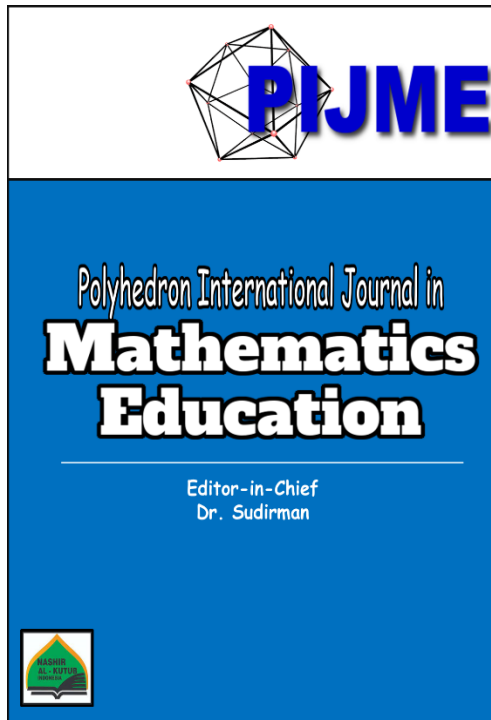


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Open and distance learning: a bibliometric analysis using Scopus database and Vosviewer

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Open and distance learning: a bibliometric analysis using Scopus database and Vosviewer

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Abstract

This study presents a bibliometric analysis of open and distance learning (ODL) literature to explore the impact of new technologies, temporal trends in research, and the influence of open pedagogy and educational resources on learner engagement and inclusion. Utilizing Scopus as the primary data source for its comprehensive coverage and analytical capabilities, a dataset was curated using specific keywords and analyzed through VosViewer. The results demonstrate a significant increase in ODL publications, indicative of growing scholarly interest and a diverse, global research community. Key findings reveal a network of influential institutions and scholars central to ODL, with highly cited documents highlighting foundational research and prevalent themes. The analysis underscores the importance of technological, pedagogical, strategic, and evaluative themes, signifying the complex and interdisciplinary nature of ODL. Suggestions for future research include qualitative analyses to understand ODL's progression and longitudinal studies to gauge the influence of global events on ODL practices. Collaborative and cross-disciplinary efforts are encouraged to innovate educational modalities. The study's implications reflect ODL's growing relevance in educational policy and practice, the influence of key scholars and institutions in shaping ODL discourse, and the strategic research focus that may dictate future educational developments. This analysis charts the trajectory of ODL, contributing to its strategic evolution and enduring relevance in education.

Keywords: bibliometric, open and distance learning, Scopus

1. Introduction

Open and distance learning (ODL) is a form of education that utilizes new multimedia technologies and the internet to enable students to acquire knowledge and skills remotely (Naciri et al., 2022). It has become increasingly relevant, especially during the COVID-19 pandemic, as it allows for continued learning while maintaining social distancing measures (Selelo & Manamela, 2022). ODL environments can be designed to ensure learner-centered pedagogy by applying scaffolding and positive reinforcement techniques. These techniques involve analyzing the context and current instructional practices to create an environment that supports students' needs and preferences (Ahmed et al., 2022).

Real-world engagements can enhance sustainability learning in ODL contexts, particularly in the Global South. This approach involves incorporating practical experiences and applications of sustainability concepts to give students a deeper understanding of the subject (Pretorius et al., 2021). Additionally, students' proactive attitudes and behaviors can influence their satisfaction with distance learning (Sivrikova et al., 2022). Students who exhibit proactive attitudes are more likely to be satisfied with the learning experience (Sivrikova et al., 2022).

During the COVID-19 pandemic, online teaching and learning methods, such as Massive Open Online Courses (MOOCs) and Open Distance Learning (ODL), have effectively provided education in various circumstances. These methods combine blended pedagogical approaches and leverage technology to facilitate teaching and learning (Selelo & Manamela, 2022). It is important to plan distance learning activities in a way that supports learning and improves students' academic performance. By doing so, the competency and performance of students in ODL can be comparable to those in conventional learning environments (Maijo Mr., 2021).

Open Educational Resources (OER) play a significant role in ODL. Open pedagogy, which is based on the philosophy of learner-centeredness, allows for the customization of course content and progression based on the needs and preferences of participants (Wiley & Hilton, 2018). ODL is considered an open educational system within the broader information society (Okopna et al., 2021). It is important to ensure that ODL systems are accessible and usable, and that they provide enriching and interactive learning environments (Altinpulluk et al., 2019).

Student satisfaction is a crucial aspect of ODL. Factors such as service quality, transactional distance, and the availability and accessibility of resources can influence students' satisfaction with distance learning (Adekannbi, 2019; Gavrilis et al., 2020; KAMARALZAMAN et al., 2018). Implementing practical-based courses in ODL can be challenging, as they require intensive practical work (Basantia, 2018). Therefore, it is important to consider the design and delivery modes of instruction, as well as provide feedback and support to enhance the distance learning environment (Casanova & Paguia, 2021).

Self-regulated learning is another important aspect of ODL. It allows students to learn without attending physical classes and take responsibility for their own learning (Yahya et al., 2021). Augmented reality can also be used to enhance ODL systems, providing increased interaction and accessibility (Altinpulluk et al., 2019). Flexibility is a key characteristic of ODL, and it is important to measure students' perceived flexibility in the context of ODL (Kokoç, 2020).

Open pedagogy, which is enabled by open licensing and OER, has been shown to have positive effects on teaching and learning (Clinton, 2021). It allows for the exploration of individual interests and promotes engagement and creativity (Hilton et al., 2019). Instructors who embrace open pedagogy experience personal growth and develop broader use of open practices, leading to improved interactions with students (Werth & Williams, 2021). Different instantiations of open pedagogy can be perceived differently by students, and it is important to understand their perceptions to enhance the learning experience (Hilton et al., 2020).

Research on open and distance learning (ODL) often overlooks emerging technologies, the evolution of scholarship, comparative bibliometric research, and the influence of open pedagogy and open educational resources on inclusivity, student engagement, and learning outcomes. Addressing these gaps would enhance the strategic advancement of ODL, ensuring it aligns with global learner needs and challenges. Based on the research gaps found in the field of open and distance learning (ODL), the proposed bibliometric analysis aims to do a full bibliometric analysis of the ODL literature to find out how new technologies have changed the field, how ODL research has changed over time, and how open pedagogy and open educational resources affect the engagement and inclusion of all learners.

2. Method

In this study, Scopus was selected as the data resource. Scopus is a widely used bibliographic database that provides access to a vast collection of scholarly literature. It is considered one of the main databases for researchers and offers a range of features and tools for searching, analyzing, and visualizing research articles (Irani et al., 2023; Izhar et al., 2023). Scopus is often preferred over other databases due to its comprehensive coverage and the availability of full-text links (Pradana et al., 2022; Sawhney et al., 2022).

The keywords used are "open and distance learning" or "open learning" and "distance learning" in the search column for title, keywords, and abstract, with unlimited search time. After that, the data is saved in the form of *.csv, *.ris, and *.bib files for processing by VosViewer. The search results for "open and distance learning" or "open learning" and "distance learning" are then exported and saved in three different file formats: *.csv, *.ris, and *.bib. These files can be easily processed by VosViewer, a software used for visualizing and analyzing bibliometric networks. VosViewer allows for in-depth analysis of the data, providing

valuable insights and patterns within the field of open and distance learning (Febriandi et al., 2023; Sholikhakh et al., 2023; Supriyadi, Suryadi, et al., 2023; Supriyadi, Turmudi, et al., 2023).

3. Results and discussion

Figure 1 from Scopus detailing the number of documents published annually in the field of Open and Distance Learning (ODL) depicts a clear upward trajectory from 1979 through 2023, signifying a burgeoning scholarly interest and evolving research in ODL. Initial growth from 1979 to 1995 was gradual, reflecting the nascent stages of distance education when technological means were limited. This was followed by a steady increase between 1996 and 2006, likely due to the internet becoming more accessible and the onset of online learning platforms. The period from 2007 to 2012 saw a more marked increase in publications, coinciding with significant advancements in online education technologies and their wider acceptance in academia. Notable fluctuations with peaks around 2013, 2016, and 2019, followed by subsequent declines, could correlate with a multitude of factors including educational policy shifts, technological breakthroughs, and major global events such as the COVID-19 pandemic, which may have both disrupted and later bolstered ODL research as the demand for remote learning surged. The slight recent decline in publications could be attributed to the incomplete data for 2023 or a realignment of research focuses within the field. This graph not only underscores the dynamic nature of ODL research but also invites further investigation into the qualitative aspects of these publications to fully understand the implications of these trends.

Figure 1

Document by year in ODL studies

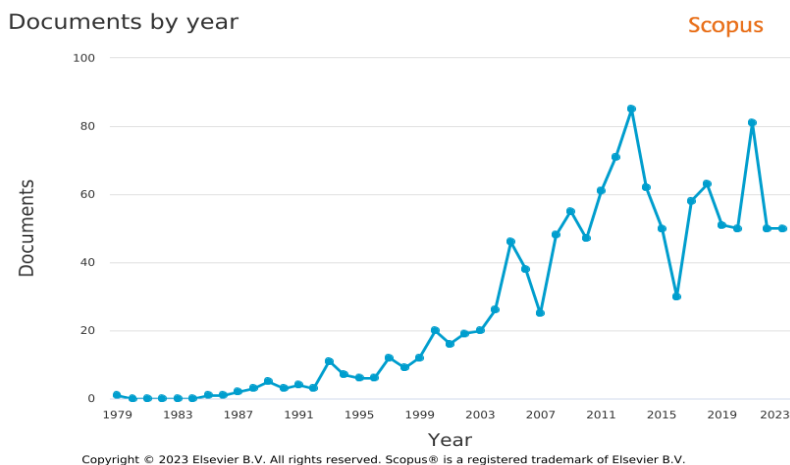


Figure 2 from Scopus illustrates the top ten affiliations by document count in Open and Distance Learning (ODL) studies, with the University of South Africa (UNISA) leading significantly, indicating its major role in ODL research likely due to its status as a prominent distance learning institution. Close behind is the Indira Gandhi National Open University (IGNOU), reflecting its importance in providing accessible education within the populous and diverse context of India. The Open University in the UK, renowned for its innovative distance learning models, also shows a substantial publication volume, signifying its influential role in the sector. Other notable institutions like Anadolu Üniversitesi, Universiti Teknologi MARA, and Athabasca University, though having fewer publications, suggest active engagement in ODL and represent the global spread and regional diversity in distance education research. Institutions like the National Open University of Nigeria, Universitas Terbuka, Hellenic Open University, and Open University Malaysia contribute smaller yet significant numbers of documents, possibly indicating emerging research contributions or focused regional

approaches to ODL. The graph collectively underscores the global reach and diverse regional contributions to the body of knowledge in ODL, providing a snapshot of how institutions across the world prioritize and engage with distance learning research.

Figure 2

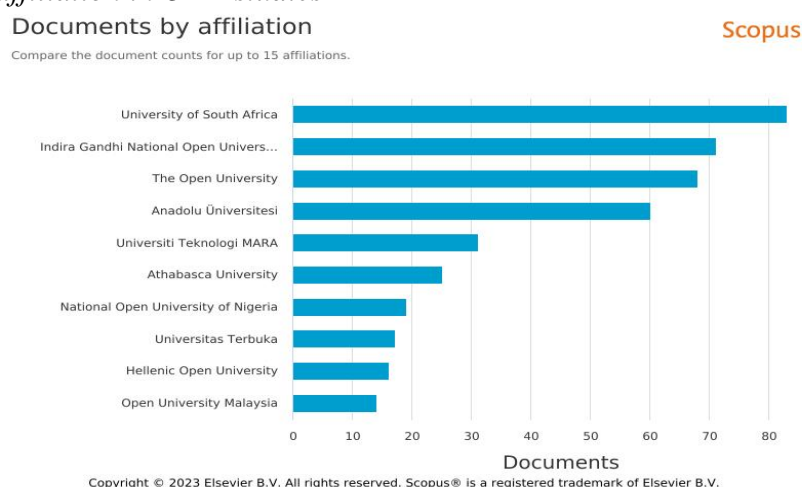
Document by affiliation in ODL studies

Figure 3 delineates the document output of the top ten authors within the Open and Distance Learning (ODL) research sphere, with C. Latchem at the forefront, suggesting a significant footprint in the ODL literature, perhaps indicative of a long-standing scholarly engagement or a robust research agenda. A. Bozkurt trails closely, highlighting their prominence in the field, while J. Baggaley and A. Tait display a comparable publication output, pointing to their steady academic contributions. Further down the list, S. Kocdar and J. Nyoni, although presenting a lower output, mark a meaningful involvement in ODL research. O. Simpson, I. Jung, J. Xiao, and O. Zawacki-Richter round out the list, each with a descending number of publications, yet their presence within the top ten underscores their active participation and the importance of their work in the academic discourse of ODL. This distribution of documents by authors not only reflects individual research productivity but also the potential influence of these scholars' work on the practices and policies of ODL, indicating a spectrum of academic impact and underscoring the value of their contributions across the global ODL community.

Figure 3

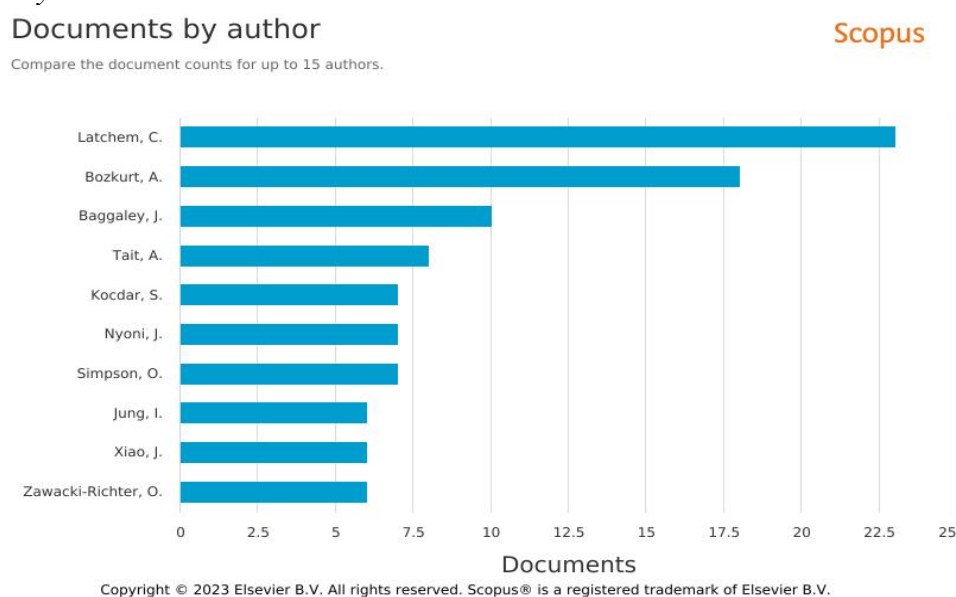
Document by author in ODL studies

Figure 4 from Scopus shows the top ten countries or territories based on their scholarly output in open and distance learning (ODL) studies. The United Kingdom leads with the highest number of documents, which suggests a strong research focus and potentially a high level of institutional support for ODL within the country. South Africa follows as a strong contender, indicating its significant contribution to ODL, which might reflect the country's emphasis on educational accessibility and innovation. India's position indicates a considerable research interest in ODL, possibly due to its large population and the necessity to reach diverse learners. Australia and the United States also show notable document counts, pointing to their active roles in the ODL field. The presence of Malaysia and Turkey underscores the global interest in ODL, especially as these countries develop their educational infrastructure and adopt technology in learning. Canada, Nigeria, and Greece, while having fewer documents than the leading countries, still make the top ten, suggesting that ODL is a relevant topic for educational advancement and research across diverse economic and cultural contexts. The spread of countries reflects the worldwide importance of ODL as a means to broaden educational access and indicates a trend of growing international research collaboration and knowledge sharing in the field.

Figure 4

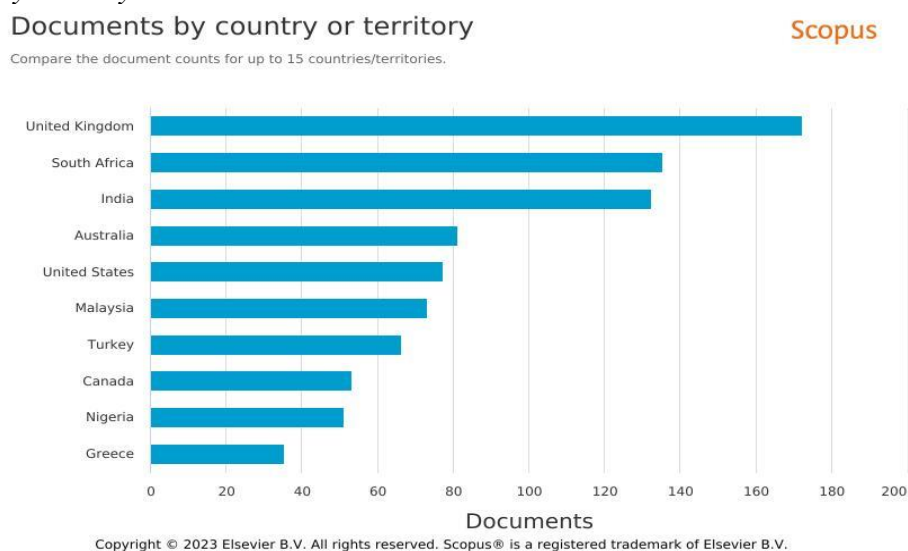
Document by country in ODL studies

Table 1 highlights the top ten sources for documents in open and distance learning (ODL) studies, with "Distance Education" leading at 165 documents, followed by "Turkish Online Journal of Distance Education" and "International Review of Research in Open and Distance Learning" with 87 and 80 documents respectively, indicating a strong presence in the field. The "Asian Association of Open Universities Journal" and "Open Learning" contribute 60 and 32 documents, underscoring ODL's significance in Asia and beyond. The inclusion of "Mediterranean Journal of Social Sciences" at 23 documents points to ODL's interdisciplinary reach. The presence of "Springerbriefs in Open and Distance Education" and "ACM International Conference Proceeding Series" with 19 and 12 documents indicates the intersection of ODL with technology and computing, while "Open Learning: The Journal of Open, Distance and E-Learning" and the "International Journal of Phytoremediation," with 12 and 10 documents, reveal a focused and cross-disciplinary scholarly engagement within and beyond ODL's traditional educational scope.

Table 1

Document by Source in ODL studies

Source Title	Freq
Distance Education	165
Turkish Online Journal of Distance Education	87
International Review of Research in Open And Distance Learning	80
Asian Association of Open Universities Journal	60
Open Learning	32
Mediterranean Journal of Social Sciences	23
Springerbriefs in Open and Distance Education	19
ACM International Conference Proceeding Series	12
Open Learning the Journal of Open Distance and E-Learning	12
International Journal of Phytoremediation	10

The top ten most-cited documents within the realm of open and distance learning studies, headlined by Muilenburg and Berge's study on the barriers students face in online learning, leading the citations with 572 mentions in Distance Education. Following are Park et al.'s pedagogical framework for mobile learning and Wang et al.'s exploration of self-regulated learning, each notably featured in the International Review of Research in Open and Distance Learning with 485 and 459 citations respectively. Bolliger and Wasilik investigate faculty satisfaction in online education, amassing 299 citations, while Baran et al.'s critique of online teaching competencies and Kreijns et al.'s examination of social presence in online environments both hold a strong citation presence in Distance Education. Chen et al. and DeNoyelles and Seo provide insights into the dynamics of asynchronous discussions and forum usage with over 200 citations each. Straying from the direct educational discourse, Eggers's research on chemical sensors and biosensors, although less directly linked to distance education, still garners 174 citations, illustrating its relevance to the field. Al-Fahad's assessment of mobile learning in Saudi Arabia rounds out the list with 173 citations in the Turkish Online Journal of Educational Technology. The geographical spread of citations predominantly comes from American academic institutions, reflecting a keen interest and active participation from entities like the University of South Alabama, University of Maryland, and Auburn University, amongst others, emphasizing the global research community's engagement with these seminal works in open and distance learning (Table 2).

Table 2

Document by citation in ODL studies

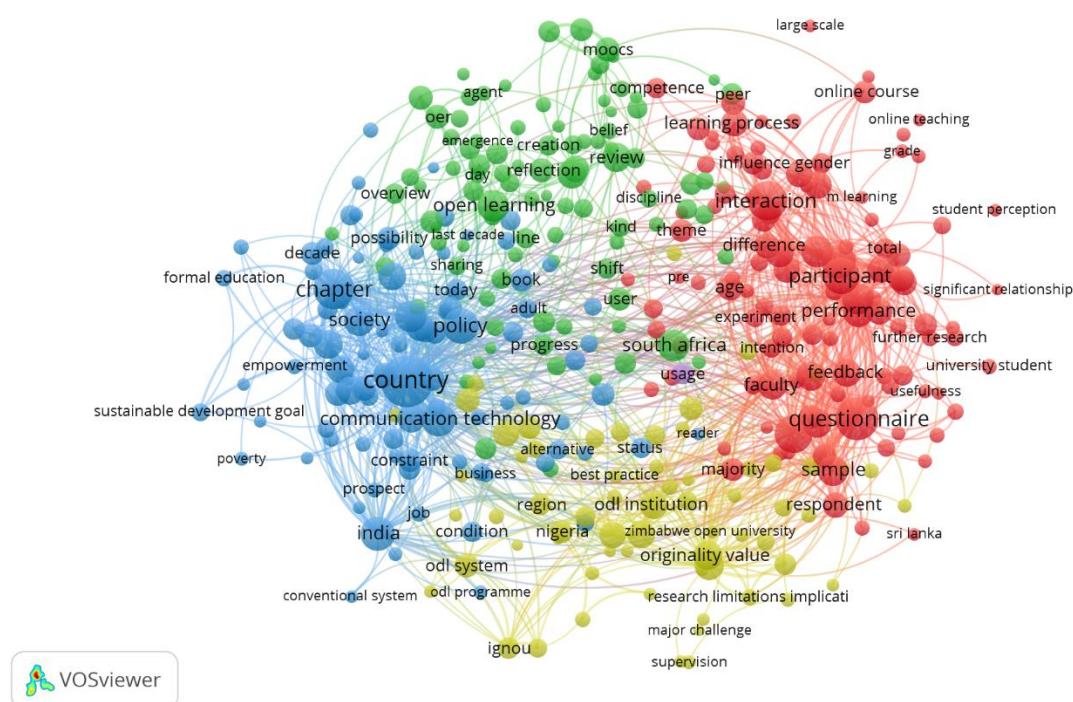
Title	Year	Cited by
Students Barriers to Online Learning: A factor analytic study	2005	572
A pedagogical framework for mobile learning: Categorizing educational applications of mobile technologies into four types	2011	485
Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning	2013	405
Factors influencing faculty satisfaction with online teaching and learning in higher education	2009	299
Transforming online teaching practice: Critical analysis of the literature on the roles and competencies of online teachers	2011	272
Understanding social presence in text-based online learning environments	2008	270

From message posting to learning dialogues: Factors affecting learner participation in asynchronous discussion	2005	221
Self-regulation in online learning	2013	203
Chemical Sensors and Biosensors	2007	174
Students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University, Saudi Arabia	2009	173

Figure 5 provided network visualization, created by VOS viewer, maps the co-occurrence of terms in the literature of open and distance learning (ODL) studies, with nodes representing terms whose size denotes frequency, and lines indicating co-occurrences. The visualization clusters terms into thematic groups: the blue cluster highlights terms relating to policy and societal impact, such as 'country' and 'sustainable development goal'; the green cluster pertains to pedagogical elements like 'MOOCs' and 'learning process'; the red cluster focuses on evaluative measures, including 'online teaching' and 'performance'; while the smaller yellow cluster seems to point to institutional challenges and case studies with terms like 'ODL institution' and 'IGNOU.' This illustration captures the complexity of ODL research, emphasizing technological, pedagogical, strategic, and evaluative dimensions, suggesting that ODL is a dynamic field integrating technology with educational objectives and undergoing rigorous assessment and continuous development.

Figure 5

Network Visualization from co-occurrence term in ODL studies



4. Conclusion

The bibliometric analysis of open and distance learning (ODL) has demonstrated an extensive growth and diversification in the field, revealing how scholarly interest has expanded, particularly evidenced by a significant increase in publications across various countries, institutions, and prominent authors. This growth has profound implications for educational policies and practices worldwide, suggesting an ongoing shift toward more inclusive and

accessible learning environments. The analysis also points to a network of influential scholars and journals that shape the ODL discourse, with implications for future research trajectories and resource allocation. Moreover, the thematic clusters in the literature highlight the multifaceted nature of ODL, incorporating technology, pedagogy, and strategic development. Future research should further explore these qualitative aspects, encourage cross-disciplinary collaboration, and address the less represented challenges within the field. Overall, this bibliometric study not only provides a comprehensive overview of the ODL research landscape but also underscores the critical role of ODL in the evolution of global education, with potential to affect educational access and quality for learners around the world.

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