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Bibliometric Analysis of Distance Education Research in Special Education: A Scopus-Based Review

Abstract

Introduction. This study provides a descriptive bibliometric overview of research at the intersection of distance education and special education. The purpose of the study is to describe the publication landscape of this field by examining the basic bibliographic characteristics and temporal development of Scopus-indexed publications. *Methodology and Methods.* Scopus was used as the data source. On September 14, 2026, the terms “distance education” and “special education” were searched together in the “Article Title, Abstract, Keywords” field. The search yielded 123 documents, all of which were included in the analysis without additional filtering or sampling. The records were examined by publication year, subject area, document type, publication language, country, institution, and source type using frequency and percentage distributions. *Results.* Publications spanned 1994–2025, with the highest number recorded in 2022 ($f = 16$; 13.01%); 2016 and 2023 followed with 11 publications each (8.94%). The most prominent subject areas were Social Sciences (73.17%), Computer Science (34.96%), and Psychology (18.70%). Articles accounted for 60.98% of the documents, followed by conference papers (19.51%) and book chapters (10.57%). English was the dominant publication language, appearing in 115 records (93.50%). The United States had the highest publication count ($f = 50$; 40.65%), followed by Brazil, Turkey, and Greece. At the institutional level, West Virginia University had the highest number of publications ($f = 10$). Journals were the predominant source type, accounting for 65.85% of the publications. *Scientific novelty.* The publication structure and temporal development of research at the intersection of distance education and special education have been mapped; the findings indicate that this research has expanded over time and has developed as an interdisciplinary field with strong connections to technology, psychology, and health-related disciplines. *Practical significance.* The results provide a foundation for future citation, keyword co-occurrence, co-authorship, and content analyses and help identify research concentrations, relatively underrepresented areas, and directions for future inquiry.

Keywords: distance education, special education, bibliometric analysis, Scopus, online learning, students with disabilities.

Introduction. Digital technologies have increasingly reshaped educational systems, and online learning has become an established alternative and complement to traditional face-to-face instruction. Distance education offers opportunities for time- and location-independent learning, repeated access to learning materials, self-paced progression, and the use of assistive technologies. When appropriately designed, digital learning environments can improve accessibility and inclusion while supporting

pedagogically effective learning experiences. These considerations are particularly important for students with special educational needs and disabilities.

The online learning experiences of students with special needs are shaped by multiple factors, including the type of disability or impairment, the technologies used, instructional design, students’ self-regulation skills, teacher support, opportunities for interaction, and the accessibility of learning materials. Öhrstedt

et al. (2024), in a study involving 6,256 university students, including 430 students with special needs, showed that online education presents both opportunities and challenges for this population. The ability of technology to compensate for barriers, promote more equitable participation, and provide flexibility in learning constitutes important advantages. However, difficulties related to planning and self-regulation, low motivation, stress, uncertainty surrounding assessment processes, and limited interaction remain important concerns. These findings underscore that students with special needs are a heterogeneous group whose online learning experiences should not be evaluated as uniform.

Similarly, the current literature emphasizes that digital accessibility cannot be reduced to technical standards alone. Lomellini et al. (2025), in a review of 91 sources on accessible and inclusive online higher education, identified barriers encountered in online learning, frameworks for accessible and inclusive instructional design, and institutional responsibility for accessibility as key research areas. Technical features such as alternative text, accurate captions, accessible documents, and compatibility with assistive technologies are important; however, an inclusive online learning experience also requires careful instructional design, meaningful student participation, institutional support, and attention to learner diversity. Accessibility should therefore be treated as a core quality criterion embedded in the design of the learning environment from the outset.

Within this context, Universal Design for Learning (UDL) provides a framework for supporting students with diverse learner profiles. Seymour (2024) found that applying UDL principles in online courses through accessible learning resources, a clear and organized weekly structure, peer interaction, and supportive instructional practices can enhance students' online learning experiences. However, the implementation of UDL does not automatically guarantee an effective or inclusive learning environment. In a systematic review of 32 peer-reviewed studies, Zhang et al. (2024) identified several implementation challenges, including

insufficient reporting of how UDL principles were operationalized, uneven application of UDL components, and limited explanation of the theoretical foundations of interventions. These findings suggest that technology should not be treated as an end in itself; rather, online learning environments should be systematically designed, evidence-informed, and adapted to learners' needs.

The COVID-19 pandemic made these issues even more prominent. The rapid shift from face-to-face instruction to emergency remote teaching made pre-existing challenges related to accessibility, individualized instruction, and support services more visible in digital environments. In a scoping review concerning children with special educational needs and disabilities, Bakaniene et al. (2023) identified substantial parental support needs, disruption of daily routines, inequalities in access to technology and resources, insufficient accommodations, and social isolation as major concerns. Research on distance education has also highlighted the importance of individualized instruction and the difficulties teachers experience in providing appropriate support (Karnas et al., 2023). Similarly, university students with learning disabilities and/or attention-deficit/hyperactivity disorder were reported to experience greater challenges in academic and emotional adjustment during periods of remote learning (Sarid & Lipka, 2023).

Distance education outcomes in special education may also vary according to the type of disability or impairment. Yıldız et al. (2022) found that orthopedic, visual, and hearing impairments were associated with differences in e-learning adoption among university students with disabilities. Large-scale evidence also supports the importance of considering disability type. Koçdar et al. (2025) analyzed learning analytics data from 98,875 learners with special needs in an open education system and reported that academic performance varied by disability category. The study further indicated that overall academic success was positively associated with learning management system use. These findings suggest that digital inclusion requires attention not only to system access but

also to the ways in which learner characteristics influence engagement with and outcomes in online learning environments.

Beyond academic access, digital and assistive technologies may support broader dimensions of student development. Pang and Datu (2025), in a meta-analysis of 26 studies, reported a positive overall effect of digital assistive technology interventions on the well-being of students with disabilities. They also emphasized that the effectiveness of such technologies may vary according to student characteristics and educational context. This evidence suggests that the value of assistive technologies extends beyond access alone and should be considered in relation to students' broader educational and psychosocial experiences.

Another important issue is the relationship between cognitive load and online learning. In a systematic review, Le Cunff et al. (2024) found that cognitive, instructional, and social factors can influence cognitive load in online learning, while research specifically addressing the experiences of neurodiverse students remains limited. This gap indicates a need for more detailed examination of the cognitive demands experienced by neurodiverse learners. Accordingly, accessibility in digital learning environments should be considered alongside variables such as cognitive load, motivation, self-regulation, social interaction, and psychological well-being.

Taken together, these studies show that distance education in special education intersects with pedagogical, technological, psychological, cognitive, and accessibility-related dimensions. On the one hand, online learning can offer flexibility, access to assistive technologies, and learning materials that can be adapted to individual needs. On the other hand, poorly designed digital environments may create or intensify barriers related to accessibility, cognitive load, limited interaction, and self-regulation. This duality suggests that understanding the development of distance education in special education requires not only individual empirical studies but also a systematic examination of the field's overall scientific production.

Bibliometric analysis offers a useful methodological approach for systematically examining the development of a research field over time and describing the structure of its scientific production. Bibliometric performance indicators can be used to analyze publication trends, subject areas, document types, publication languages, countries, institutions, and source types, thereby identifying the disciplines in which research is concentrated, the contributors to scientific output, and the geographical and institutional structure of a field. Current frameworks for bibliometric research also emphasize the distinction between performance analysis and relationship-based science-mapping techniques and recommend selecting analytical methods that are aligned with the research questions and the structure of the available data (Öztürk et al., 2024).

Broader Scopus-based bibliometric studies of digital learning have shown that the Social Sciences are among the dominant subject areas and that the United States is a prominent contributor to scientific publication output (Vaicondam et al., 2022). Bibliometric research focusing on e-learning accessibility for students with disabilities has likewise demonstrated the increasing visibility of educational technology, accessibility, and special-needs themes (Obidat, 2022). However, studies that jointly examine the international Scopus literature using the terms "distance education" and "special education" across publication year, subject area, document type, language, country, institution, and source type appear to be limited. Kim (2025), for example, examined research on distance education for students with disabilities between 2015 and 2024 and found that studies intensified during the pandemic, whereas student-focused and experimental research remained relatively limited.

Therefore, it is important to examine how scientific publications at the intersection of distance education and special education have developed over time, the disciplines in which they are concentrated, the countries and institutions contributing to scientific production, the publication types that predominate, and the scientific communication channels

through which this research is disseminated. Such an assessment can describe the overall structure of the existing literature while also identifying research concentrations, relatively underrepresented areas, and directions for future inquiry. Accordingly, using Scopus data retrieved on September 14, 2026, this study aims to provide a current and holistic overview of the literature on distance education in special education by systematically examining the bibliographic and temporal characteristics of publications meeting the specified search criteria.

Access to quality education for individuals with special needs is a fundamental issue in educational equity and inclusion. The widespread use of digital learning environments offers these students new opportunities, including flexibility in time and place, adaptation to individual learning pace, and access to assistive technologies. However, when accessibility and individualized instruction are not adequately addressed, digital environments may reproduce or intensify existing educational inequalities. Distance education in special education should therefore be evaluated not only in terms of technological infrastructure but also in relation to pedagogical, psychological, social, and accessibility-related dimensions.

This study is significant because it provides a holistic overview of the key publication characteristics of the international Scopus literature on distance education and special education. By examining publication years, subject areas, document types, publication languages, countries, institutions, and source types, the study identifies where scientific production is concentrated and how the current structure of the field has developed. Such an overview is useful for identifying temporal and disciplinary trends and for recognizing areas that remain relatively underrepresented.

Furthermore, this study provides a foundation for more comprehensive bibliometric and content-analytic research. Describing the current publication structure can inform subsequent analyses of keyword co-occurrence, co-authorship, country collaboration, citation patterns, bibliographic coupling, and thematic change. In this respect, the study is expected

not only to characterize the existing literature but also to support the development of a future research agenda on distance education in special education.

The main purpose of this study is to describe the publication landscape of distance education research in special education by examining the basic bibliographic characteristics and temporal development of all Scopus-indexed publications that contain both the terms “distance education” and “special education” and met the specified search criteria as of September 14, 2026. All 123 publications returned by the search were included in the analysis without additional filtering, exclusion, or sampling. The publications were categorized by publication year, subject area, document type, publication language, country, institution, and source type. The study aims to describe the current structure and temporal development of research at the intersection of special education and distance education, identify prominent areas of scientific production, and provide a basis for future research.

Accordingly, the study sought to answer the following research questions: (1) What is the distribution of publications on distance education in special education by year? (2) What is the distribution of publications on distance education in special education by subject area? (3) How are the publications distributed by document type and source type? (4) What is the distribution of publications by language? (5) What is the distribution of publications by country? (6) What is the distribution of publications by institution?

Materials and Methods. This study employed a descriptive bibliometric review design. In bibliometric research, clear reporting of the research question, data source, search strategy, data-cleaning process, and analytical techniques is essential for reproducibility and methodological quality (Öztürk et al., 2024). The present study focused on performance indicators available through Scopus, including publication count, publication year, subject area, document type, publication language, country, institution, and source type. Because the dataset used in this study did not include citation relationships,

co-authorship networks, or keyword co-occurrence matrices, science-mapping analyses were not conducted. The study was therefore limited to descriptive bibliometric performance analysis. This approach is consistent with the performance-analysis logic used in Scopus-based bibliometric studies of disability and e-learning (Obidat, 2022).

The research data were obtained from the Scopus database. The search was conducted on September 14, 2026. In the Scopus interface, the search field was set to “Article Title, Abstract,

Keywords,” and the terms “distance education” and “special education” were entered together. The search yielded 123 documents (Figure 1; Table 1). No restrictions were applied by year, country, publication language, document type, or source type. All 123 publications that met the search criteria and were indexed in Scopus as of September 14, 2026, were included in the study. Therefore, no additional filtering, eligibility screening, or sampling was performed; the analysis covered all records returned by the query.

Figure 1

Scopus Database Search and Number of Records Retrieved (September 14, 2026)

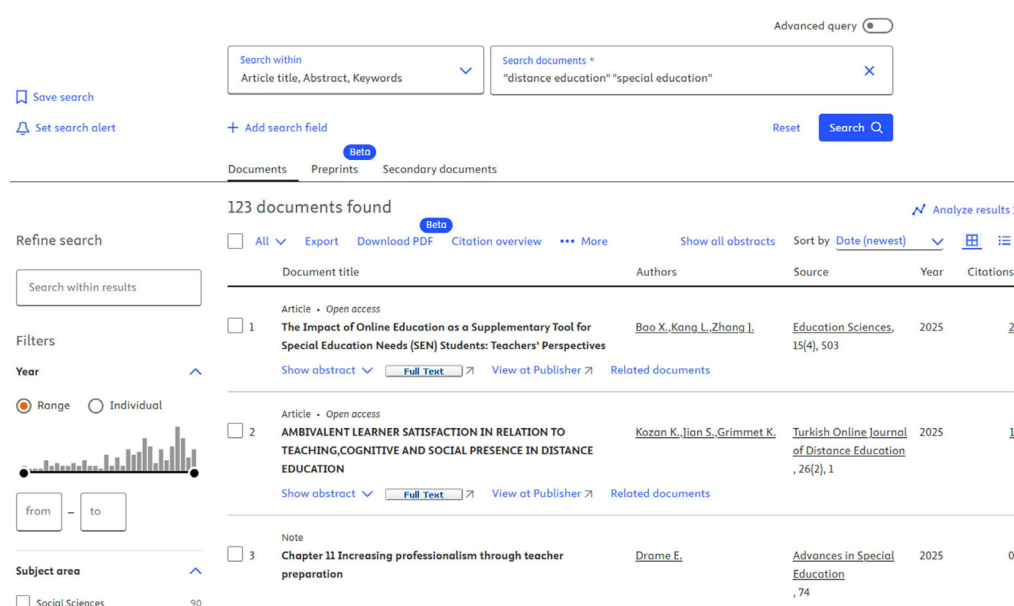


Table 1

Scopus Search Strategy and Dataset Coverage

Component	Explanation
Database	Scopus
Search date	14.09.2026
Search field	Article title, Abstract, Keywords
Search terms	«Distance education» and «special education»
Total records	123 documents; all records included in the analysis
Scope	All Scopus-indexed publications meeting the specified search criteria
Type of analysis	Descriptive bibliometric performance analysis
Variables examined	Publication year, subject area, document type, publication language, country, institution, and source type

Note. The search terms were entered together in the selected Scopus search field. Reporting the exact search terms and field selection supports methodological transparency and reproducibility.

The scope of the study comprises all publications retrieved from Scopus on September 14, 2026, using the terms “distance education” and “special education” in the “Article Title, Abstract, Keywords” field. The 123 publications returned by this search were included in the analysis without further selection or sampling. For each record, the relevant bibliographic metadata used in the analysis were recorded, including publication year, language, country, institution, document type, subject area, and source type. No additional restrictions were applied. The dataset therefore represents all Scopus-indexed publications that met the specified search criteria on the date of the search.

Frequency values were obtained from the Scopus filter screens, and percentages were calculated for each category based on the total number of records ($n = 123$). Publication year, document type, and source type are mutually exclusive categories, so the frequencies within each of these variables sum to 123. In contrast, subject area, publication language, country, and institution may include more than one classification or affiliation for a single record; therefore, total frequencies for these variables

may exceed 123 and the corresponding percentages may exceed 100%. For publication year, each record was assigned to a single year, and annual frequencies and percentages were calculated accordingly.

The study did not collect data from individual participants and relied exclusively on bibliographic metadata from scientific publications. Accordingly, the study involved no intervention with human participants and no analysis of personal data.

Results. The yearly distribution (Table 2) shows that the earliest publication in the dataset dates to 1994 and the most recent publications to 2025. The highest number of publications was recorded in 2022 ($f = 16$; 13.01%), followed by 2016 and 2023 with 11 publications each (8.94%), and by 2017 and 2021 with eight publications each (6.50%). A total of 95 publications (77.24%) were published between 2013 and 2025, compared with 28 publications (22.76%) between 1994 and 2012. This pattern indicates that publication activity at the intersection of distance education and special education became more sustained after 2013, with a notable concentration during 2021–2023.

Table 2

Distribution of Publications by Year

Year	frequency	%
2025	7	5.69
2024	4	3.25
2023	11	8.94
2022	16	13.01
2021	8	6.50
2020	3	2.44
2019	7	5.69
2018	2	1.63
2017	8	6.50
2016	11	8.94
2015	6	4.88
2014	5	4.07
2013	7	5.69
2012	1	0.81
2011	4	3.25
2010	1	0.81
2009	5	4.07

2007	1	0.81
2006	1	0.81
2005	3	2.44
2004	1	0.81
2003	2	1.63
2002	1	0.81
2001	1	0.81
2000	2	1.63
1999	1	0.81
1998	3	2.44
1994	1	0.81

Note. The Scopus year filter displays only years in which at least one publication was indexed; years with no publications are therefore omitted from the table. The total frequency is 123.

Table 3 shows that most publications are classified within the Social Sciences ($f = 90$; 73.17%). Computer Science ranks second ($f = 43$; 34.96%), followed by Psychology ($f = 23$; 18.70%). The representation of Medicine ($f = 12$; 9.76%), Health Professions ($f = 11$; 8.94%), and Engineering ($f = 8$; 6.50%) indicates that research at the intersection of distance education and special education extends beyond educational sciences and is also connected to technological and health-related disciplines.

Table 3

Distribution of Publications by Subject Area

Subject area	frequency	%
Social Sciences	90	73.17
Computer Science	43	34.96
Psychology	23	18.70
Medicine	12	9.76
Health Professions	11	8.94
Engineering	8	6.50
Mathematics	6	4.88
Business, Management and Accounting	4	3.25
Arts and Humanities	3	2.44
Decision Sciences	2	1.63
Neuroscience	1	0.81
Chemistry	1	0.81
Biochemistry, Genetics and Molecular Biology	1	0.81

Note. Because a publication may be classified under more than one Scopus subject area, the sum of the frequencies exceeds 123 and the sum of the percentages exceeds 100%.

As shown in Table 4, research articles constitute 60.98% of the dataset ($f = 75$). Conference papers account for 19.51% ($f = 24$), book chapters for 10.57% ($f = 13$), review articles for 5.69% ($f = 7$), books for 2.44% ($f = 3$), and notes for 0.81% ($f = 1$). The

predominance of articles indicates that the field is largely represented through peer-reviewed journal publications, while the substantial share of conference papers suggests that applied and technology-oriented work is also disseminated through conference channels.

Table 4*Distribution of Publications by Document Type*

Document type	frequency	%
Article	75	60.98
Conference paper	24	19.51
Book chapter	13	10.57
Review	7	5.69
Book	3	2.44
Note	1	0.81

English is the dominant publication language in the dataset (Table 5; $f = 115$; 93.50%). Portuguese appears in five records (4.07%) and Spanish in three (2.44%), while Turkish, Korean, and Arabic each appear in one record

(0.81%). This distribution reflects the dominant role of English in international academic communication and suggests that research published in other language contexts may have more limited visibility within Scopus.

Table 5*Distribution of Publications by Language*

Language	frequency	%
English	115	93.50
Portuguese	5	4.07
Spanish	3	2.44
Turkish	1	0.81
Korean	1	0.81
Arabic	1	0.81

Note. The total language frequency is 126 because some Scopus records are tagged with more than one publication language.

The United States has the highest publication count in the dataset (Table 6), with 50 publications (40.65%). Brazil follows with 10 (8.13%), Turkey with eight (6.50%), and Greece with seven (5.69%). Norway and China each have five publications, while Kazakhstan has four. These findings indicate that research output

is internationally distributed across multiple regions, although it is concentrated in several countries. Turkey's third-place position in this dataset indicates relatively high publication visibility at the intersection of special education and distance education.

Table 6*Countries Represented by at Least Three Publications*

Country	frequency	%
United States	50	40.65
Brazil	10	8.13
Turkey	8	6.50
Greece	7	5.69
Norway	5	4.07
China	5	4.07
Kazakhstan	4	3.25

United Kingdom	3	2.44
Switzerland	3	2.44
Portugal	3	2.44
India	3	2.44

Note. The Scopus output includes four records in the “Undefined” category. Thailand, Spain, Saudi Arabia, Poland, Italy, Israel, Chile, Canada, and Australia are each represented by two publications, whereas the United Arab Emirates, Taiwan, South Korea, Palestine, Pakistan, Japan, Indonesia, Hungary, Hong Kong, France, the Czech Republic, and Cyprus are each represented by one publication. Because publications may involve authors from multiple countries, the total country frequency may exceed 123.

West Virginia University has the highest institutional publication count (Table 7), with 10 publications (8.13%). Universitetet i Oslo follows with five publications (4.07%), while the National and Kapodistrian University of Athens and Abai Kazakh National Pedagogical University each have four publications (3.25%). Because most institutions are represented by three or fewer publications, scientific output appears to be distributed across numerous universities and research institutions rather than concentrated in a single institutional center.

Table 7

Institutions Represented by at Least Three Publications

Organisation	frequency	%
West Virginia University	10	8.13
Universitetet i Oslo	5	4.07
National and Kapodistrian University of Athens	4	3.25
Abai Kazakh National Pedagogical University	4	3.25
University of Macedonia	3	2.44
The University of North Carolina at Charlotte	3	2.44
Northern Arizona University	3	2.44
The University of Utah	3	2.44

Note. Institutional frequencies are not mutually exclusive because publications may include multiple authors and institutional affiliations. Many additional institutions appear in the Scopus results with one or two publications.

Regarding source type (Table 8), 65.85% of the publications ($f = 81$) were published in journals. Conference proceedings account for 14.63% ($f = 18$), books for 11.38% ($f = 14$), and book series for 8.13% ($f = 10$). These findings indicate that journals are the primary scientific communication channel for research at the intersection of distance education and special education.

Table 8

Distribution of Publications by Source Type

Source type	frequency	%
Journal	81	65.85
Conference proceeding	18	14.63
Book	14	11.38
Book series	10	8.13

Discussion. The temporal distribution indicates that research on distance education in special education dates back to 1994 and that publication activity has increased over time. Of the 123 publications, 95 (77.24%) were published between 2013 and 2025, suggesting that the topic has developed into a more sustained research area during the past decade. The highest annual output occurred in 2022 ($f = 16$; 13.01%), and 35 publications (28.46%) were published during 2021–2023. This concentration is consistent with the heightened research attention given to distance education and the education of students with special needs during and immediately after the COVID-19 pandemic. Kim (2025) similarly reported that research on distance education for students with disabilities intensified during the pandemic within the 2015–2024 period. Aristovnik et al. (2023) also demonstrated a rapid expansion of online-learning research associated with COVID-19. The 2022 peak in the present dataset, rather than a peak in 2020, may partly reflect the time required to conduct studies, prepare manuscripts, complete publication processes, and achieve Scopus indexing. However, the lower frequencies observed in 2024 and 2025 should not, by themselves, be interpreted as evidence of a lasting decline. Longitudinal monitoring that incorporates keyword, citation, and content indicators would be necessary to evaluate whether the temporal pattern represents a sustained shift.

The classification of 73.17% of the publications in the Social Sciences, 34.96% in Computer Science, and 18.70% in Psychology indicates that distance education research in special education is interdisciplinary, combining educational, technological, and human-behavior perspectives. This finding is consistent with Vaicondam et al. (2022), who identified the Social Sciences as the most prevalent subject area in their analysis of 1,361 Scopus records on digital learning. Similarly, Obidat (2022) demonstrated that educational technology, accessibility, disability, and digital learning are closely interconnected themes within the literature on e-learning accessibility for students with disabilities. Thus, although

the predominance of the Social Sciences is expected, the substantial representation of Computer Science and Psychology suggests that the field also engages with technological design, user experience, cognitive processes, and psychosocial adjustment. The visibility of Psychology is also consistent with recent empirical and review research. Le Cunff et al. (2024), for example, showed that the relationship between neurodiversity and cognitive load in online learning remains insufficiently examined, while Öhrstedt et al. (2024) identified self-regulation, motivation, stress, interaction, flexibility, and assistive technologies as important dimensions of students' online higher education experiences. Together, these studies support the presence of psychology- and health-related perspectives in the current bibliometric distribution and demonstrate that distance education in special education cannot be understood solely in terms of technological access.

The document and source-type findings further clarify the scientific communication structure of the field. Articles are the most common document type (60.98%), conference papers rank second (19.51%), and journals are the dominant source type (65.85%). This pattern indicates that research at the intersection of distance education and special education is disseminated predominantly through peer-reviewed journal channels. The result is comparable with Aristovnik et al. (2023), whose bibliometric analysis of 8,303 Scopus records on online learning found that most research was published in scientific journals. By contrast, Prahani et al. (2022) reported conference proceedings as the most common document type in their study of learning management system research covering 2,689 Scopus records. This difference may reflect variation in disciplinary emphasis: research on learning management systems often focuses on technological infrastructure and software development, whereas research at the intersection of distance education and special education may place greater emphasis on pedagogical, psychological, accessibility, and applied educational issues. Nevertheless, the role of conferences should

not be overlooked. Because distance education, assistive technologies, accessible interfaces, and digital teaching tools are rapidly evolving areas, conferences provide important venues for disseminating emerging technologies and preliminary findings. The predominance of journal publications in the present dataset nevertheless suggests that the field also has a substantial body of peer-reviewed, detailed research reports. This interpretation is consistent with Öztürk et al. (2024), who emphasize that document and source types are important performance indicators for understanding a field's scientific communication structure.

English accounts for 93.50% of the publication-language records, making it one of the most prominent characteristics of the dataset. This proportion is comparable with the findings of Aristovnik et al. (2023), who reported that approximately 95% of the 8,303 Scopus publications examined in the context of online learning and COVID-19 were in English. Prahani et al. (2022) likewise identified English as the dominant publication language in learning management system research. The predominance of English in the present study therefore appears to reflect a broader linguistic pattern in Scopus-indexed digital-learning research rather than a feature unique to the intersection of special education and distance education. Importantly, this finding should not be interpreted as evidence that research in other linguistic or cultural contexts is absent. Scopus coverage and the role of English as a common language of international scholarly communication can increase the visibility of English-language publications. The presence of national-language research, such as the Turkish-language study by Dayı and Basık (2022), further illustrates this point. Future comparisons of Scopus with ERIC, Web of Science, and regional or national databases may clarify the extent to which the observed linguistic distribution reflects database coverage.

The United States has the highest publication count in the country distribution, with 50 publications (40.65%), a pattern that is consistent with previous bibliometric research. Vaicondam et al. (2022) identified the United States as the

leading country in digital-learning research in terms of publication output and citations. Obidat (2022) similarly reported that the United States was the most productive country in the literature on e-learning accessibility for students with disabilities and noted the comparatively strong contribution of developed countries while emphasizing the need for greater international collaboration. The present findings may therefore reflect the substantial research capacity of the United States in special education, educational technology, digital accessibility, and higher education. At the same time, the publication counts for Brazil ($f = 10$), Turkey ($f = 8$), and Greece ($f = 7$) show that research in this area is not confined to North America. Turkey's relatively high representation is also consistent with recent empirical studies conducted in the country. Yıldız et al. (2022) showed that factors influencing e-learning adoption can differ by disability type among university students with disabilities. Dayı and Basık (2022) highlighted access and collaboration needs in the distance education experiences of university students with special needs, while Karnas et al. (2023) documented challenges faced by special education teachers in maintaining individualized instruction and support services during distance education. These studies provide contextual support for Turkey's visibility in the bibliometric results.

At the institutional level, West Virginia University has the highest publication count ($f = 10$; 8.13%), followed by Universitetet i Oslo with five publications and the National and Kapodistrian University of Athens and Abai Kazakh National Pedagogical University with four publications each. This distribution indicates that publication output is not concentrated in a single institutional center. The result differs from Obidat (2022), who identified the University of Washington as the most productive institution in the broader e-learning accessibility literature. This difference is not necessarily contradictory; bibliometric rankings are sensitive to the concepts used in the search, the search strategy, the period covered, and the unit of analysis. In the present dataset, the leading institution accounts for only

8.13% of all publications, and the remaining institutions have even smaller shares, indicating a dispersed pattern of institutional productivity. However, publication counts alone cannot determine whether institutions form strong or weak collaborative networks. Assessing collaboration requires separate analysis of co-authorship relationships and inter-institutional networks. As Öztürk et al. (2024) emphasize, performance analysis should be distinguished from relationship-based science-mapping techniques. Accordingly, the present study describes institutional productivity but does not draw conclusions about the structure or strength of institutional collaboration.

The bibliometric findings also have implications for research and practice. A consistent message across the literature is that technical accessibility alone is insufficient to ensure inclusive and effective distance education for students with special needs. Starks (2022) showed that special education teachers working in K–12 online learning environments require differentiated instruction, flexible content arrangements, and family–school collaboration. Lowenthal and Lomellini (2023) identified gaps in the knowledge and skills of instructors and educational technologists related to designing accessible online courses and materials. Similarly, Lomellini et al. (2025) identified student barriers, accessible course design, universal-design approaches, and institutional responsibility as central themes in the literature on accessible and inclusive online higher education. These studies help explain the simultaneous representation of Social Sciences, Computer Science, Psychology, and health-related fields in the present dataset: inclusive online learning requires the integration of pedagogical design, technical accessibility, and attention to learner characteristics. Differentiation among students with special needs should therefore remain central to the research agenda. Sarid and Lipka (2023) showed that university students with learning disabilities and/or ADHD may experience greater vulnerability in academic and emotional adjustment during remote learning, while Petlik (2024) identified challenges related to emotion

regulation, participation, and perseverance among students with exceptionalities. Polat et al. (2022) also indicated that online education can offer benefits in the context of autism spectrum disorder, although adaptability and usability require further improvement. Future studies that distinguish learners by disability type, educational level, digital skill level, assistive technology use, and instructional model may therefore produce more precise and actionable evidence than studies that treat students with special needs as a homogeneous group.

By examining all 123 Scopus records that met the specified search criteria on September 14, 2026, without additional sampling or exclusion, this study provides a current descriptive overview of publication activity at the direct intersection of the terms “distance education” and “special education.” Kim (2025), focusing on distance education research for students with disabilities between 2015 and 2024, found that research intensified during the pandemic while student-focused and experimental studies remained relatively limited. The present study extends this perspective by providing an international Scopus-based overview across subject area, document type, source type, publication language, country, and institution. It is important, however, to distinguish the present approach from science mapping. This study constitutes descriptive performance analysis rather than a network-based bibliometric analysis. Obidat (2022), by comparison, combined performance analysis with science-mapping techniques to examine collaboration and thematic structure in the e-learning accessibility literature. Öztürk et al. (2024) likewise emphasize that bibliometric techniques should be selected in accordance with the research question and available data structure. The absence of citation networks, co-authorship networks, keyword co-occurrence maps, and bibliographic-coupling analyses in the present study should therefore be understood as a methodological boundary of the selected design. A logical next step would be to export the complete metadata for the 123 records in CSV or BibTeX format and conduct citation, co-authorship, country-collaboration, keyword co-occurrence, and thematic-evolution analyses

using tools such as VOSviewer or Bibliometrix/Biblioshiny.

Conclusions. This study provides a bibliographic and temporal overview of all 123 Scopus-indexed publications that met the specified search criteria at the intersection of the terms “distance education” and “special education” as of September 14, 2026. The publications span 1994–2025, with a clear concentration after 2013 and the highest annual output in 2022 ($f = 16$; 13.01%). The concentration of publications during 2021–2023 indicates increased scholarly attention to distance education in special education during and immediately after the COVID-19 pandemic. The literature is predominantly classified within the Social Sciences, with substantial representation in Computer Science and Psychology. Articles are the most common document type, journals are the dominant source type, and English is the principal publication language. The United States has the highest publication count, followed by Brazil, Turkey, and Greece. Although West Virginia University has the highest institutional publication count, the overall distribution across many institutions indicates that the field is not concentrated within a single institutional center. Considered together with the related literature, the findings show that distance education in special education is an interdisciplinary research area that brings together pedagogical design, digital accessibility, psychosocial adjustment, assistive technologies, and institutional support. Further development of the field would benefit from research addressing accessible digital design, individualized support, teacher and educational-technologist competencies, family–school collaboration, disability-specific instructional strategies, and the direct experiences of students with special needs.

The study has several limitations. First, this study is based exclusively on the Scopus database; publications indexed only in Web of Science, ERIC, Google Scholar, or regional databases were not included. Second, the search was limited to the two exact terms “distance education” and “special education.” Publications using related concepts such

as “online learning,” “e-learning,” “remote learning,” “special educational needs,” “disability,” or “inclusive education” without containing both search terms may therefore have been excluded from the dataset. Third, temporal development was examined descriptively using annual frequencies and percentages. Advanced time-series analysis, thematic-evolution analysis, and period-based citation analysis were not conducted. Fourth, the study focused on descriptive performance indicators; citation analysis, co-authorship-network analysis, keyword co-occurrence analysis, bibliographic coupling, and co-citation analysis were not performed. Fifth, because individual publications may be assigned to more than one category for subject area, publication language, country, and institution, the percentages for these variables are not mutually exclusive and may sum to more than 100%. Finally, Scopus is a dynamic database. New indexing, metadata corrections, and changes in database coverage may cause the same query to return a different number of records at a later date.

Prospects for further research are related to the following directions. First, future studies should expand the search strategy by incorporating synonyms and related concepts and should conduct sensitivity analyses to evaluate the effect of alternative search terms. Second, Scopus records should be exported in CSV or BibTeX format and analyzed using tools such as VOSviewer or Bibliometrix/Biblioshiny to examine keyword co-occurrence, co-authorship, country collaboration, and citation networks. Third, beyond annual publication counts, future research should compare the pre-COVID-19, pandemic, and post-pandemic periods in terms of keywords, citations, and content indicators to examine the conceptual evolution of the field over time. Fourth, the publications should be subjected to content analysis according to disability or impairment type, educational level, instructional model (synchronous, asynchronous, or blended), and the assistive technologies used. Fifth, Scopus and Web of Science results should be compared to evaluate differences in database coverage and indexing patterns. Finally, greater emphasis

should be placed on mixed-methods studies that of students with special needs, their families, jointly examine the online learning experiences and their teachers.

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