*(2), 175-194.

Su, Y. S., Lin, C. L., Chen, S. Y., & Lai, C. F. (2020). Bibliometric study of social network analysis literature. *Library Hi Tech*, *38*(2), 420-433.

Subramaniam, M., Scaff, L., Kawas, S., Hoffman, K. M., & Davis, K. (2018). Using technology to support equity and inclusion in youth library programming: Current practices and future opportunities. *The Library Quarterly*, *88*(4), 315-331.

Suwarto, D. H., Setiawan, B., & Machmiyah, S. (2022). Developing digital literacy practices in Yogyakarta elementary schools. *Electronic Journal of e-Learning*, *20*(2), 101-111.

Todd, R. J. (2021, February). From learning to read to reading to learn: School libraries, literacy and guided inquiry. In *IASL Annual Conference Proceedings,* pp. 1–18.

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700

Van Eck, N., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *scientometrics*, *84*(2), 523-538.

Widiyanto, W. (2023). Perpustakaan digital dalam pendidikan tinggi: Analisis bibliometrik. *Jurnal Sastra Indonesia*, *12*(3), 234-242.

Zhou, Y. X., Cao, X. Y., & Peng, C. (2022). A bibliometric analysis of the 100 most-cited articles on curcumin. *Frontiers in Pharmacology*, *13*, 963032.

DOI: https://doi.org/10.17509/pdgia.v21i3.65088
p- ISSN p. ISSN 1693-5276 e-ISSN 2579-7700