







## A comprehensive bibliographic analysis of environmental education research in Russia

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### Abstract

This paper presents a detailed and insightful bibliometric analysis of environmental education research in Russia offering an integrated view of progress, impact and main actors of the field. Fundamental information was gained from journal articles, conference papers and other significant academic distributions that were included in the Scopus database. These included measurements involving issues like distributions and references/year, neighboring country comparisons, authorship patterns, affiliations and sources of financial support etc. The analysis of Russian exploration of environmental education presented in the paper provides an outline for further work in a crucial area Russia can be effective here, drawing on its experience with this demand to contribute to the development of environmental education and global sustainability efforts in general.

**Keywords:** environmental education, Russia, bibliometric analysis, Scopus database

### INTRODUCTION

According to Shutaleva et al. (2020), environmental education in Russia involves the building and development of a student's environmental outlook based on scientific knowledge, environmental culture, and ethics. This is aimed at implementing the principles of sustainable development and is treated as an integral component of quality education (Masalova, 2020). Anisimova et al. (2020) emphasized environmental education in Russia towards development of students' meta-subject skills and competencies for sustainable development goals. Tilbury (1995) points out that the philosophical roots of the country's development, the technological, social, political, legal, and cultural factors, have impact on the content of environmental education. Mingazova (2014) indicates that in building continuous environmental education in Russia, the definition of its essence is essential, examination of social conditions and policies, creation of coherent system, and establishment

of institute of continuing environmental education. Studies on environmental education in Russia mainly target the dissemination of ideas, civic dialog, specialized knowledge, and the training of teachers in the area (Kasimov et al., 2002).

The progress of environmental education in Russia is oriented towards the shift from general environmental awareness towards "sustainable education" and involves the incorporation of ecological, economic, and social dimensions into the school syllabus. In Russian universities, they perform eco-friendly acts, but it's important to increase pupils' consciousness as well as their involvement in environmentally beneficial actions (Kasimov et al., 2011). Russia's environmental education concentrates on the development of students' attitudes towards and understanding of the environment from a long-term perspective. Russia developed a national strategy of education for sustainable development aiming at problem-solving skills (Verbitskaya et al., 2002). Sustainable development conceptually applied is

### Contribution to the literature

- This paper evaluates ways in which different parts of the Russian Federation integrate environmental education into local curricula to tackle specific problems, thus, presenting information that can serve as a basis for the content that will be understandable and relevant for different areas.
- This study investigates the two subjects such as earth science, and geography with the environmental education, which would develop more consolidated knowledge for students.
- This review deals with the issue of successful collaboration between the government and educational establishments aiming to reveal the efficient formats of partnership, which purpose is improving the environmental education impact in Russian context.

reflected in numerous subjects and lectures across different school and university educational programs (from primary to postgraduate levels) with various foci as stated by Ali and Anufriev (2020).

There is an acknowledgement of the necessity to adopt an environmental safety discipline in schools, as well as a readiness among the people to learn competencies targeted at modifying human influence on the environment. Besides this, non-Marxist traditions in Russian philosophy impact the intellectual underpinning of environmental education in Russia according to Zakharova et al. (2015).

This bibliometric study covering environmental education studies in Russia between 2013 and 2023 is a time period because with the growing needs for environmental matters in both international global scale level as well local situation. Russia being a country with high and varied natural resources finds unique environmental problems that demand understanding of the part played by research work as well in instructional materialization provide state ecological education. The study targets to systematically analyze the literature related to environmental education within Russia over a certain time frame so as it can determine various key aspects such as identifiable trends, gaps and areas of emphasis in Russian environmental education research. This analysis is vital in bringing policymakers, educators and researchers to be aware of the current state about knowledge outlining areas that need more investigation or intervention points towards contributing effectively into environmental education and conservation strategies Russia.

The issue on which the bibliometric study of environmental education in Russia between 2013 and 2023 focuses is that consistently an effort should be made to decisively determine what has been achieved as far as research output concerning this field by a particular number of years. The quantity orientation of the analyzed environment education research articles is also specified.

The variety of environmental education formats is a global phenomenon. Countries decide what kind of learning approach they will use based on the interaction of cultural, social, and environmental factors in their country. Study in Sweden and Norway Scandinavian

countries provides such an environmental education, where special outdoor learning, sustainable and eco-practices and nature bound there is widely considered. (Remmen & Iversen, 2023). On the one hand, Asian countries like Japan incorporate eco-education as a given part of their formal education incorporating subjects like science and social studies along with students' participation in environmental projects according to Nomura (2017).

Lately, the recent moving to Africa and its development, Kenya has shown commendable strides in environmental literacy, infusing it in the nation education system to deal issues of deforestation and wildlife. For instance, the Maasai wilderness conservation trust in Kenya devises programs about taking care of the environment through educating communities on sustainable land use methods as stated by Nyatuka (2020).

North America without doubt has Canada standing out for its holistic environmental education schemes (Stern et al., 2014). For instance, joining classroom learning with outdoor activities clarifies concepts of ecosystems, global warming, and conservation in British Columbia. The United States applies a diverse approach through groups and provides resources for environmental education.

Another example is projects involving direct hands-on learning about the environment. In the South American context, Brazil has made environmental education as a priority by means of programs such as the green citizenship project, building up the citizens' awareness of sustainable practices. Amazon environmental education center in Brazil repairs the rainforest and nearby communities about forest preservation (Briggs et al., 2018).

Finally, Europe has Germany, where like in Denmark, environmental education is emphasized by incorporating sustainability and ecological responsibility in education system. One of the ways through which the European Union is promoting environmental education is the eco-schools program, which has multiple European countries on board and appeals to those practices that are environmentally responsible in school institutions (Acosta Castellanos & Queiruga-Dios, 2022). While in comparison Russia has

paid increased attention on environmental education as a significant component in recent years.

### Objectives & Importance of Study

The primary objectives of the bibliometric research on environmental education in Russia from 2013 to 2023 are highly significant compared with several other studies carried out earlier. Further, the paper is meant to do a bibliometric review and analysis of this body of literature, which has been developed in order to write about all aspects that were done from our stated period forward. This encompasses determining the number and kinds of publications, including research articles, reviews and conference about international congress on environmental education. This study attempts to measure the quality and implications of those articles using bibliometric metrics such as citation counts journal impact factors etc. This analysis will also provide a graph of the influential works and researcher, plus in denomination to showing cooperation within these scholars. The study seeks, in the third place, to draw conclusions by synthesizing bibliometric findings in order to find out growing trends and topics lacking attention or requiring further research within environmental education as possible hotspots associated with Russia. It is also important to inform policymakers, educators and researchers about the state of present knowledge in this field with a view to developing strategies that will purge administration, which environmental education advancement.

### LITERATURE REVIEW

Many studies focus on environmental education research in Russia. These studies explore the possibility of introducing environmental education into Russian education, especially the federal state education standards for general and higher education (Crotty & Hall, 2014; Frolova, 2019; Shutaleva et al., 2020; Yachina et al., 2018). Environmental education research in Russia developed later than in the United States, Canada, the United Kingdom, and Western Europe, but according to Gilmiarova et al. (2000) environmental education studies have shown a great development in the past decade.

Annan-Diab and Molinari (2017) focused on sustainable development part of Russian advanced education, including abilities to evaluate real issues, identify consequences from research of scholars. Similarly, Kankovskaya (2016) dissected the development of the concept of sustainable development in the Russian high education and revealed problems with its development. Likewise, Ryazanova et al. (2021) pointed out the feasibility and necessity for transversal educational courses of master scholars and preceptors of new education about the themes of the environmental education by enforcing education for sustainable development.

Santana and Obara (2017) suggested that the part of environmental education is vital for considering society, environment, biodiversity and sustainability. It is about conforming oneself to others, difficulties in interdisciplinary combination and need of public programs in environmental education to according to Shimlina and Suvorova (2018). for the environmental education models in Russia and Kazakhstan in the context of sustainable development. This analysis discusses of the duration of sustainable development about environmental education in Russian education system involving environment- acquainted systems. Moreover, after that there are numerous studies of sustainable development in Russia in the literature (Ilina & Brazhnik, 2021; Kulikova et al., 2021; Salimova et al., 2015; Verbitskaya et al., 2002).

Anufrieva et al. (2020) explored content material and philosophical basis of environmental education in Russia, while technological, social, political, felony, and cultural factors are examined. Khetagurova and Bryukhanova (2015) consider the establishment of continuous environmental education in Russia, the socio-economic circumstances, policy implementation, and a unified device's status quo. Moreover, Balashova and Khabibulin (2019) aimed at assessing the usefulness of the environmental education of primary school students in the Vologda Region of Russia. In a similar way, Griazev et al. (2020) looked at the realization of environmental education and its use of virtual skills and capabilities to solving contemporary environmental problems. Furthermore, the study conducted by Sigareva et al. (2018) concluded the importance of environmental education on mining engineers' schooling in Russia.

The other line of research is the effectiveness of teaching engineering towards humans, specifically the competencies of engineering graduates in relation to the industries demands (Yakubov & Luchinkina, 2021). Additionally, Mingazova (2014) reported the use of dynamic learning strategies in environmental training in Russian universities including simulations and enterprise games. Aside of this, Silantiev et al. (2020) highlighted important features of environmental education and the establishment of ecological culture among school youths and argued that education makes senses of living, not the set of knowledge and skills. Kartseva et al. (2021) referred to the environmental education of generation Z students inside the Luga District of the Leningrad Region in Russia in another study. In like manner, Aleksashkina (2018) emphasized on environmental education in institutions and their role of shaping younger generation's values and attitudes towards environment.

Bondaletova et al. (2018) stated that the need for new system approaches to design and formation of modern educational principles, categories, standards, and pedagogical tools in Russia. Thus, Ursul and Ursul

(2018) mentioned that environmental education in Russia is primarily focused on ecological vision and needed clearer development direction at the official level. In a similar way, Khetagurova et al. (2016) discussed the importance of continuous ecological education in Russia and the need for a united system of ecological education. Besides this, the first results of the implementation of the initiative project realized by the employees of the ecological faculty of the RUDN-University are presented as discussed by Khaustov et al. (2017), which is aimed at obtaining information on the environmental situation and the main sources of impact on the territory of the campus. Studies cited most often in Russian bibliometric studies of environmental education include publications devoted to the ecotourism potential of Russia, thematized on the regions such as North-West, Altay Mountains, Lake Baikal and Kamchatka (Agbesi, 2023). The articles increase the knowledge on ecotourism's trends in Russia is still a society-oriented study field, where research should be conducted since these studies are not enough to expand according to Arias-Chávez et al. (2022). Besides the internationalization, foreign student mobility and acculturation challenges that have been investigated in previous publications on intercostal among Russians general public (Ioseliani et al., 2023).

## METHODOLOGY

The methodologies used for data gathering, data coding, and data analysis in our bibliometric study of environmental education research in Russia were explained in this section. In the dynamically developing period from 2013 to 2023, environmental education studies in Russia went through a significant reconstruction. During this period, a lot of research was conducted on environmental sustainability conservation and introduction of environment principles in school curriculum. Environmental education was discussed by scholars in many areas, including curricular development as well as teaching methodologies and the influences from environmental education on public cognition or behavior. Also, technological approaches to environmental education became prevalent since researchers aimed at novel means of attracting the learners and encouraging them towards preservation.

### Data Gathering

The current study was limited to scholarly research on environmental education in Russia. Various statistics were also collected from the Scopus database, which was a collection of important statistics from journal articles, conference papers, and other relevant scholarly works.

The Scopus database was selected to exclusively use it in the study since this database covers a broad range of scholarly literature from various disciplines among them environmental education. It is the Scopus database

that made a great name for itself with its extensive indexing of journals, conference proceedings and other scholarly publications; offering researchers plenty of sources. Further, the Scopus database offers various effective search and analysis mechanisms peculiar for the requirements of this study. Even though other databases such as Web of Science provide extensive coverage, the choice to limit oneself exclusively on the Scopus database was based on relevance of attention and literature in scope. This method can provide a more focused analysis that goes beyond simply comparing different databases. The Scopus database is widely recognized for its vast coverage of scientific literature, such as journals patents and conference proceedings associated with different areas in science the reason it is suitable to do comprehensive bibliometric analyses. Further, through the Scopus database in the researcher has access to sophisticated search and data analysis tools that facilitate fast point cloud retrieval necessary for dealing with big datasets present in bibliometric analyses. Secondly, the coverage of the Scopus database is more diverse international leading to it becoming particularly suitable in studying how research has developed on Russia, but they were published outside their native country. All in all, the Scopus database qualities of comprehensive coverage, powerful search functions and wider geographical implementation render it a preferred source for bibliometric analyses such as this one.

In searching for relevant papers, we developed a sophisticated search method and used English phrases in our search strings as including "environmental education", "OR" "ecology education" "AND" "Russia". Published information was searched and obtained from the selected databases. The facts were exported similarly in predefined CSV form. The first involved removing duplicated records, removing superfluous items, and correcting and resolving any inconsistencies in the dataset.

Initially, a search with the keyword as stated above in the Scopus database gave 4,697 studies. After narrowing this number to studies that were conducted in Russia, the result was 138. Second, a bibliometric analysis of the 128 studies published in English language from within the period between 2013 and 2023 is chosen. Since the number of studies written in Russian language in the Scopus database is very small, it is not included in this study.

### Coding of Data

To capture critical information from every publication, an entire coding schema was developed. Variables in this schema included title, author(s), publication years, journal/source, keywords, distributions and references/year, comparisons with neighboring countries, authorship patterns, affiliations,

distribution sources and sources of financial support. The dataset was changed to be coded manually for the usage of the described schema. Every article turned into examined, and pertinent information turned into noted. To ensure consistency, a portion of the facts became cross validated by means of impartial coders. To ensure coding uniformity and correctness, ordinary great assessments have been achieved. All differences have been ironed out via conversations and consensus between the various developers.

### Data Analysis

Basic data including a variety of publications through the years, the maximum prolific writers, and the distribution of the publications amongst journals have been calculated. The keywords used in the papers have been tested to discover unusual subject matters and developments in Russian environmental education research. Citation statistics has been used to evaluate the impact of publications as well as to identify prominent studies and authors inside the location. Author affiliations and co-authorship networks have been investigated to discover research collaborations interior Russia as well as with overseas companions. To gain a better understanding of examine content material and techniques, a quantitative analysis of decided on guides changed into done. To visually constitute our discoveries, we applied a numerous array of fact visualization methodologies, along with charts, graphs, and network diagrams. The importance of our bibliometric analysis for the location of environmental education in Russia in context of our studies questions and pursuits have been discussed. This approach phase offers a clear and systematic evaluation of processes applied to behavior bibliometric analysis, assuring studies approach transparency and repeatability.

The bibliometric research on the environmental education in Russia developed during the period from 2013 until 2023 used PRISMA (preferred reporting items for systematic reviews and meta-analyses) model as its methodological framework, where data collection was conducted. As known, PRISMA is used to carry out the systematic literature reviews systematically—particularly in bibliometric studies. It offers a systematic way of selecting pertinent studies according to predetermined rules, filtering them using specific criteria, and characteristic data extraction; concludes with the synthesis of findings. In proceeding according to PRISMA guidelines, this study sought at transparency in regards to a process of evaluation for addressing specifically pertinent body literature dedicated towards environmental education from Russia within the fore mentioned span.

## RESULTS

### Number of Publications & Citations per Year

The evaluation of a wide variety of guides and citations in line with years inside the context of the environmental education studies in Russia paints a brilliant photo of the country's evolving landscape of environmental education research. Studies output on this sector has visible a sizable growth in latest years through analyzing the records attentively. In 2013, there were simply two articles, and not using citations. But successive years saw a steady and big rise in publications, culminating at 27 in 2019, demonstrating a rising hobby and dedication to environmental education a few of the Russian instructional community.

Citations began with one reference in 2015, and the number has regularly extended in line with the growth in courses. The link between publications and citations shows Russian environmental education research' growing significance and reputation. The quantity of citations had improved to 92 through 2021, demonstrating the increasing international significance of these studies.

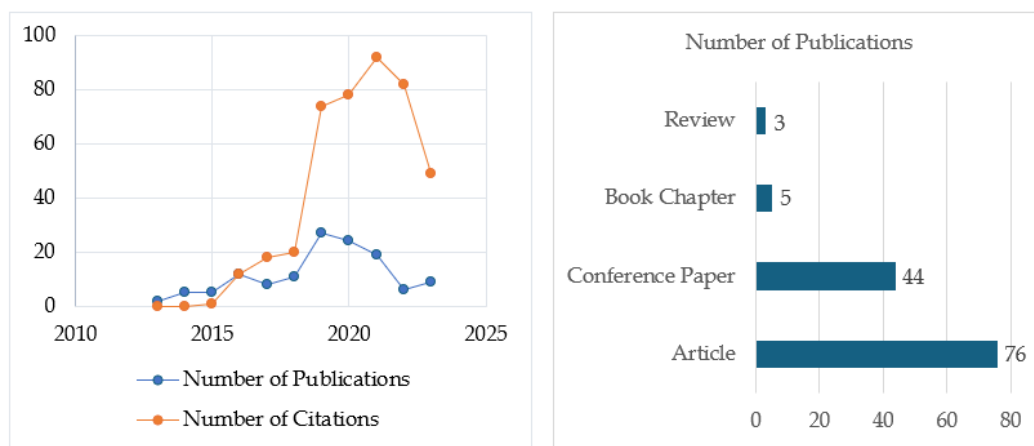
It is important to highlight the oscillations found in 2022 and 2023, with a decrease in each article and citation. Although, the general trajectory depicted in these records highlights Russian scientists' most important contributions to the area of environmental education, as well as the expanding global resonance in their paintings. This research now not the handiest counts instructional production but additionally shows the impact and global exposure of environmental education studies in Russia, thereby supplying widespread insights to the bigger communication in this important problem.

**Figure 1** indicates number of publications and citations with percentages of publication types.

### Comparison of Number of Publications & Citations in Russia Between Neighboring Countries

Russia has published 128 articles and received 427 citations with an average of 3.33 citations per publication. Its eastern neighbor China has 276 publications that have garnered 3858 citations, this giving an average of 13.98 citations in every article. Turkey has 166 publications and 1,177 citations, averaging 7.09 citations per article as it moves west. Finland, a neighbor to the north, has 59 articles with 1,024 citations, averaging 17.35 citations per publication, demonstrating their significant effect on research.

Finland's (one of northwards neighbors) has 59 articles containing 1,024 citations, with average of 17.35 citations per publication, signifying their substantial impact in the research. For instance, Norway has an average of 7.81 citations per article and Kazakhstan has an average of 1.83 citations per article. Russia



**Figure 1.** Number of publications & citations per year with percentages of publication types (Source: Authors’ own elaboration)

**Table 1.** Comparison of number of publications & citations in Russia between neighboring countries

| Country    | Number of publications | Number of citations | Number of citations per number of publications |
|------------|------------------------|---------------------|--|
| Russia     | 128                    | 427                 | 3.33   |
| China      | 276                    | 3,858               | 13.98  |
| Turkey     | 166                    | 1,177               | 7.09   |
| Finland    | 59                     | 1,024               | 17.35  |
| Norway     | 32                     | 250                 | 7.81   |
| Kazakhstan | 18                     | 33                  | 1.83   |

significantly differs from its neighbors in terms of publications and citations.

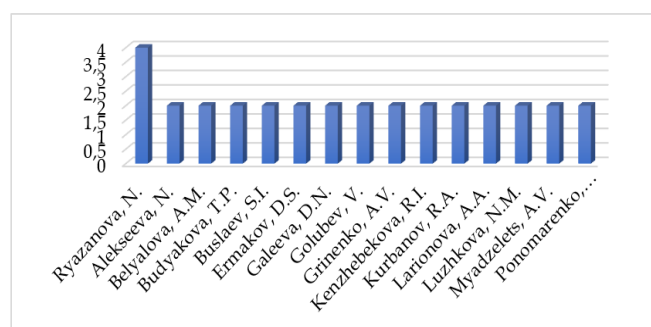
**Table 1** shows this, indicating that a much larger proportion of Finnish research is cited than Russian or other countries’ research.

**Publications by Author**

Ryazanova, N. emerges as the most prolific author in Russia’s research landscape in environmental education, with a total of four publications. Ryazanova, N. is a major character in the academic debate around environmental education because of her strong and continuous dedication to study in the topic.

The analysis also identifies a group of authors, including Alekseeva, N., Belyalova, A. M., Budyakova, T. P., Buslaev, S. I., Ermakov, D. S., Galeeva, D. N., Golubev, V., Grinenko, A. V., Kenzhebekova, R. I., Kurbanov, R. A., and Larionova, A. This group highlights the collaborative and multidisciplinary character of environmental education research in the nation by representing a sizeable cohort of scholars with a noteworthy presence in the area.

The sort of authors and their individual publication histories highlight the intensity of Russian environmental education studies. It implies that many students with specific specialties and hobbies are involved in this subject matter, in place of just a small wide variety of critical contributions. The authors’ differing numbers of publications additionally point to viable regions of competence and uniqueness within the greater popular area of environmental education.

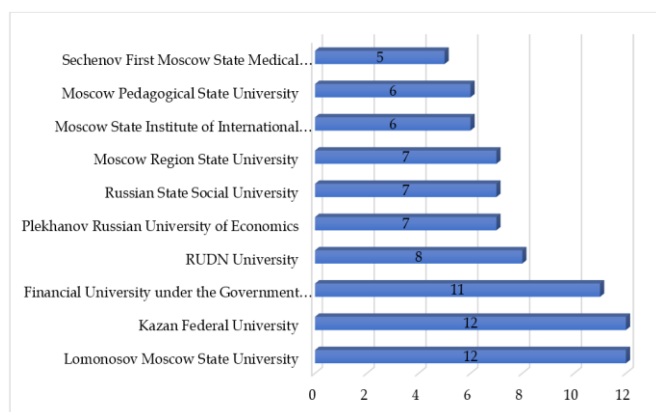


**Figure 2.** Number of publications by author (Source: Authors’ own elaboration)

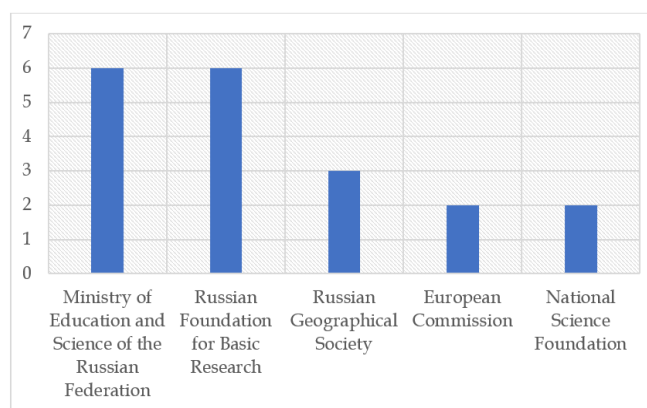
In conclusion, the bibliometric evaluation of the wide variety of publications made by means of the authors in this paper emphasizes how lively and developing environmental education studies are in Russia. The inclusion of a substantial wide variety of writers with enormous contributions demonstrates the wealthy tapestry of studies and expertise on this important topic, although Ryazanova, N. leads in phrases of publishing output. A dynamic instructional community dedicated to developing environmental education in Russia may be seen in the diversity of authors (**Figure 2**).

**Publications by Affiliations**

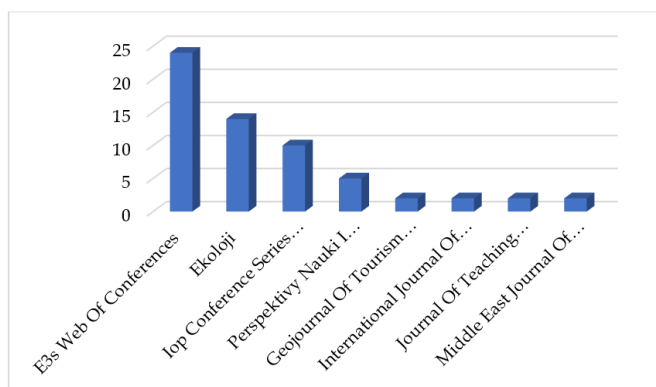
This paper looks at the issue of quantitative publications by affiliation and it reveals high concentration of research output within a few academic institutions (**Figure 3**). Most significant contributions were made by two universities, Lomonosov Moscow



**Figure 3.** Number of publications by affiliation (Source: Authors' own elaboration)



**Figure 5.** Number of publications by funding sponsor (Source: Authors' own elaboration)



**Figure 4.** Number of publications by source (Source: Authors' own elaboration)

State University and Kazan Federal University, that have produced 12 publications each in environmental education. To mention but a few, Financial University of the Russian Federation government follows closely with 11 publications. The fact that this institution is research oriented emphasizes the need to enhance environmental education in Russia.

In addition, RUDN University, Plekhanov Russian University of Economics, Russian State Social University, Moscow Region State University, Moscow State Institute of International Relations MGIMO, Moscow Pedagogical State University, and Sechenov First Moscow State Medical University provide substantial contributions highlight Distribution of publications in terms of affiliation reveals aspects of the institutional processes and information transmission on the subject of environmental education in Russia.

### Publications by Source

The paper analyses the number of publications by publishing source to show a broad landscape of academic dissemination in the area of environmental education (Figure 4). A notable resource, with its 24 publication, E3S Web of Conferences contributes significantly to promoting the distribution of outcome studies in the sector. The journal Ekoloji is additionally

monitored by 14 publications, which demonstrates its significance as a forum for environmental education research. The conference proceeding publications in the IOP Conference Series Earth and Environmental Science contribute ten articles to the literature of this discipline. The environmental education research has a multidisciplinary and international character, as reflected in the smaller but valuable contribution of publications from Perspektivy Nauki I Obrazovaniya, GeoJournal of Tourism and Geosites, International Journal of Environmental and Science Education, The Russian environmental education research is wide in the mix of its published sources. It clearly reflects the collaborative nature of the research as the experts are communicating their findings through a variety of platforms and venues.

### Publications by Funding Sponsor

Many funding assets that have helped to progress environmental education research inside the nation are highlighted through an examination of the wide variety of courses via funding sponsors in this text (Figure 5). Drastically, the Russian basis for fundamental studies and the Ministry of Schooling and Science of the Russian Federation have each subsidized six publications and feature similarly performed critical roles. This demonstrates how dedicated domestic resources are to advancing sector's studies and innovation. Moreover, Russian Geographical Society has contributed notably to development of environmental education studies with its three publications. Internationally, publications every from the European Union fee and the country-wide technological know-how basis imply the presence of out of doors investment sources, pointing to a collaborative method for studies on environmental education with worldwide partners. This type of investment asset exemplifies the various gadget of assist that underpins environmental education studies in Russia, with both country-wide and global businesses contributing to the enlargement and development of this essential region.

## DISCUSSION

The present paper offers a comprehensive examination of the situation with the Russian environmental education research that highlights main features of this sphere of inquiry. One of the vital points raised in the article concerns the rate of the publications and citations per year. This study provides insights into the evolution and productivity of environmental education research across time.

Increasingly, the importance and impact of this issue is being evaluated through the trend of publications and citations. This enables us to pinpoint periods when environmental education was particularly important and when it reached its peak in terms of research activity. Additionally, it looks at the figures of publication and citation in Russia comparing with neighboring countries. This kind of comparison would be quite helpful in grasping the extent of Russia's scholarly contributions into environmental education when compared with other neighboring countries. In this way it would identify those Russian segments for which Russia is better or worse as compared to other countries facilitating co-working and information exchange.

The other significant aspect addressed in this essay is publications of authors. This allows for analysis of how other authors have responded and influenced environmental education by providing information about some of the thought leaders involved in shaping the process. Identifying such renowned authors can influence the future direction of research and result in mentoring within the field. Various affiliate journals also publish information about such institutions participating in environmental education research. This may help locate areas that require more funding or cooperation and expertise centers. The publications by source study highlights the most popular platforms or journals, where Russian scholars publish their work. Academic researchers and policy-makers will benefit enormously from this data because it can aid in influencing a choice of journals, targeting audience and methods for publication. Finally, a glance at "publications by funding sponsor" discloses the funding sponsors that contribute to environmental education research in Russia. This explains why government, private donors and international organizations are involved in this research. The financing landscape might help academics get a hold on possible funding for their own work and advise policy makers of the parties involved while deciding the path of the environmental education research in the country.

The present study is a bibliometric overview of environmental education research in Russia, which allows for thorough insight into the development of this field, its impact, as well as main players involved. Various metric was used to evaluate the situation,

including publication on annual basis as compared to similar countries, authorship pattern, area of study, and source of funds, among other thing leading to the development of a wide perspective view on state of environmental education research in Russia. Researchers can use this information to plan future research, partner with others, and advocate for policies that promote environmentally friendly education and development in the region.

A bibliometric study on environmental education in Russia between 2013 and 2023 would contribute to the concept of sustainable development by giving new impetus for studying relationships, growth, shaping dynamics as well as impacting rural children's environment with adequate information about how their physical world looks like (Yang & Xiu, 2023). It would allow for defining the impediments and opportunities to sustainable development of science in Russia, including resolution on institutional traps. Moreover, the study could uncover the existence of sustainability on in tourism grooming and mainly economic as well social matters according to Araújo-Vila et al. (2023). It might also analyze the development of research about teacher education for sustainability, themes and educators' involvement in developing awareness respondents with enlightening on living a sustainable life (Saraf & Kumar, 2023). Analyzing the trends and themes in these studies under discussion, part of bibliometric study is useful for developing recommendations concerning contribution to approximately promotional sustainable development on environment within Russian education.

## CONCLUSIONS & IMPLICATIONS

In short, this bibliometric analysis is instructive as it reveals some interesting indicators on the situation with environmental education in Russia. This item offers an extensive assessment of improvements, importance, and actors within the geographical area at the level of much research effort. The analysis of the number of references and citation per year provides a chronological perspective for the development and impact of environmental education studies. This is an historic record that helps the researchers locate intervals of specific significance and production. Such a record provides great input for coming up with future research agendas and priority areas. It is essential to analyze how research on environmental education in Russia relates or competes with similar work done by countries that surround Russia regionally internationally. International cooperation in terms of sharing statistics can address a common environmental challenge, with areas/specialties, where countries could collaborate identified.

Researcher influencers who are influencing the conversation in environmental education are highlighted in the study of publications by author.



Mentoring programs may be directed, and a new generation of subject matter experts can be developed by identifying these thought leaders. Publications with the aid of affiliations offer insight into the Russian academic climate for environmental education research. To further the targets of environmental education, identifying top establishments can help in extra efficaciously allocating assets and fostering relationships between academics, authorities, and business.

Through supply, guides analysis informs researchers about the most appropriate channels for sharing their work, aids in strategic publication decisions, and enhances the impact of their work. The proof of vital players funding environmental education research in Russia are through the examining of books through sponsor. There are many researchers seeking funding and policymakers interacting with investment agencies on health research goals with nearby, country-wide, and worldwide environmental goals. Recognizing notable writers in the subject can enable mentorship and capacity building. Young researchers benefit from the sharing of information and expertise from more experienced professionals, thus fostering development of a strong environmental education research community. The data on research publications by affiliations can be used to assess the success of environmental education research by institutions. This may lead to universities and research centers to invest strategically in interdisciplinary collaboration, faculty development and research infrastructure.

Thus, they can select the most appropriate journals or platforms for disseminating their work by having an insight into the most popular sources of publication within the subject. It can also serve the needs of environmental education studies in guiding editorial picks and journal policies. The policymakers' findings on investment sponsors can be used to interact with stakeholders in the environmental education field. Such harmony can bring research priorities closer to the national and international environmental legislations and objectives, which later become the basis of proof-based policy components. The increased profits and efficiency in environmental education research in Russia can make the country a leader in combating global environmental challenges. Management can enhance involvement in global environmental agreements, campaigns for sustainable practices, and spreading knowledge to the global system. Being aware of key members and sources of information within the discipline can facilitate effective goal outreach efforts. Sustainable growth is unthinkable without environmental education. They can also enable Russia to align its research activities more with these intentions, so that study outputs add to the larger sustainable development agenda. In essentials, the results of this bibliometric study are aimed at increasing it outside of lecturers. Such impacts could result in studies funding,

choices of legislation, collaborations among different countries, and public campaigns targeting environmental issues affecting Russia and the world generally. The results of this study can be used to increase environmental education and Russian role in global sustainable initiatives.

Lastly, the articles thorough review of Russian studies on environmental education provides a map for future initiatives on a critical area. This briefing provides the necessary information to facilitate collaboration, efficient resource allocation, and the growth of environmental education and sustainability initiatives in Russia to the teachers, policymakers and institutions. Bibliometric studies have shown the problems and opportunities that the state could address to enhance the role of playing on the national and global levels. Some distance-achieving consequences of conclusions reported in this article can influence the fate of environmental education studies and policy in Russia and beyond. Prioritizing research may be aided by annual review of publications and references. It can help investment companies as well as agencies to channel funds into environmental education aspects that are the most prosperous and effective. This ensures that research goes towards the most critical environmental questions. When Russia's performance is compared with that of neighboring countries, then international cooperation is possible.

In the light of this study, several research gaps are specified that provide a glimpse to future avenues and implications for both theories as well practice. First of all, the analysis shows that more research is required into particular areas within environmental education in Russia including relative efficacy on different approaches to teaching and learning as well as how individual's behavior changes due to receiving certain knowledge about environment from their teachers. Making a greater connection between levels by regarding specific subject matters makes another source for future studies concerning studying this area also soon becomes apparent. These gaps, in their turn show that there are further opportunities for these areas to be studied by future research projects, which will develop more detailed analysis of environmental education and Russian context. The study also alludes to the inadequacy of longitudinal studies that overwatch a long-term outcome, environmental education programs whose insights might be useful while researching sustainable interventions.

As to the future perspectives of this study, it is recommended that there should be collaboration among various researchers across many disciplines as a way of responding effectively on challenges in complex environment. A combination of the educators, environmental scientists, policymakers and other stakeholders interest groups would produce a more contextualized approaches insofar as strategy for

development seeks. Additionally, this study shows the necessity for studies, which focus on technology in environmental education environments because of a high level of digital programs among teaching.

Theoretical contributions of this study may stem from the utilization, which could be done in contributing to some theoretical frameworks for environmental education aided by certain key themes, trends and gaps identified within existing literature. This may provoke the improvement and development of theoretical schemes to reflect finer details of environmental education in Russian forms. In terms of application, the results from this study could be practically used to support development or environmental policy and practice based on evidence. Thus, by clarifying what works well and to a lesser degree it seeks improvement the study will guide educators, policymakers and practitioners in developing more effective environmental education interventions. In summary, this research not only gives wide information about the state of affairs in current circle but also brings new explanations that will guide to construct a detailed picture for future environmental education in Russia.

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