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A Bibliometric Analysis of Outdoor Education

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Abstract: The aim of this study is to map the thematic landscape of studies on outdoor education. Our process focuses on the following research question: What are the emerging topics in studies on outdoor education? Bibliometric data retrieved from the WOS database, which consists of 555 scientific publications with the keyword "outdoor education" and indexed in SCI-Expended, SSCI, A&HCI, CPCI-S, CPCISSH, BKCI-S, BKCI-SSH or ESCI, was analysed using the descriptive analysis technique. Analysis of the results revealed that there are 10 different types of publications on outdoor education and the most frequently used type is scientific articles, with 365 examples. Keyword network mapping showed that "outdoor education, environmental education and outdoor learning" were terminologies that stood out the most. The analysis of the data was visualized by VOSviewer (Version 1.6.9) visual mapping program and presented with tables and density maps in the findings section. As a conclusion, the study puts forward the main concepts that require particular attention from the outdoor educators. In addition, we hope and expect that the thematic concepts, country distribution of articles and outlining the highly cited studies of this field will contribute to paving the way for future research and identifying the gaps in the literature. This study aims to pinpoint the leading and emerging topics within the outdoor education research field, which has great importance both for the theory and practice of outdoor education.

Keywords: *outdoor education, outdoor learning, bibliometric analysis, environmental education.*

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1. Introduction

The educational paradigm of 21st century calls for taking uniqueness of individuals into account, developing unique potentials, and seeking for the necessary conditions to realize these individual abilities. Among the conditions of self-realization is outdoor education. The word nature is rooted in French, originating from the Latin "nasci", which used to mean "to be born" or "to emerge" in the past. "Nature can be described as showing great color and diversity in terms of living and non-living elements, effecting and being effected, causing change and being changed and possessing the power to create and regenerate, to form and to exist without human influence; having its own mechanisms and laws; covering a wide variety of elements, phenomena, entities, relationships, interactions and processes; an open system with uncertain boundaries". "The nature we see is a product of synthesis. Processes of different disciplines have worked together, interacted with each other and as a result, different ecosystems and different landscapes were formed. Each landscape reflects a different synthesis". Based on these definitions, we can suggest that nature is a self-contained system consisting of entities that interact with one another (Birinci, 2013).

Outdoor education includes certain educational resources, forms and methods which are not based on transferring knowledge by means of theoretical methods, but instead by mediation of actual experiences (Jirásek & Turcova, 2017; Yildiz, 2021; Yıldız et al., 2017). For the concept of outdoor education, Donaldson and Donaldson (1958) suggest the following definition: "Outdoor education is education in, about and for the outdoors." Similarly, outdoor education is also defined as a learning system that includes adventurous activities to encourage personal and social growth (Fiskum & Jacobsen, 2013). In recent years, the term and its implications has attracted much attention, especially due to the variety in its scope. For instance, trips were included in outdoor education and other practical activities from such trips were argued to be a great way to show the correlation between knowledge and real life. Outdoor education also enables individuals to raise their awareness on environmental issues, take responsibility and develop strategies to solve these problems (Kıyıcı et al., 2014).

Examining the research from a particular discipline within a given period of time is of great importance not only because it helps observe the progress of the field in question, but also because it allows one to see the changing gravity of topics under consideration (Kozak, 2003). It is for this reason that this study prefers a bibliometric analysis. This method allows one

to review research on certain topics, the sample selected in these studies, their scope, and other cited articles. Bibliometric analysis is a method useful for summarizing the literature by measuring certain indicators (Thelwall, 2008). For field research, bibliometric studies are accepted as the product of a process that includes data collection from authors, journals, countries, research areas, keywords, and citation analysis (Deng et al., 2009). In other words, bibliometric analyses are useful tools to reveal the current literature in a particular research area and include quantitative as well as visual means to identify patterns and dynamics of scientific publications (Wang et al., 2016). The objective of bibliometric analysis is to demonstrate the general structure of the area or field, starting with the key concepts in use. It is the aim of this study to make a bibliometric analysis of research on outdoor education between 1950 and 2021.

2. Methods

This research is designed as a case study, which is a type of qualitative research method, in order to determine the current situation of the "outdoor education" field among academic publications. The data is collected by document analysis. The purpose of case study research is to evaluate the results of a particular case, or of cases collectively within their own limits. Document analysis, in return, is a method to analyze the sources of written information about the target area in detail, especially when it is not possible to observe or conduct in-depth interviews (Yıldırım & Şimşek, 2018).

2.1. Procedure

A bibliometric analysis was performed in the Web of Sciences database using "outdoor education" as the primary keyword. Both the titles and the content of publications that are available in the Web of Sciences database, covering between 1950-2021 and indexed under SCI-Expended, SSCI, A & HCI, CPCI-S, CPCISSH, BKCI-S, BKCI-SSH and ESCI are searched for the abovementioned keyword. Scanning the database, there were a total of 555 results related to the subject field.

2.2. Statistical analysis

Results of the initial scan were analyzed through the bibliometric method. Bibliometrics is the statistical analysis of written publications such as articles or books in the academic literature (Ozsoy & Demir, 2018; Van Eck & Waltman, 2010). It focuses on the analysis of authors, subjects, references, and sources of cited scientific studies, in order to reveal the general character of a particular discipline based on the statistics obtained

from analyses (Zan, 2012, p. 15). In this study, VOSviewer (Version 1.6.16) package program was utilized to visualize bibliometric maps of the keyword network analysis, which was based on the results of searching "outdoor education" as the keyword among the works published in the Web of Sciences database.

3. Findings

This section includes the data obtained from the research and its analysis.

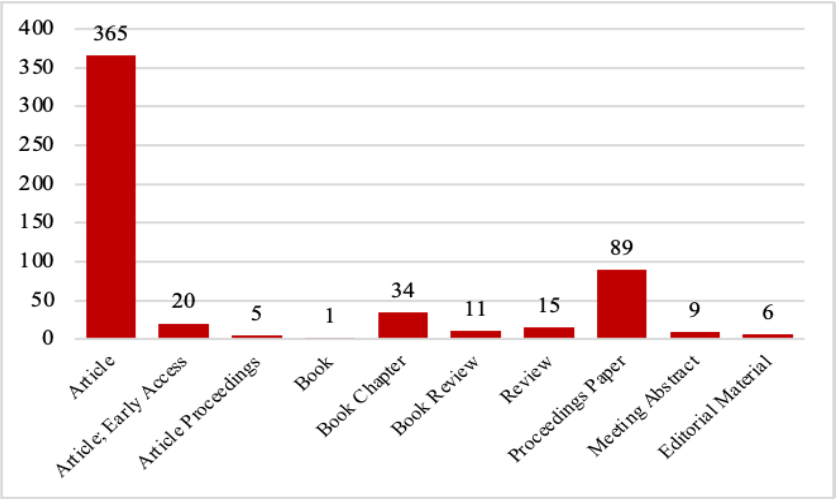


Figure 1. Types of Publications about the Outdoor Education
Source: Authors' own conception

Types of publication on outdoor education are demonstrated in Figure 1. There are 10 different types of publications on outdoor education and the most frequently used type is scientific articles, with 365 examples. This is followed respectively by 89 proceedings papers and 34 book chapters. Books as types of publication on this matter are found to be the least frequent publication type, with only 1 available result.

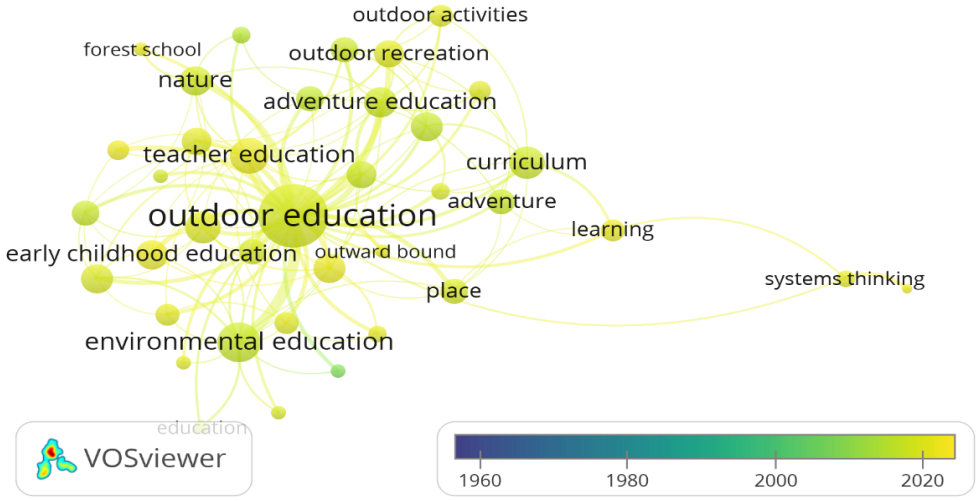


Figure 2. Current Issue Analysis (N=555)
Source: Authors' own conception

Examining Figure 2 suggests that concepts such as outdoor education, environmental education, teacher education, adventure education, outdoor activities, outdoor recreation, learning, curriculum, nature, wilderness and education are widely used in the literature up to 2021. Data also suggests that in recent years, keywords like early childhood education and outward-bound are trendy.

Circle sizes show the frequency of use of the keyword, the coloring indicates which keywords are used together, and the lines between the circles mean that they are related.

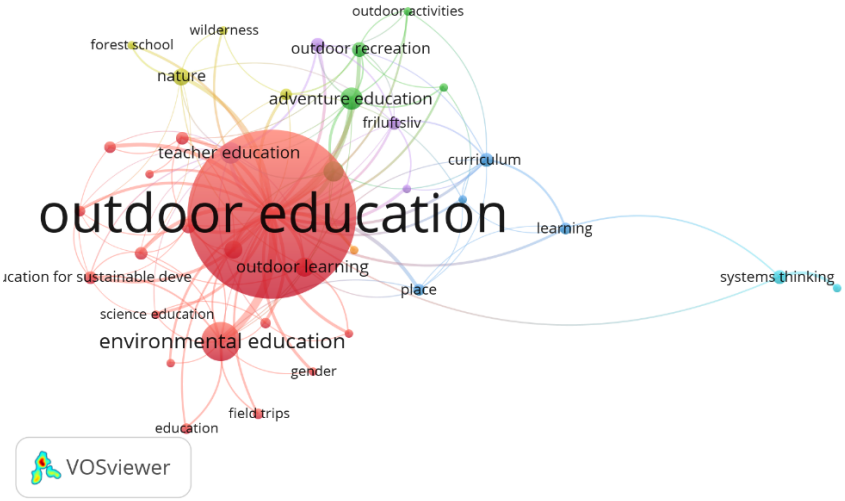


Figure 3. Keyword network map (N=555)
Source: Authors' own conception

Figure 3 shows that the most common keywords for the field of outdoor education are: outdoor education, environmental education, outdoor learning, teacher education, adventure education, outdoor activities, outdoor recreation, learning, curriculum, nature, wilderness, education and place. It can also be seen here that outdoor recreational activities bring different disciplines together. Additionally, it can also be inferred from the data that the keywords are heavily clustered, and the binder of these clusters is basically the concept of "outdoor education". While circle sizes show the frequency of use of the keyword, the coloring indicates which keywords are used together, and the lines between the circles are about the relationship between the keywords.

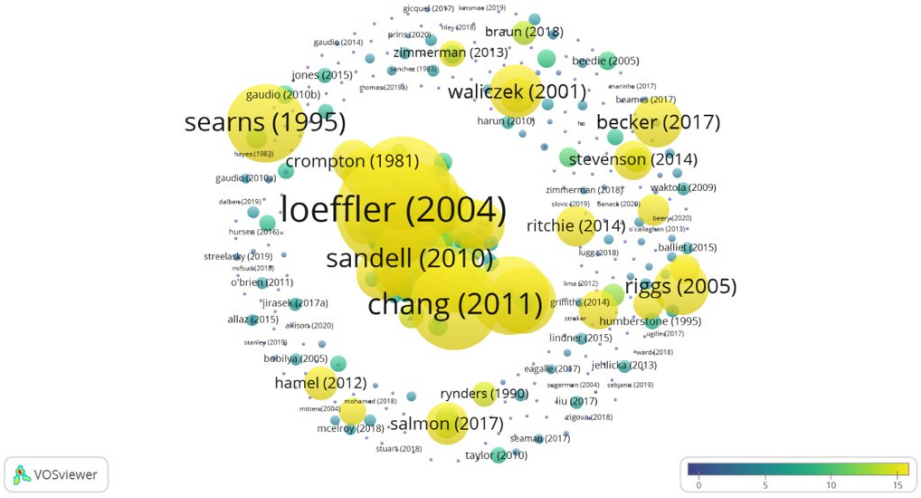


Figure 4. Citing analysis (N=555)
Source: Authors' own conception

Figure 4. displays the network analysis of the authors who are frequently cited in the field of outdoor education. Prominent figures of the research on outdoor education can also be revealed through this analysis. In other words, Figure 4. shows which researchers are cited more often in studies on this subject. Interpreting the figure through a focus on its clusters, three clusters are worth paying attention. These clusters are highlighted in the figure with yellow, blue and green.

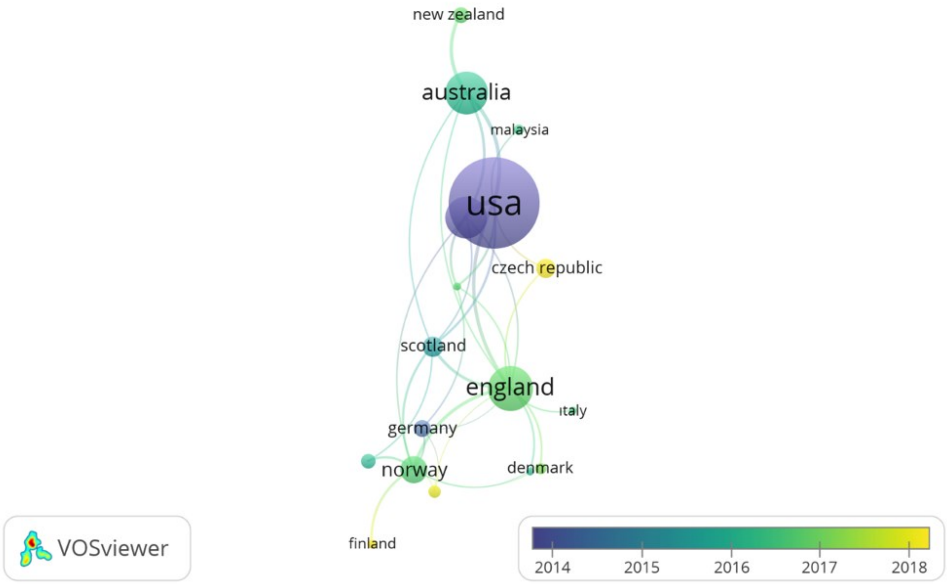


Figure 5. Country Distribution of Articles (N=555)
Source: Authors' own conception

Country distribution of articles focusing on outdoor education is presented in Figure 5. with a colorized visual of the network analysis using the VOSviewer program. Circle sizes increase with the number of publications from each country. A similar coloring code is used to indicate the studies that refer to one another and the lines between the circles demonstrate the countries studying related topics.

Table 1. The 10 Most Cited Articles about Outdoor Education

	Author/s	**Article Title**	**Journal**	**WOS Categories**	**Times Cited, WoS Core**	**Times Cited, All Databases**
1	Loeffler, T.A.	A photo elicitation study of the meanings of outdoor adventure experiences	J. Leis. Res.	Hospitality, Leisure, Sport & Tourism; Sociology	108	108
2	D'Amato and Krasny,	Outdoor Adventure Education: Applying Transformative Learning Theory to Understand-	J. Environ. Educ.	Education & Educational Research; Environmental Studies	86	86

		ing Instrumental Learning and Personal Growth in Environmental Education				
3	Chang et al.,	The study on integrating WebQuest with mobile learning for environmental education	Comput. Educ.	Computer Science, Interdisciplinary Applications; Education & Educational Research	80	85
4	Uhls et al.,	Five days at outdoor education camp without screens improves preteen skills with nonverbal emotion cues	Comput. Hum. Behav.	Psychology, Multidisciplinary; Psychology, Experimental	67	68
5	Searns, R.M.	The Evolution of Greenways As An Adaptive Urban Landscape Form	Landsc. Urban Plan.	Ecology; Environmental Studies; Geography; Geography, Physical; Regional & Urban Planning; Urban Studies	67	87
6	Sandell, K., and Öhman, J.	Educational potentials of encounters with nature: reflections from a Swedish outdoor perspective	Environ.Educ. Res.	Education & Educational Research; Environmental Studies	66	67
7	Sibthorp, J., Paisley, K., & Gookin, J.	Exploring participant development through adventure-based programming: A model from the National Outdoor Leadership School	Leis. Sci.	Hospitality, Leisure, Sport & Tourism; Sociology	60	60
8	Lai et al.,	The implementation of mobile learning in outdoor education: Application of QR codes	Br. J. Educ. Technol.	Education & Educational Research	53	55
9	Brookes, A.	Lost in the Australian bush: outdoor education as curriculum	J. Curric. Stud.	Education & Educational Research	53	53
10	Mutz, M. & Mueller, J.	Mental health benefits of outdoor adventures: Results from two pilot studies	J. Adolesc.	Psychology, Developmental	44	47

Source: Authors' own conception

4. Discussion

The overall status of outdoor education literature was evaluated comprehensively as part of this study. Studies from 8 different indexes (SCI-Expended, SSCI, A & HCI, CPCI-S, CPCISSH, BKCI-S, BKCI-SSH, ESCI) containing the keyword "outdoor education" published between 1950 and 2021 were scanned in a detailed manner. The resulting bibliometric analysis reveals the reasons why these studies are part of this field.

Uncovering those articles are the most frequently used type of academic publication on outdoor education can be attributed to the fact that articles are objective indicators of academic and scientific performance of scholars. While doing academic research, reviewing published articles on the particular field can be deemed as the expected route (Donaldson & Donaldson, 1958; Fiskum & Jacobsen, 2013; Kıyıcı et al., 2014; Jirásek & Turcova, 2017). This tendency also prevails in this study. When it comes to the country distribution of publications and the access to publications, the necessity of including journals in this field in the libraries of educational institutions to ensure accessibility becomes apparent. The fact that there is only one book available on outdoor education literature signifies that it is of utmost importance to write and publish more books in the field.

When the keyword network map is examined, it can be seen that the most frequent keyword is "outdoor education", followed by related notions such as "environmental education, outdoor learning, adventure education, outdoor activities, outdoor recreation" (Lugg, 2007; Parkin, 1998; Taniguchi et al., 2005; Woodhouse & Knapp, 2000). When the network analysis of authors that are cited the most in bibliographies of publications on outdoor education is interpreted, names like Loeffler (2004a), Sandell & Öhman (2010), Chang and Chen & Hsu (2011) step forward. In their bibliometric study focusing on the field of reading, Karagöz and Şeref (2019) emphasize that productive authors contribute greatly to forming their area and to the scientific progress in their field of study. Based on this perspective, determining influential and visible authors in this field may allow studies on outdoor education to become more of a scientific tradition. Scientific research from our country may then benefit from these internationally recognized authors and studies in the literature, in addition to the authors cited in the local academic circles.

Looking at the countries where scientific studies on outdoor education are published, USA is the country contributing to the field the most, followed by the UK and Australia. Considering the educational level, prosperity and economic development of these countries, it can be argued

that the studies and practices surrounding outdoor education are becoming more important. Keeping the scientific knowledge generated in these countries in mind can be helpful as a guide for the academic field of outdoor education and future applications in this area. Turkish researchers who plan to study the scientific research on outdoor education cannot ignore these leading countries, researchers, and key articles in the field, so that the quality of their academic publications can be significantly improved. For instance, Loeffler's (2004b) highly cited article titled " A Photo Elicitation Study of the Meanings of Outdoor Adventure Experiences" can be considered as an example for important scientific publications that guide the field. This and other similar reference articles are foundational and can lead to better collaboration within the scientific community. Therefore, it would not be wrong to say that referring to fundamental sources allow the literature on this field to emerge and develop further in our country. Besides, including often-cited articles in the bibliography of future studies focusing on outdoor education will amplify the authors' impact and increase the quality of studies.

Taking a closer look at the country distribution of publications suggests that the highest number of scientific studies in the field are originated in the US, and that the UK and Australia have interacted with these studies the most. In addition to this finding of our study, it is also important to point out that there has been an increase in scientific studies in the field of outdoor education in countries like the Czech Republic in recent years.

5. Conclusion

Finally, findings of our research on the current status of outdoor education -with certain limitations- can be taken as an important indicator for the field's place in the scientific literature. This research contributes to the diversity of this field and pinpoints related keywords for researchers and other relevant studies. To conclude, key concepts like outdoor education, environmental education, outdoor learning, teacher education and adventure education are frequently used in the research on publications about outdoor education. In addition, we hope and expect that these thematic concepts, country distribution of articles and outlining the highly cited studies of this field will contribute to paving the way for future research and identifying the gaps in the literature.

The main limitation of this study is that journals indexed in those other than the specified indexes were not included. In future studies, it is possible to expand the scope of our research to increase the number of keywords, universities, and related fields, as well as the scope of the indexes that are included.

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