

The Descriptive Analysis and Bibliometric Mapping of IJDEEL Journal

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ABSTRACT

The fast changes in student profiles and instructional settings that technological improvements have brought about are becoming increasingly apparent. The purpose of this study is to catalogue the most-cited research articles and authors in IJDEEL and to find out how often each type of article is published each year. Furthermore, the study delves into the citation frequency of IJDEEL by year, examines the distribution of keywords in abstracts and titles, and delves into the writers who have made significant contributions through co-authorship. Finding trends in articles published in the IJDEEL journal from 2015 to 2023 was the goal of this study, which used descriptive analysis, a quantitative research method. This research aimed to determine which writers had the most significant impact on the IJDEEL journal by analysing the keywords published in the journal and determining how often specific keywords appeared in the abstract and title fields using the bibliometric mapping method. The analysis revealed that IJDEEL frequency peaked around 2020. That interval could imply intellectual activity or a reaction. These high citations indicate that the 2021 IJDEEL research has a lasting impact on academia and actively contributes to intellectual discussion. The prominent keywords are COVID-19, learning, distance learning, and ICT, indicating more significant interest in e-learning and online education. The co-authorship analysis demonstrates the excellent rapport of the IJDEEL researchers. Field knowledge improves with teamwork. The study examines IJDEEL's publication trends, citation impact, subject focus, and collaborations. It shows the ever-changing distance education and e-learning research contexts.

Keywords: Descriptive analysis, bibliometric analysis, IJDEEL journal.

INTRODUCTION

The fast changes in student profiles and instructional settings that technological improvements have brought about are becoming increasingly apparent. Learners now have access to a broad range of educational resources. They are better prepared to interact with the content they are studying due to the proliferation of digital tools and internet connectivity (Rapanta et al., 2020). However, educators are also using technology to provide learning environments that are dynamic and engaging, tailored to meet the needs of a wide range of students. The way we approach education has been revolutionised due to these advances, making it more straightforward for students to access education anywhere. The collaborative whiteboard that is available online allows for a conversation to take place between the instructor and the student. The use of such digital tools enables the instructor to provide real-time feedback and advice to the pupils, which in turn makes for a learning experience that is more visually engaging. The ability for students to quickly collaborate on projects and assignments is another way that learning may be more interactive and dynamic (Yuliansyah & Ayu, 2021).

The educational system has been profoundly affected by the steady integration of ICT. As a result, online learning platforms, often called smart learning environments (SLEs), have been built all over the world to integrate technology into education (Joseph et al., 2019). Since the implementation of COVID-19, schools have been compelled to offer online courses or training that may be done from anywhere. For some businesses, the problem will lie in improving their current processes. Regarding other people, it will be about setting up technologies that let them teach pupils who are housebound online (Purwanto, 2020).

As a result of its inability to adapt to the rapid development and widespread use of ICT, the educational system is experiencing profound change. A paradigm shift has occurred in educational technology as a consequence of the global rollout of e-learning platforms, often known as smart learning environments (SLEs). This evolution is visible. The goal of combining conventional instructional strategies with cutting-edge technological solutions is to improve the quality of the learning experience while also adjusting to the requirements of the digital age (Pendy, 2023).

The disruptive effects of the COVID-19 pandemic have forced educational institutions all over the world to reassess and adapt their teaching methods, which has further accelerated the growth of distance education. Educational institutions are being compelled to offer training or learning possibilities via remote means as a result of the epidemic (Ali, 2020). The entire education industry faces a great problem as well as an opportunity because of this. This change indicates that, for some institutions that are going through it, there is a need to improve and streamline current processes in order to smoothly meet the needs of distant learning. In the case of others, it entails the establishment of completely new technologies that are able to provide efficient online training to students who are restricted to their homes as a result of constraints associated to the epidemic (Adedoyin & Soykan, 2023).

The change towards education through online learning is not only a short-term solution to a problem; rather, it is a paradigm shift that will have far-reaching repercussions for the academic landscape of the future. The incorporation of technological solutions into educational institutions is not merely a precautionary measure; rather, it is an essential part of the long-term educational strategy that these institutions are developing (Paudel, 2021). The global shift to online learning has made several tasks more urgent and crucial, including building a strong e-learning infrastructure, fostering digital literacy in teachers and students, and rethinking pedagogical approaches to fit the dynamic nature of virtual classrooms.

All things considered, the trend that has emerged here is a pattern of continuous development and adaptation in reaction to both technological advances and unforeseen challenges, like the worldwide health system situation. Learning settings that make use of information and communication technology (ICT) to foster creativity and flexibility are pushing the conventional limits of education farther and further (Haleem et al., 2022). Because of this, education will remain accessible and effective even as things change. This pattern is indicative of a fundamental reworking of educational paradigms, which places an emphasis on the necessity of resiliency, adaptability, and a proactive approach to the incorporation of technology into the fabric of education.

According to Donthu et al., (2021), trend studies are considered to be beneficial because they provide insight into the existing state of affairs in the industry, allow for the observation of changes within a predetermined time frame, and shed light on the future. Furthermore, investigating the studies that have been carried out in any field and identifying the patterns that have emerged might

serve as guidance for researchers in the future (Danese et al., 2018). Researchers should first evaluate the studies that have been published in their field using content analysis (Zainuddin et al., 2019). This is because trend studies can assist researchers in avoiding topical overlaps (Li & Li, 2020). Furthermore, it is critical to review the studies that have been conducted in a particular field before conducting research on a specific issue. In this particular study, the objective was to investigate the research that has been published in the IJDEEL journal, which holds a significant position in the area, throughout the course of the past five years (2019–2023). A bibliometric map of the journal was to be created using the meta-data of studies published between 2015 and 2023. This was the secondary objective. For the purpose of this study, identifying the trends observed in the studies published in the specified journal is crucial in summarising the current state of the literature. The researcher investigated the following research questions in an effort to find answers:

1. What is the publish frequency of research articles in a year and the top cited titles and who the top cited authors in IJDEEL?
2. What is the frequency of citations year-wise from IJDEEL?
3. How is the distribution of the keywords from title and abstract fields?
4. The authors who contributed most to the IJDEEL in co-authorship?

REVIEW OF RELATED LITERATURE

Technological advancements have had a profound impact on the classroom setting in universities. Online education has become more accessible, open, and flexible due to the growth of web technologies. It also made it possible for new ways of teaching to be developed. As a result, the information age was ushered in, allowing for more rapid and efficient human interaction and communication (Amoozegar et al., 2018). Online education has recently gained popularity as a viable alternative to and significant enhancement to traditional classroom settings. The rapid development of technology has led to the emergence of online instruction. Technology has always been essential to distance education's success in reaching students (Allan, 2004). Recent technological developments have greatly enhanced the convenience and efficacy of distance learning. Video conferencing, interactive learning technologies, and internet platforms have completely changed how students participate in their studies. Regardless of where a student lives, they can get a high-quality education through distance learning as long as technology keeps improving. Because of this, remote education is a topic that is now trending and exciting in the field of education (Schulte, 2011). This is especially true in higher education, where it is a viable choice (Freitas et al., 1998). According to Bozkurt Ozbek et al. (2015), the evolution of new forms of educational delivery, areas of learning, principles of learning, procedures and outcomes of learning, and entities and roles within education have all been prompted by a paradigm shift in the field of education.

Online education first arose in the 1990s to provide a more comprehensive explanation of the learning process using technological expansion (Brika et al., 2022). Pedagogy has become an increasingly popular field of study as both instructional design and technology have progressed. Recent years have seen e-learning take centre stage in higher education, continuing education, and more. Electronic learning, or e-learning, allows for non-traditional forms of education to be delivered online. Additionally, it heightened the demand for customised and sophisticated social media platforms (Siemens, 2005). On top of that, reading is a common term for it. After seeing the success of more "traditional" forms of online education, it is clear that this change is necessary to

make learning more accessible. With the merging of technical and educational resources, this will become more than just an individual issue.

The term "e-learning" refers to the process of acquiring knowledge through the use of the internet and includes a wide range of tools and resources that can facilitate this process. These platforms allow for the sharing of educational resources (such as videos, quizzes, and forums) as well as the transmission of questions and answers between instructors and students. With the advent of e-learning, educators now have more flexibility in how they teach and learn. Our hope is that by providing the kids with a wider range of learning opportunities, we can inspire them to keep learning. With the right tools and support systems in place, online education can be a powerful tool for positive change. Additionally, the assistance that e-learning users provide makes a difference in how well this strategy works.

Although there is a lot of writing about bibliometric analysis of e-learning, most of it is concerned with finding the most important aspects of e-learning, or keywords. Chiang et al. (2010) conducted a network analysis that ranked the most important fields of study in e-learning as follows: computers, information science, library science, and education and educational research. Online education, instructional design, and the incorporation of technology have all been highlighted as crucial terms in other research.

Alrikabi et al. (2022) state that e-learning is a productive learning process that integrates the distribution of digital resources with learning support and services. E-learning is one form of collaboration-based learning. As a result of the use of information technology, there will be major shifts in the development of educational systems, the delivery of content, the execution of instructional and learning processes, and the difficulties faced by both educators and students. These elements include online learning and web-based learning.

Research in mobile cloud computing has been documented in more scholarly articles between 2007 and 2016, according to an analysis by Gupta, et al. (2018). Also, most scholarly works on mobile cloud computing were published in the US, China, and South Korea. To compile a bibliography of articles about information literacy published between 2005 and 2014, Kolle (2017) searched the Web of Science. From 2005 to 2014, there was a noticeable increase in publications about information literacy, according to the data. "Pinto, M." and "The University of Granada, Spain" were also institutes and authors that produced quality work. A growing number of scholarly articles have focused on digital literacy, according to an analysis of the current state of research by Alagu and Thanuskodi (2019). Additionally, they discovered that the field was most advanced in the United States, the United Kingdom, Australia, and Canada. Also, articles about digital literacy tended to utilize the terms "Digital," "Literacy," "Information," and "Learning" rather than any others.

"Digital Libraries: A Scientometric Assessment of Global Publications Output during 2007-16" was the study title in which Gupta et al. (2018) examined virtual library publications. Based on their research, they determined that the United States dominated Digital Libraries in terms of publishing scientific documents. Most of the e-learning applications were found in computer science and education, with a smaller percentage identified in medical education, information science, documentation, and other multidisciplinary fields (Chiang et al., 2010). They conducted a literature review about "e-learning," "distance learning," and "electronic learning," with a concentration on scholarly journals.

In their mapping work published in the journal, Leydesdorff et al. (2015) demonstrated how VOSViewerFootnote4 ensures node labels are comprehensively visualized on the map and

how stress minimization techniques like multidimensional scaling (MDS) make it easier to see. A review of previous studies showed that bibliometrics has successfully navigated several research domains, including information literacy, cloud computing, digital libraries, e-learning, and digital literacy. Whatever the case, they failed to consider the reporting process in Advanced E-Learning or the current state of logical archive distribution. Since comprehensive analyses of the distribution status of e-learning data have yet to be conducted, it is essential to conduct such an inquiry.

Research Methodology

In keeping with the study's goals, descriptive analysis—a type of quantitative research—was employed to ascertain the trend of papers published in the IJDEEL journal from 2015 to 2023. This study also employed the bibliometric mapping method to examine the keywords published in the IJDEEL journal, find the writers that contributed the most to the journal, and determine how often the keywords appeared in the abstract and title areas. A field's trends can be discovered by bibliometric mapping (Goksu, 2021).

A bibliometric study of the existing literature is one part of the research evaluation approach; this branch of statistics is also called scientometrics (Deti & Mandasari, 2021). In order to evaluate the literature, the bibliometric approach employs a statistical framework that includes quantitative analysis. The results demonstrate that these journals have done a fantastic job of picking significant research findings, as citations represent the importance of research. Furthermore, bibliometric studies have shown that only a small number of studies published in prominent US radiology journals still require citations after 10 years of publication. Researchers plan to take these characteristics into account, as stated by Rosenkrantz et al. (2019).

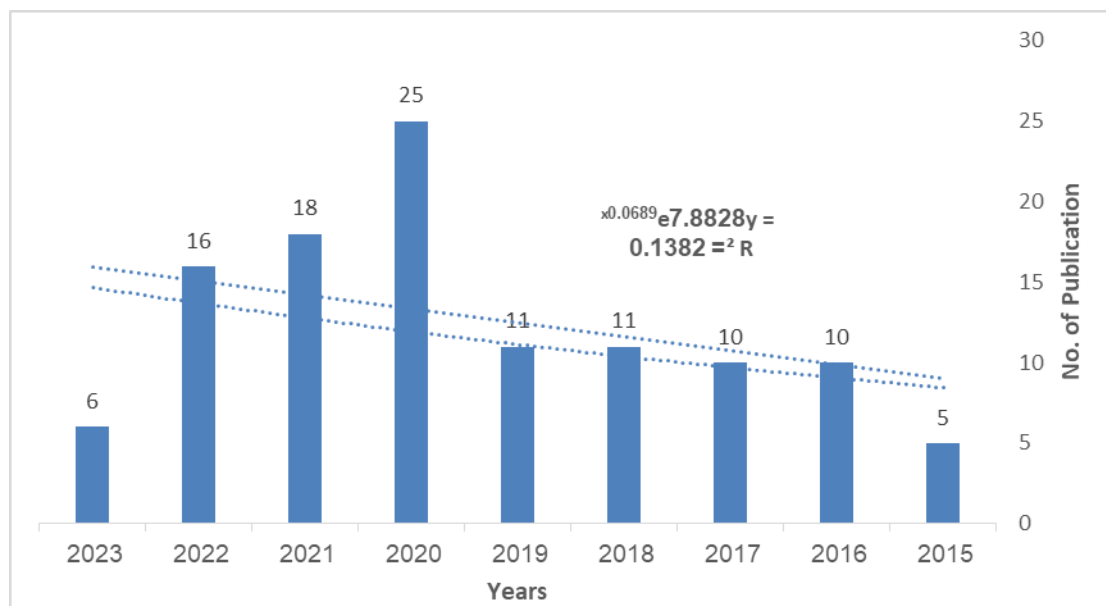
Bibliometric mapping offers the scientific community and the general public advantages by transforming publication metadata into maps or visual representations. These maps are easier to handle and analyse, enabling valuable insights. For instance, they can be used to visualise keywords and identify research themes or clusters within a specific field. Additionally, bibliometric mapping can be used to map author affiliations in a journal, revealing the geographic reach of the publication. The researcher seeks distance and e-learning-related articles as a prefix to understand the mapping's relationship to distance and e-learning. The researcher retrieved all the articles in the IJDEEL journal from 2015 to 2023, and the frequency with which two terms occur in the same article indicates their association (Eck & Waltman, 2010), and interactions between keywords will cause them to grow.

In this study, the bibliometric tool VOSviewer was used. According to Tupan et al. (2018), this app offers a range of features that allow for a more comprehensive display of publication maps. It can also display specific information regarding bibliometric graphic maps. One technique to make big bibliometric maps more straightforward to understand is using VOSviewer (Eck & Waltman, 2010).

Data Analysis Procedures

On the basis of the secondary data, the following analysis is presented and interpreted; Graph 1 shows the frequency of research articles published in IJDEEL between 2015 and 2023. The year 2020 saw the most number of research articles published at 25, while 2015 saw the lowest number of publications published at 5.

Year of publication



Graph 1 *Frequency of publication year-wise*

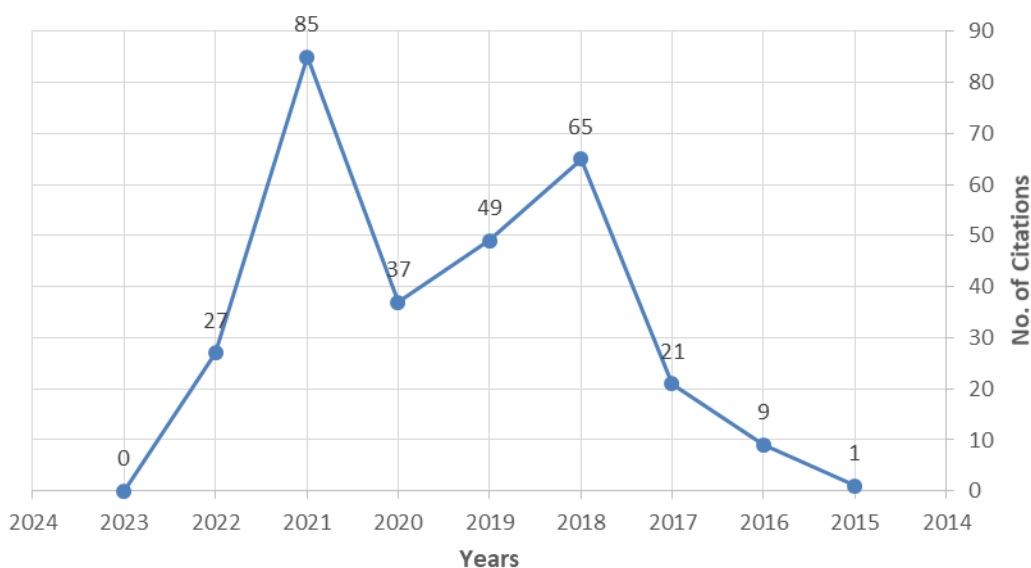
Table 1

Top cited papers

Rank	Title	Citations	References
1	Learning Loss: A Real Threat in Education for Underprivileged Students and Remote Regions during the Covid-19 Pandemic	32	Hasudungan et al., 2021
2	Study of the Impact of Online Education on Student's learning at University Level in Pakistan	28	Humaira et al., 2018
3	Investigating the use of Computer Technology for E-learning in Pakistani Maddaris: Case of Religious Teachers	22	Hassan et al., 2019
4	Investigation of Students' Satisfaction about H5P Interactive Video on MOODLE for Online Learning	11	Mir et al., 2022
5	Role of Information Communication Technology in Developing Academic Intimacy among Secondary School Students	10	Ali et al., 2018
6	E-Leadership: Secondary School Heads and Contemporary Needs	10	Kashif et al., 2019
7	Innovative Teaching and Technology Integration: Exploring Elderly Teachers' Attitudes	10	Bazila et al., 2020

8	Self-Efficacy Beliefs of Pre-Service Teachers Regarding Online Teaching	10	Mariam et al., 2021
9	Effects of ICT on Student's Learning at Secondary Level in Private Schools of the Punjab	9	Saleem et al., 2017
10	Challenges in Implementing STEM Education and Role of Teacher Education Programs in Mitigating these Challenges	9	Abdul et al., 2020

Researchers' most-cited articles in the International Journal of Distance Education and E-Learning (IJDEEL) are summarised in Table 1. Hasudungan et al.'s (2021) research study "Learning Loss: A Real Threat in Education for Underprivileged Students and Remote Regions during the COVID-19 Pandemic" has the most number of citations (32) on Google Scholar. Abdul et al. (2020) have nine citations in the STEM education literature that are relevant to the topic, according to the rank order. Results showed that research publications in IJDEEL were cited in other research an average of 85 times in 2021, with the highest number of citations occurring in the year 2020. This information is presented in the following graph.



Graph 2 Number of citations year-wise from IJDEEL

BIBLIOGRAPHIC DATA ANALYSIS

Titles and Abstract Field

Figure 1 presents the occurrences of keyword from the *field of titles and abstract*, the minimum number of occurrences of term was 10 times and of the total 2730 keywords, 120 meet the threshold and system selected the 72 keywords. Data retrieved these from 2017 to 2021, the most frequent keywords are; COVID, Learning, Distance Learning, program, tutor. Whereas the keywords i.e. ICT, Communication Technology, E-learning, AIOU and adult education were linked to the distance education and e-learning.

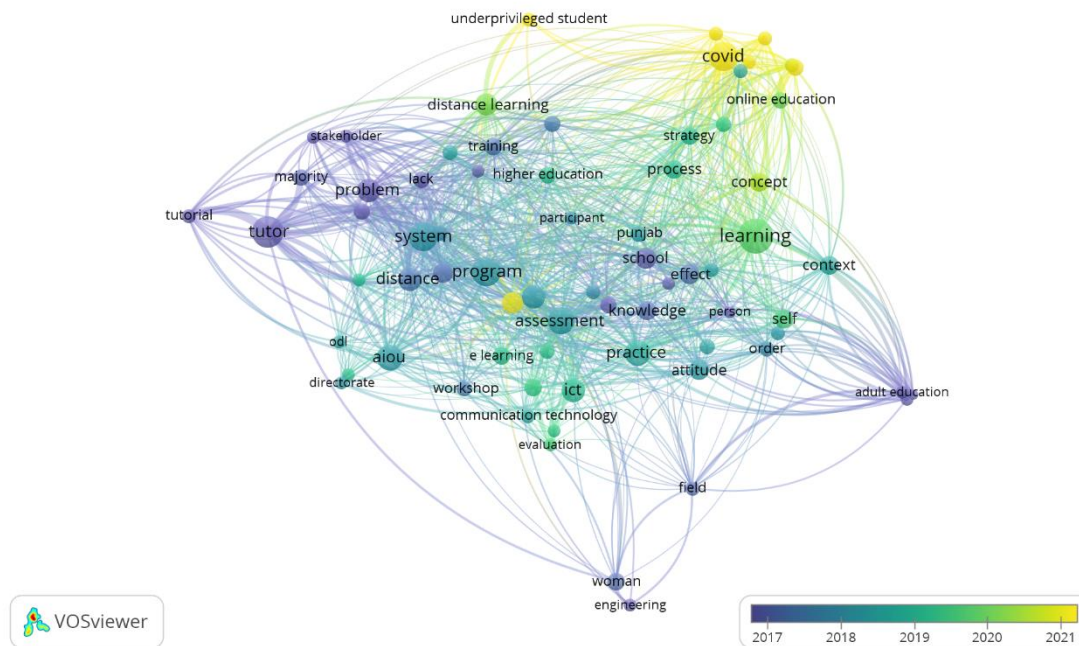


Figure 1 Keyword occurrence in abstract and title field (10 Times)

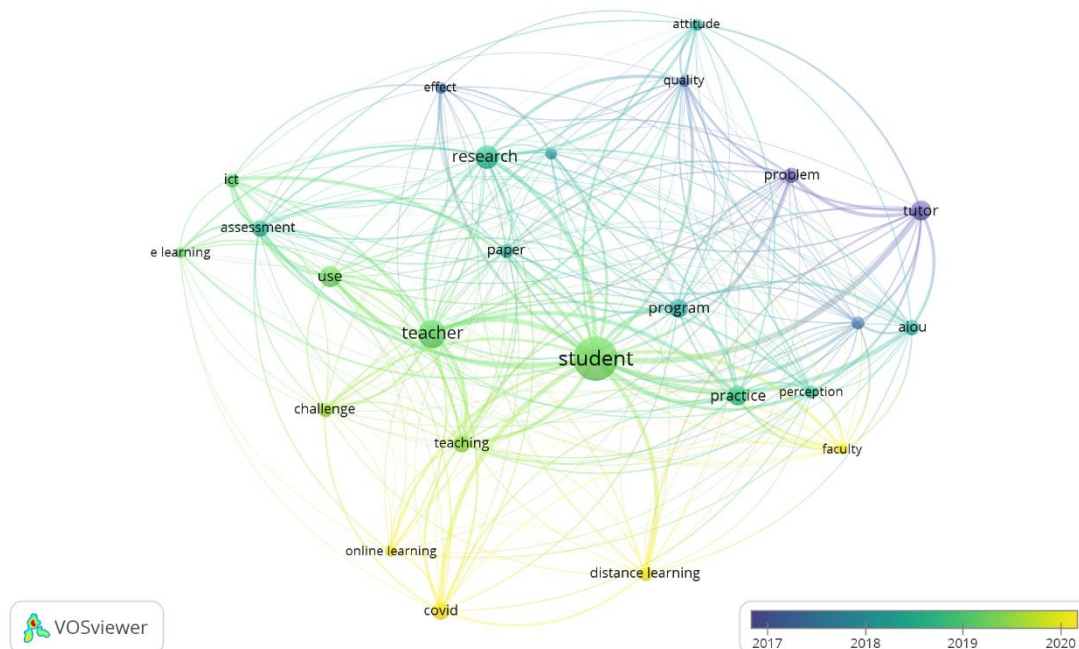


Figure 2 Keyword occurrence in abstract and title field (20 Times)

Figure 2 presents the occurrences of keyword from the *field of titles and abstract*. Whereas in the title and abstract field the minimum number of occurrence of term was 20 times of the total 2730 keywords, 41 meet the threshold and system selected the 25 keywords. Data retrieved these from 2017 to 2020, the most frequent keywords are; students and teachers, whereas the keywords i.e. distance learning, online learning, COVID and research were linked to the themes of the IJDEEL.

Figure 3 displays the frequency of a specific keyword in the titles and abstracts. The minimum number of times this keyword appeared was 30 out of a total of 2730 keywords. Out of these, 21 keywords met the required threshold, and the system picked 13 of them. The data collected spans from 2017 to 2020. The most commonly occurring keywords are "students" and "study." On the other hand, keywords such as "distance learning," "education," "research," "tutor," "aiou," and "Allam Iqbal Open University" are associated with the themes of the International Journal of Distance Education and E-Learning (IJDEEL).

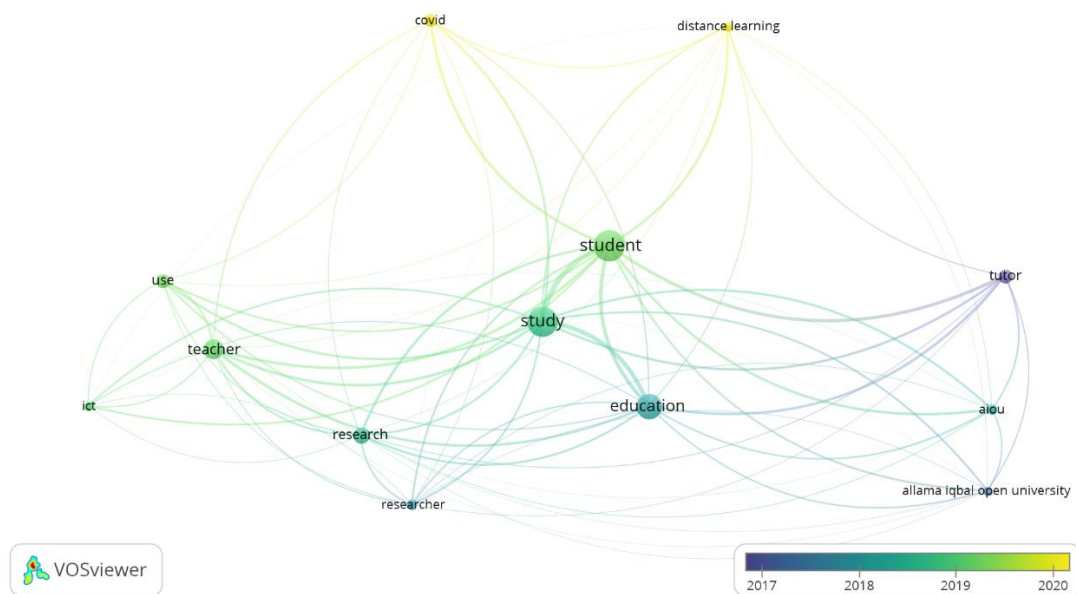


Figure 3 Keyword occurrence in abstract and title field (30 Times)

Figure 4 displays the frequency of a specific keyword found in the titles of a particular field. The minimum number of times this keyword appeared was 10 out of a total of 518 keywords. Out of these, five keywords met the required threshold and were selected by the algorithm. The data collected spans from 2017 to 2022, and the most commonly occurring keywords are Pakistan, students, role, distance education, and COVID.

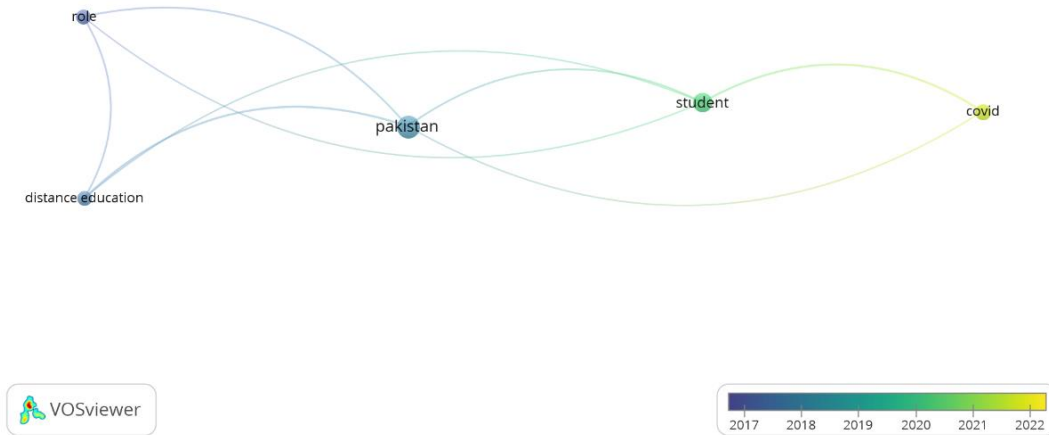


Figure 4 Keyword occurrence in titles field (10 Times)

Figure 5 displays the frequency of a certain keyword in the abstract field. The minimum number of times this keyword appeared was 10 out of a total of 2466 keywords. Out of these, 107 keywords met the required threshold, and the system chose the top 50 keywords. The data collected spans from 2017 to 2021. The most commonly occurring keywords over this period were learning, tutoring, distance learning, and COVID. Conversely, the themes of the IJDEEL were associated with keywords such as adult education, teaching practices, strategy, online education, difficulties, quality, AIOU, factor, and women.

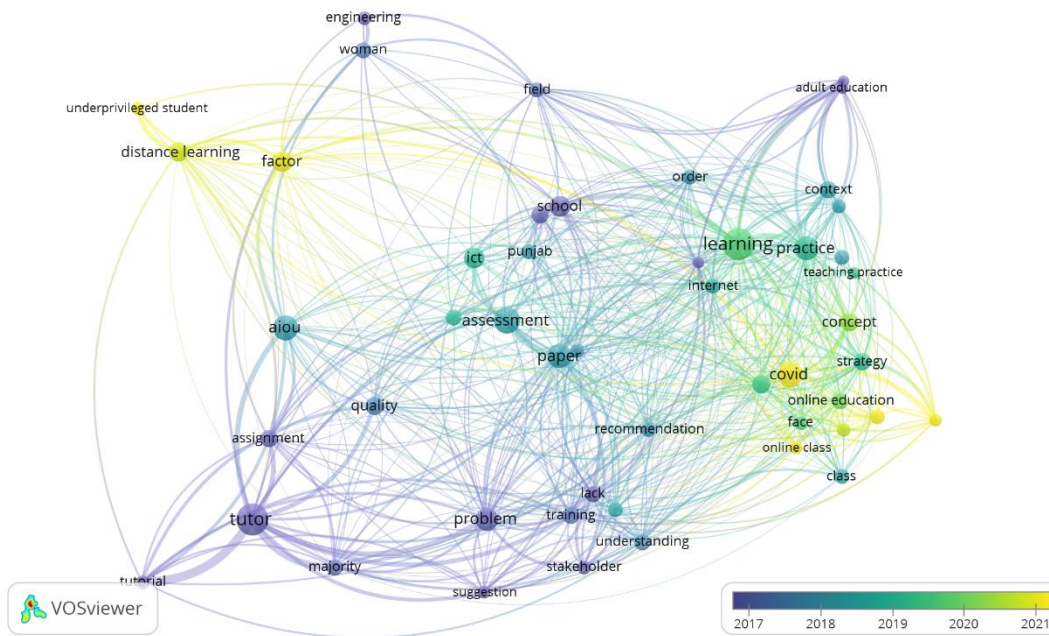


Figure 5 Keyword occurrence in abstract field (10 Times)

The results of the co-authorship study, which used authors as the unit of analysis, are displayed in Figure 6 as a network visualisation map. Each document may have a maximum of three writers. In order to be eligible for analysis, an author must have made a minimum of three contributions to the journal's publications. Out of a total of 291 writers, only four successfully completed this test and were then selected for further research. The criteria used in this analysis emphasize the importance of identifying and examining writers who have consistently contributed to understanding collaborative patterns. VOSviewer identified four authors who satisfy the specified criteria. Among them, Sherish Javed and Munaza Mahmood have a co-authorship relationship, while the other two authors do not have any co-authorship connections.

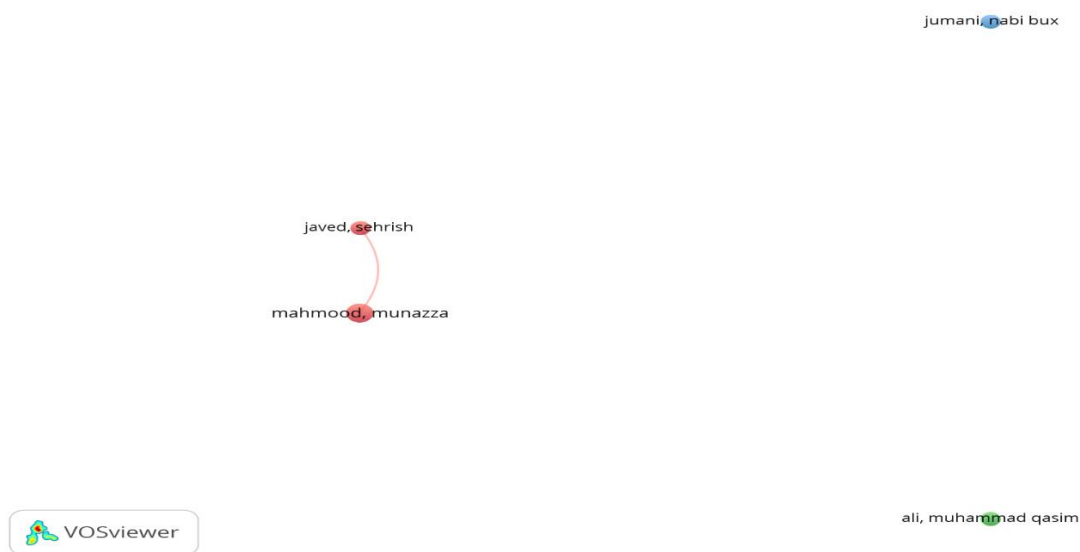


Figure 6 Network visualization map of co-authorship - an author with minimum 3 documents

Figure 7 displays the results of a network visualisation map generated from co-authorship analysis, where authors are considered the unit of analysis. Each document may have a maximum of three writers. In order to be eligible for analysis, an author must have made a contribution to a minimum of two papers within the journal. Out of a total of 291 writers, only 34 successfully passed this exam and were then selected for further research. The criteria utilised in this analysis emphasise the importance of identifying and examining writers who have consistently contributed to comprehending collaborative patterns. According to VOSviewer, 34 authors met the specified criteria. The analysis revealed strong co-authorship connections among the following authors: Memoons Bibi, Munazza Mahmood, Veryish Javed, Sabheen Gul, Tahira Mahboob, Hasudungan Anju Nofarof, Ofianto, Tehseen Ahmed, and Saleem Arshad.

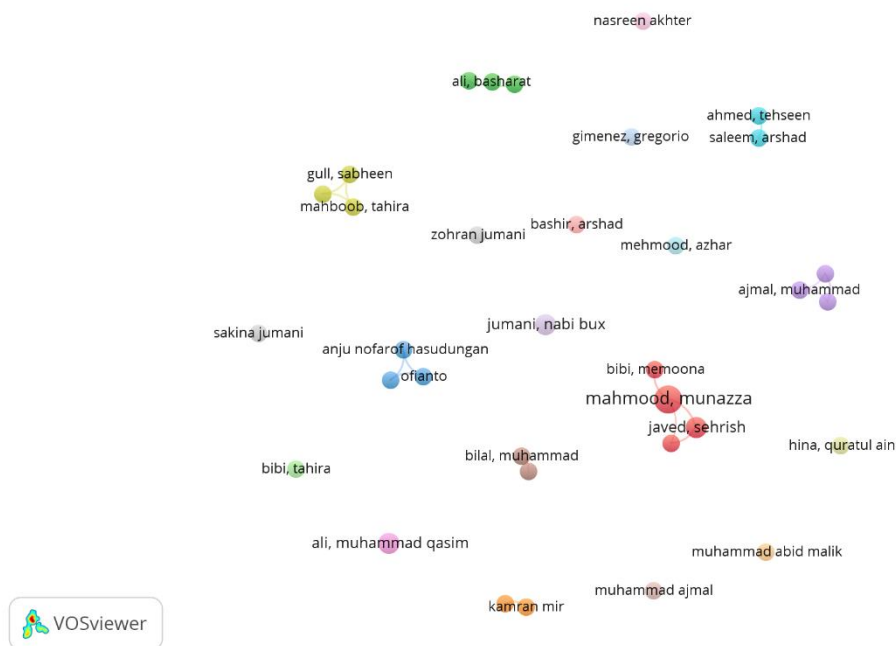


Figure 7 Network visualization map of co-authorship, an author with minimum 2 documents

FINDINGS AND CONCLUSIONS

The research study found that in 2020, the highest number of research articles (25) were published, while the lowest number (5) were published in 2015. Over time, an observable fluctuation in the quantity of published papers may be noted, ultimately resulting in a substantial increase in 2020. The research paper titled "Learning Loss: A Real Threat in Education for Underprivileged Students and Remote Regions during the COVID-19 Pandemic" by Hasudungan et al. (2021) has received the maximum number of citations on Google Scholar, with a total of 32. The study revealed that Abdul et al. (2020) conducted significant research on STEM education, which has received nine citations, indicating its relevance in the relevant literature. The graph depicts the number of research articles from IJDEEL that have been referenced in other books and articles. The year twenty-one witnessed the peak number of citations, which amounted to eighty-five. Furthermore, the study examined the effect and sway that the research published in IJDEEL had on other academic works by assessing the journal citations present in other research publications.

An analysis of keyword occurrences enables the identification of theme patterns in titles and abstracts spanning 2017 to 2023. The essential keywords include COVID, learning, distance learning, programme, tutor, ICT, communication technology, e-learning, adult education, and AIOU. Consequently, it was found that numerous minimum occurrence thresholds were used in each image, providing insights into the different levels of popular phrase usage. The findings of the comprehensive co-authorship investigation are presented in Figure 6, revealing that only four authors, out of a total of 291 authors, met the criteria for the analysis. Sherish Javed and Munaza Mahmood established a collaborative partnership as co-authors. Figure 7 illustrates that among the

291 writers, only 34 authors were able to fulfil the condition, suggesting a broader co-authorship network. Several authors, namely Memoona Bibi, Munazza Mahmood, and Sehrish Javed; Sabheen Gul, Tahira Mahboob; Hasudungan Anju Nofarof, Ofianto; Tehseen Ahmed, and Saleem Arshad, were found to have established strong co-authorship connections with one another. The study's findings indicate that the frequency of IJDEEL has varied over the years, with its peak occurring in 2020. During that time frame, it could be a sign of increased cognitive activity or a response to specific incidents that occurred. The substantial number of citations received by the study published in IJDEEL in 2021 demonstrates its profound and enduring influence on the academic community, actively enriching the broader scholarly conversation. The thematic analysis of keywords reveals the prevailing focus on themes such as COVID, learning, distance learning, and ICT, providing valuable insights into the emerging trends and interests in distance education and e-learning. The cooperative nature of research in IJDEEL is revealed through the analysis of co-authorship, where certain authors establish strong links. The collective effort pursued here contributes to the expansion and distribution of knowledge in the discipline. Overall, the research provides a comprehensive evaluation of the publication patterns, influence of citations, theme concentration, and networks of collaboration in relation to IJDEEL. It sheds light on the dynamic research landscape around distance education and e-learning.

RECOMMENDATIONS

In order to better address current issues and advance the profession, professionals and researchers may contribute effectively to addressing contemporary challenges and advances in the field. Workshops, conferences, and Internet platforms can help scholars collaborate, which may increase knowledge and create a more connected and vibrant research community. Boosting the journal's profile can encourage additional academics to write for it, increasing its readership and solidifying its position as an essential resource for online and hybrid courses.

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