

Semarak International Journal of Applied Psychology

Journal homepage: https://semarakilmu.digital/index.php/sijap/index ISSN: 3030-525X



Open and Distance Learning (ODL) in Higher Education: Bibliometric Analysis within the Psychology Field in the Scopus Database

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ARTICLE INFO

Article history:

Received 8 August 2025 Received in revised form 18 September 2025 Accepted 30 September 2025 Available online 14 October 2025

ABSTRACT

This study demonstrates a bibliometric analysis of scientific publications investigating Open and Distance Learning (ODL) in higher education in the psychology field. The authors retrieved 85 articles from the Scopus database by utilising Bibliometrix. The objectives of this study are to present an overview of the evolution of this topic. The findings indicate that research on ODL in higher education began in 2007 and has shown an upward trend starting in 2019, with a total of 85 articles published in Scopus. China ranked first among the most prolific countries, with a total of 19 publications, meanwhile, the largest number of citations was recorded in the USA. However, it is worth noting that South Africa exhibited the highest number of citations among the emerging countries. Moreover, Frontiers in Psychology was found to be the most prominent journal, and the work authored by Bates and Khasawneh in 2007 had the most number of citations. The comprehensive overview of ODL in higher education research spanning over a decade indicates that more funding is required to effectively disseminate ODL in higher education findings, particularly in the least developed countries. In acknowledging this need, this study recognises the importance of Sustainable Development Goal 4 by advocating for the reduction of disparities and inequities in education, including both accessibility and quality. This study demonstrates scientific evidence that serves as a framework for showing global trends in ODL in higher education research. Thus, the findings are beneficial in assisting scholars and policymakers in the development and improvement of ODL in higher education particularly within the psychology field.

Keywords:

Bibliometric analysis; Open and Distance Learning (ODL); higher education; psychology field; Scopus; RStudio

1. Introduction

The increasing of Open and Distance Learning (ODL) has changed higher education by broadening access, improving flexibility and facilitating lifelong learning opportunities beyond conventional educational settings. The change is particularly noticeable in the field of psychology, where the learning environment has a relationship to student's well-being [1], motivation [2] and engagement

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https://doi.org/10.37934/sijap.7.1.4757

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[3]. The dependence on ODL was increased further by the COVID-19 pandemic [4,5], which resulted in ODL being positioned as a main mode of delivery in many higher education institutions globally.

Despite the significant increase in ODL research, contemporary research in psychology is still inconsistent. Numerous research are limited to certain contexts, such as pandemic-related emergency teaching and learning [6], or focus on certain psychological constructs such as student self-regulation [7,8] and satisfaction [9-11]. Although these research provide valuable information, they often overlook the conceptual framework of the field and the effect of psychology on the growth of ODL in higher education. Besides, research often use descriptive or exploratory methods without contextualising their findings within a broader framework of existing knowledge. This lack of systhesis limits the identification of consistent themes, theoretical advancements and research gaps.

In this regard, bibliometric analysis provides a systematic and empirical method to critically map the psychology field. In contrast to systematic reviews, which prone to subjectivity and limitations of scope, bibliometric analysis statistically analyse published documents to reveal patterns, academic linkages and emerging topics. This is important for ODL and psychology, where the difference populations, contexts and methodologies can weaken the consistency unless the field is systematically mapped. Thus, research tools including Biblioshiny and VOSViewer were used in performing the bibliometric analysis of ODL in psychology-related higher education research to provide visualisation of patterns, identification of the most influential countries, journals and articles, as well as the most productive authors, and the identification of the keyword distribution. On that account, this study aims to answer the following research questions (RQ):

RQ1: What is the annual publication growth?

RQ2: Which are the most influential countries?

RQ3: Which are the most influential journals?

RQ4: Which are the most influential articles?

RQ5: Who are the most productive authors?

RQ6: What is the trend of keywords?

2. Methodology

2.1 Data Collection

Scopus was chosen as the online database in retrieving the documents due to its widely recognised as reliable for bibliometric analysis and provides extensive international coverage of peer-reviewed journals, particularly in the fields of psychology and education. The query string as shown in Table 1 was created to include a wide range of research in ODL in higher education such as "e*learning", "online*learning" and "remote*learning" for ODL, and "higher learning", "university*" and "tertiary*education" for higher education. Synonyms, Boolean operators and truncations were used in order to optimise the retrieval of related documents.

Table 1Query Strings in the scopus database

<u> </u>		
Electronic Databases	Query Strings	
Scopus	TITLE (("open*and*distance learning" OR "open*distance learning" OR	
	"online*and*distance learning" OR "online*distance learning" OR "e*learning" OR	
	"online learning" OR "online*and*distance education" OR "online*distance	
	education" OR "remote learning" OR "remote education") AND ("higher education"	
	OR "higher learning" OR "universit*" OR "college*" OR "tertiary*education" OR	
	"tertiary*level" OR "third*level" OR "graduate")) AND (LIMIT-TO (SUBJAREA ,	
	"PSYC")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBSTAGE , "final"))	

2.2 Data Extraction

Figure 1 illustrates the stages of data extraction, where the initial search generated 1,788 records. The number was reduced to 100 records by limiting the subject area to psychology. Conference papers and early access material were excluded in order to include only research articles (N = 87) and final publication stage documents (N = 85). Finally, 85 documents were chosen for the bibliometric analysis. In performing the bibliometric analysis, Biblioshiny [12] and VOSViewer [13] were used, where Biblioshiny generated descriptive data while VOSViewer validated the occurrence to ensure the reliability of findings.

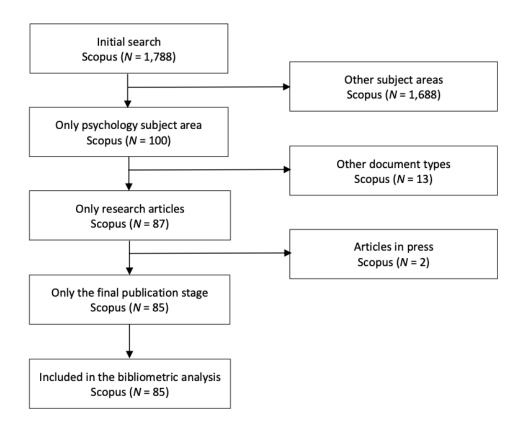


Fig. 1. The stages of data extraction

3. Results

3.1 Main Information

Table 2 presents the main information of scientific production of Open and Distance Learning (ODL) in higher education in psychology field, obtained from the Biblioshiny online application. Between year 2007 and 2023, a total of 85 documents were retrieved from 35 sources, with average citations per document is 14.27.

Table 2Main information of scientific production from 2007 to 2023

Description	Results			
Main Information About Data				
Timespan	2007:2023			
Sources (Journals, Books, etc)	35			
Documents	85			
Annual Growth Rate %	21.31			
Document Average Age	2.65			
Average citations per doc	14.27			
References	4785			
Document Contents				
Keywords Plus (ID)	101			
Author's Keywords (DE)	301			
Authors				
Authors	276			
Authors of single-authored docs	8			
Authors Collaboratio	n			
Single-authored docs	8			
Co-Authors per Doc	3.29			
International co-authorships %	24.71			
Document Types				
Article	85			

3.2 Annual Publication Growth

Figure 2 illustrates the annual production growth of documents in a bibliometric analysis of Open and Distance Learning (ODL) in higher education in psychology field. Between year 2007 and 2018, publication activity was small, characterised by limited contributions. A steady increase started in 2019, followed by a significant increase in 2021 and reached its peak in 2022. In 2023, the total number of publications decreased although remained high compared to previous years. This pattern shows the increasing recognition of ODL as a suitable learning method in psychology, particularly during the pandemic when distance learning was important. The 2022 peak shows an increased research focus on ODL as institutions adjusted to shifting teaching and learning methods that is consistent with broader bibliometric analysis on ODL in Turkiye, which reported 2022 was the peak of publication [14]. Meanwhile, the subsequent 2023 decrease shows that ODL has become a stabilised practice and integrated into teaching and learning method within psychology.

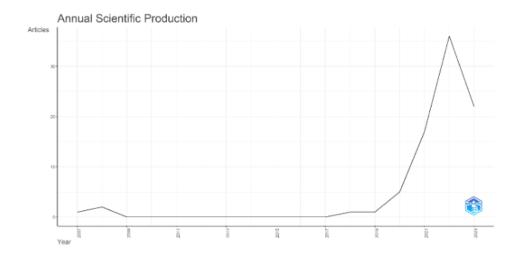


Fig. 2. Annual production growth of ODL in higher education in the psychology field from 2007 to 2023

3.3 The Most Influential Countries

Table 3 and Table 4 shows significant patterns in global authorship and citation impact within ODL in higher education in the psychology field. Table 3 shows that China, Germany and the United States of America (USA) lead the overall publications, including both single-country publication (SCP) and multiple-country publication (MCP), but their research is produced within their countries that lead to lower MCP ratio. Conversely, countries with lower total publications, including Thailand, Czech Republic and Iran, reach the MCP ratio of 1 that indicates that all of their research are co-authored globally. This difference shows a dual pattern, where research-intensive countries exhibit more independence in research output, while emerging research countries exhibit dependency on international collaboration to contribute to the field. The difference could result from unequal access to research funding, which is mostly focused on high-income countries that limits independent capacity in under-resourced countries [15].

Table 3The top 10 countries ordered by corresponding author's countries

Rank	Country	TP-BM	SCPs	MCPs	Rank	Country	MCP-Ratio
1st	China	19	16	3	1st	Thailand	1
2nd	Germany	6	4	2	2nd	Czech Republic	1
3rd	USA	6	5	1	3rd	Iran	1
4th	United Kingdom	4	2	2	4th	Kazakhstan	1
5th	Australia	3	2	1	5th	Netherlands	1
6th	Hong Kong	3	3	0	6th	Norway	1
7th	India	3	2	1	7th	Oman	1
8th	Indonesia	3	2	1	8th	United Arab Emirates	1
9th	Italy	2	2	0	9th	United Kingdom	0.5
10th	South Africa	2	2	0	10th	Germany	0.333

When assessed in line with citation impact as shown in Table 4, more differences become noticeable. Countries such as the USA have the highest total citations (TC = 257). Meanwhile, several countries with a lower number of publications have high Average Article Citations (AAC) that include Singapore (AAC = 107.00), the Netherlands (AAC = 92.00) and South Africa (AAC = 78.00), indicating that their research contributions are highly significant. Conversely, China, even being the most

productive, has a relatively low AAC of 6.40, indicating that their research has not yet achieved the average impact in psychology field.

Table 4The top 10 countries ordered by the total number of citations (TC) received

Rank	Country	TC	AAC
1st	USA	257	42.80
2nd	South Africa	156	78.00
3rd	China	122	6.40
4th	Singapore	107	107.00
5th	Netherlands	92	92.00
6th	United Kingdom	83	20.80
7th	Germany	64	10.70
8th	Hong Kong	56	18.70
9th	Iran	56	56.00
10th	Ireland	24	24.00

3.4 The Most Influential Journals

Table 5 shows the top 10 journals ordered by number of documents on the ODL in higher education within psychology field. Frontiers in Psychology has the highest number of documents and h-index that indicates its significance as a major open-access publication and most cited journal in the field of psychology [16]. Education Sciences ranked second that indicates its teaching and learning focus of ODL research in higher education. Specialised publications like the Journal of Education and E-Learning Research and the Youth Voice Journal are indicators of the increasing integration of psychological approaches with challenges related to education, digital learning and youth engagement.

Table 5The top 10 journals ordered by number of documents

Rank	Journal	No. of Documents (%)	<i>h</i> -index
1st	Frontiers in Psychology	22	7
2nd	Education Sciences	17	6
3rd	Journal of Education and E-Learning Research	4	3
4th	Youth Voice Journal	4	2
5th	Computers in Human Behavior	3	2
6th	Behavioral Sciences	2	2
7th	Humanities and Social Sciences Communications	2	1
8th	Journal of College Reading and Learning	2	1
9th	Psychology Research and Behavior Management	2	1
10th	Social Sciences and Humanities Open	2	1

3.5 The Most Influential Articles

Table 6 shows the top 10 articles on ODL in psychology-related higher education research that is ordered by the total number of citations, where majority of which emerged during the COVID-19 pandemic. The top-cited articles constantly examine psychological constructs including self-efficacy, self-regulation, anxiety and satisfaction in relation to online learning. This emphasis indicates that psychology plays an important role in understanding the effectiveness of ODL. For instance, the works examine the effect of sense of self-efficacy on the use of online learning systems, how the students self-regulate their learning when shifting to online learning, the increase of anxiety during

the first semester of online learning and the role of satisfaction on learning outcomes. The citation patterns indicates that the psychology of learning, motivation and emotional adaptation is not optional, but instead important for the improvement of ODL in higher education. This is in line with empirical evidence that the significant factors of ODL effectiveness are positive motivational factors and supportive psychological and emotional attitudes [17].

Table 6The top 10 articles ordered by the total number of citations (TC) received

Rank	Author (Year)	Title	Source	TC	ТСрҮ
1st	[18]	Self-efficacy and college students'	Computers in	178	9.89
		perceptions and use of online	Human Behavior		
		learning systems			
2nd	[19]	Emergent transition from face-to-	Humanities and	155	31.00
		face to online learning in a South	Social Sciences		
		African University in the context of	Communications		
	[0.0]	the Coronavirus pandemic	- 1		
3rd	[20]	COVID-19 Emergency eLearning	Education	107	26.75
		and Beyond: Experiences and	Sciences		
		Perspectives of University			
4+1-	[24]	Educators	Fuentiensin	0.2	22.00
4th	[21]	Changes and Adaptations: How	Frontiers in	92	23.00
		University Students Self-Regulate Their Online Learning During the	Psychology		
		COVID-19 Pandemic			
5th	[22]	Higher Education Students'	Education	75	18.75
5011	رككا	Perceptions of Online Learning	Sciences	73	10.75
		during COVID-19—A Comparative	Sciences		
		Study			
6th	[9]	Online Learning Satisfaction	Frontiers in	56	14.00
		During COVID-19 Pandemic	Psychology		
		Among Chinese University	, 0,		
		Students: The Serial Mediation			
		Model			
7th	[23]	Chinese College Students Have	Frontiers in	51	10.20
		Higher Anxiety in New Semester of	Psychology		
		Online Learning During COVID-19:			
		A Machine Learning Approach			
8th	[24]	Higher Education during the	Education	48	12.00
		Pandemic: The Predictive Factors	Sciences		
		of Learning Effectiveness in			
	(a=1	COVID-19 Online Learning			
9th	[25]	The Costs of Online Learning:	Frontiers in	48	8.00
		Examining Differences in	Psychology		
		Motivation and Academic			
		Outcomes in Online and Face-to-			
		Face Community College			
		Developmental Mathematics Courses			
10th	[26]	University Students' Readiness for	Education	40	8.00
10111	رحان	Using Digital Media and Online	Sciences	40	0.00
		Learning—Comparison between	Sciences		
		Germany and the USA			

3.6 The Most Productive Authors

In ODL psychology, the main focus of highly cited works is on satisfaction [9-11], self-regulation [7,8] and engagement [7,27], as shown in Table 7. The most productive author performed a study highlighting satisfaction as main outcome [9], followed by a study that emphasises on self-regulation and engagement [7]. This pattern indicates that research emphasises student-centered psychological constructs over technological or institutional constructs. However, the total citations are relatively low, demonstrating that ODL psychology is still in the process of developing as a field, where future research is recommended to expand beyond short-term pandemic responses to examine long-term psychological and pedagogical frameworks.

Table 7The top 10 authors ordered by the total number of citations (TC) received.

Rank	Author (Year)	Title	Journal	TC	TCpY
1st	[9]	Online Learning Satisfaction During	Frontiers in	56	14
		Covid-19 Pandemic Among Chinese	Psychology		
		University Students: The Serial			
		Mediation Model			
2nd	[7]	Students' Online Interaction, Self-	Frontiers in	6	2
		regulation, and Learning	Psychology		
		Engagement in Higher Education:			
		The Importance of Social Presence			
		to Online Learning			
3rd	[10]	System Quality, Information	Frontiers in	4	1.333
		Quality, Satisfaction and	Psychology		
		Acceptance of Online Learning			
		Platforms among College Students			
		in The Context of Online Learning			
		and Blended Learning			
4th	[28]	Emergency Remote Education and	Education	4	1.333
		its Impact on Higher Education: A	Sciences		
		Temporary or Permanent Shift in			
		Instruction?			
5th	[29]	German University Students'	Frontiers in	3	1
		Perspective on Remote Learning	Psychology		
		During the Covid-19 Pandemic: A			
		Quantitative Survey Study with			
		Implications for Future Educational			
6.1	[0.0]	Interventions		•	0.6
6th	[30]	Negotiating Education Amidst	Youth Voice	3	0.6
		Covid-19 Pandemic: Challenges and	Journal		
		Strategies in Online Learning			
		Among College Students in Manila,			
746	[מכן]	Philippines	Fuentions in	2	1
7th	[27]	Improving Effectiveness of Online	Frontiers in	2	1
		Learning for Higher Education	Psychology		
		Students During the Covid-19 Pandemic			
8th	[8]	Antecedents of Continuance	Frontiers in	1	0.333
oui	[၀]	Intention in Online Learning	Psychology	1	0.333
		Systems among Vocational College	rsychology		
		Students: The Moderating Effect of			
		Gender			
		Gender			

9th	[11]	Investigating the Impact of the	Psychology	1	0.5
		Community of Inquiry Presence on	Research and		
		Online Learning Satisfaction: A	Behavior		
		Chinese College Student	Management		
		Perspective			
10th	[31]	Exploring the Influence of	Humanities	0	0
		Teachers' Motivating Styles on	and Social		
		College Students' Agentic	Sciences		
		Engagement in Online Learning:	Communicatio		
		The Mediating and Suppressing	ns		
		Effects of Self-Regulated Learning			
		Ability			

3.7 The Trend of Keywords

The keyword distribution as shown in Table 8 and Figure 3 highlight on human-centered focus of ODL research, including repeated keywords such as "students", "female" and "male", which reflect psychology's focus on characteristics of learners and differential experiences in online learning. The global adoption of ODL research was facilitated by the pandemic, which highlighted it as an important medium for psychological and educational research, as evidenced by the frequent keywords occurrence of COVID-19, "e-learning" and "distance education". Besides, the interdisciplinary nature of ODL research is evidenced by keywords such as "education" and "epidemiology", which intersect with social sciences and public health while keeping a strong foundation in psychological perspectives. Overall, this pattern indicates that the main focus on ODL in psychology-related higher education research is on student well-being, technological adaptation and contextual influences.

Table 8The top 10 keywords ordered by the occurrences

Rank	Keywords	N
1st	human	8
2nd	students	7
3rd	female	6
4th	male	6
5th	covid-19	5
6th	e-learning	5
7th	education distance	5
8th	humans	5
9th	education	4
10th	epidemiology	4

Fig. 3. Word cloud of the most frequently used keywords of ODL in Higher Education in psychology field

4. Conclusions

In conclusion, this bibliometric analysis highlights the growth of ODL research in higher education within the psychology field, in line with Sustainable Developmental Goal (SDG) 4 that emphasises the need to reduce the disparities and inequalities in both accessibility and educational quality. The analysis shows the growth of academic linkages and knowledge building in ODL by mapping publication growth, identifying significant countries, journals, articles, authors and keywords. Thus, these findings provide a framework for understanding global research patterns that provide

evidence-based guidance for not only scholars, but also for policymakers, aiming to enhance and improve ODL systems in higher education.

For future research, studies should broaden the scope of bibliometric coverage to include other databases such as Web of Science in order to provide a more comprehensive perspective, in addition to Scopus database. Besides, comparative analyses across disciplines are recommended in future research to further contextualise psychology's contribution to ODL research. These future recommendations will ensure that ODL within psychology field continues to grow as a reliable learning method for higher education.

Acknowledgement

This work was supported by the CeRI Incentive Research Grant (WOU/CeRI/2024(0067)), Wawasan Open University.

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