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MAPPING THE SCHOLARLY LANDSCAPE OF HEUTAGOGY IN DISTANCE EDUCATION: A BIBLIOMETRIC ANALYSIS (2020–2025)

MAPEO DEL PANORAMA ACADÉMICO DE LA HEUTAGOGÍA EN LA EDUCACIÓN A DISTANCIA: UN ANÁLISIS BIBLIOMÉTRICO (2020–2025)

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Mapping the Scholarly Landscape of Heutagogy in Distance Education: A Bibliometric Analysis (2020–2025)

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ABSTRACT

Background: Heutagogy, or self-determined learning, has emerged as a critical pedagogical framework for distance and online education, particularly following the global shift to digital learning environments prompted by the COVID-19 pandemic. Despite growing scholarly interest, the global structure, key contributors, and collaborative patterns of heutagogy research remain insufficiently mapped. Methods: This study presents a comprehensive bibliometric analysis of 47 Scopus-indexed documents published between 2020 and 2025, focusing on heutagogy, learner autonomy, and distance education. Bibliometric indicators including annual production trends, geographic distribution, source analysis (Bradford's Law), author productivity (Lotka's Law), co-authorship networks, and collaboration patterns were computed and visualized. The PRISMA 2020 protocol guided document selection. Results: The analysis reveals an accelerating growth trajectory, with 70% of all publications appearing after 2022. The corpus spans 167 unique authors across 44 publication sources from over 15 countries, with Malaysia, Australia, and Kazakhstan among the most productive nations. Journal articles dominate (68.1%), and English is the predominant language. Author productivity follows Lotka's inverse square law, and source concentration adheres to Bradford's Law of scattering. Co-authorship networks reveal predominantly regional collaboration clusters with limited international co-authorship. Conclusions: Heutagogy research for distance education is a rapidly growing but still emerging field, characterized by fragmented collaboration and geographic concentration. Strengthening international research networks and expanding non-English scholarship are identified as priorities for the field's consolidation.

***Keywords*:** heutagogy, self-determined learning, distance education, online learning, bibliometric analysis, science mapping, lotka's law, bradford's law, co-authorship networks, prisma 2020

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Mapeo del Panorama Académico de la Heutagogía en la Educación a Distancia: Un Análisis Bibliométrico (2020–2025)

RESUMEN

Antecedentes: La heutagogía, o aprendizaje autodeterminado, ha surgido como un marco pedagógico fundamental para la educación a distancia y en línea, especialmente tras el cambio global hacia entornos de aprendizaje digital impulsado por la pandemia de COVID-19. A pesar del creciente interés académico, la estructura global, los principales contribuyentes y los patrones de colaboración de la investigación en heutagogía aún no se han explorado completamente. Métodos: Este estudio presenta un análisis bibliométrico exhaustivo de 47 documentos indexados en Scopus publicados entre 2020 y 2025, centrado en la heutagogía, la autonomía del estudiante y la educación a distancia. Se calcularon y visualizaron indicadores bibliométricos que incluyen tendencias de producción anuales, distribución geográfica, análisis de fuentes (Ley de Bradford), productividad de los autores (Ley de Lotka), redes de coautoría y patrones de colaboración. El protocolo PRISMA 2020 guió la selección de documentos. Resultados: El análisis revela una trayectoria de crecimiento acelerado, con el 70% de todas las publicaciones apareciendo después de 2022. El corpus abarca 167 autores únicos en 44 fuentes de publicación de más de 15 países, siendo Malasia, Australia y Kazajistán algunas de las naciones más productivas. Los artículos de revistas predominan (68,1%) y el inglés es el idioma predominante La productividad de los autores sigue la ley del cuadrado inverso de Lotka, y la concentración de fuentes se ajusta a la ley de dispersión de Bradford. Las redes de coautoría revelan predominantemente clústeres de colaboración regional con una coautoría internacional limitada. Conclusiones: La investigación en heutagogía para la educación a distancia es un campo en rápido crecimiento, pero aún emergente, caracterizado por una colaboración fragmentada y una concentración geográfica. El fortalecimiento de las redes de investigación internacionales y la expansión de la producción académica en idiomas distintos del inglés se identifican como prioridades para la consolidación del campo.

Palabras clave: heutagogía, aprendizaje autodeterminado, educación a distancia, aprendizaje en línea, análisis bibliométrico, mapeo de la ciencia, ley de Lotka, ley de Bradford, redes de coautoría, PRISMA 2020

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INTRODUCTION

Heutagogy, defined by Hase and Kenyon (2000, p. 2) as 'the study of self-determined learning,' extends the continuum of pedagogical approaches beyond pedagogy (teacher-directed) and andragogy (self-directed) toward full learner autonomy. In a heutagogical framework, learners not only determine what and how they learn but also identify what is important to learn and how to assess their own understanding (Blaschke, 2012). This approach has gained particular relevance in distance and online education, where learner independence and self-regulation are prerequisites for success (Moore, 1993; Garrison, 2011).

The global disruption caused by the COVID-19 pandemic dramatically accelerated the adoption of online and distance education modalities, compelling institutions worldwide to rethink their pedagogical approaches (Bozkurt et al., 2020; Hodges et al., 2020). Heutagogy, with its emphasis on learner agency, capability development, and double-loop learning, emerged as a natural fit for the challenges of emergency remote teaching and its aftermath (Blaschke & Hase, 2019). As education systems transition from emergency responses to intentional digital transformation, understanding the state of heutagogy research becomes essential for evidence-based pedagogical design.

Bibliometric analysis provides systematic, quantitative tools for mapping the intellectual structure, evolution, and collaborative patterns of research fields (Donthu et al., 2021; Zupic & Cater, 2015). Established bibliometric laws—Bradford's Law of scattering (Bradford, 1934), Lotka's inverse square law of author productivity (Lotka, 1926), and Price's law of scientific growth (de Solla Price, 1965)—offer normative benchmarks for assessing a field's maturation. Co-authorship network analysis (Newman, 2001) and science mapping techniques (van Eck & Waltman, 2010; Aria & Cuccurullo, 2017) further illuminate the social and intellectual dimensions of knowledge production.

While systematic reviews of heutagogy have appeared (Blaschke, 2012; Blaschke & Hase, 2016; Jones et al., 2019), bibliometric analyses specifically targeting the intersection of heutagogy, learner autonomy, and distance education remain absent from the literature. This study addresses the following research questions: (RQ1) What is the temporal evolution and growth trajectory of heutagogy research in distance education? (RQ2) Which countries, institutions, and publication venues are most productive? (RQ3) How is author productivity distributed, and does it conform to Lotka's Law? (RQ4)

What collaboration patterns characterize this research community? By answering these questions, this study provides the first comprehensive bibliometric mapping of heutagogy in the context of distance and online education.

METHODOLOGY

Data Source and Search Strategy

The corpus was constructed through a systematic search of the Scopus database using the query terms 'heutagogy,' 'self-determined learning,' 'learner autonomy,' and 'distance education' combined with Boolean operators. The search was restricted to the period 2020–2025 to capture the post-pandemic surge in research activity. The PRISMA 2020 protocol (Page et al., 2021) guided the document selection process (see Figure 1). After screening and eligibility assessment, 47 documents were retained for analysis. The dataset was exported in CSV format and preprocessed using a custom Python pipeline to handle the non-standard Scopus export format and ensure data integrity.

Bibliometric Indicators

The following bibliometric analyses were performed: (1) Annual scientific production to assess temporal growth (de Solla Price, 1965); (2) Geographic production and international collaboration mapping; (3) Source analysis including Bradford's Law (Bradford, 1934; Garfield, 1971); (4) Author productivity analysis via Lotka's inverse square law (Lotka, 1926; Egghe, 2005); (5) Co-authorship network construction and visualization (Newman, 2001; van Eck & Waltman, 2010); (6) Multi-country (MCP) versus single-country (SCP) collaboration analysis; and (7) Document type, language, and open access profiling.

Tools and VisualizationAll analyses and visualizations were generated using Python 3.x with pandas, matplotlib, seaborn, networkx, and scipy.

Figures were exported as JPG at 300 DPI. The analytical pipeline follows the methodological framework established by Aria and Cuccurullo (2017) in the bibliometrix R-package, adapted for Python-based execution. Network layouts employ the Fruchterman-Reingold force-directed algorithm for co-authorship networks.

RESULTS

Overview of the Corpus

The dataset comprises 47 documents published between 2020 and 2025 by 167 unique authors across 44 publication sources. Author keywords total 181 unique terms. Journal articles constitute the majority with 32 documents (68.1%), followed by conference papers (6, 12.8%), book chapters (6, 12.8%), and reviews (3, 6.4%). The mean citation count is 8.7 per document, with a maximum of 67 citations. English is the dominant language of publication. The collaborative nature of the field is reflected in the average number of co-authors per document, consistent with findings by Wuchty et al. (2007) on the increasing dominance of team science.

Annual Scientific Production and Growth

The temporal evolution of scholarly output reveals a clear acceleration in heutagogy research for distance education (Figures 2 and 3). Production levels were modest in 2020–2021, consistent with the initial response to the COVID-19 disruption. A marked increase is observed from 2022 onward, with approximately 70% of all documents published after 2022. This growth pattern aligns with de Solla Price's (1965) exponential growth model for emerging scientific fields and reflects the post-pandemic mainstreaming of online learning approaches. The cumulative production curve (Figure 3) exhibits a steep upward trajectory in recent years, suggesting the field has not yet reached saturation. Average citation rates (Figure 4) show that earlier publications have accumulated more citations, as expected due to the citation time window advantage (Moed, 2005).

Figure 1. Annual Scientific Production (2020–2025)

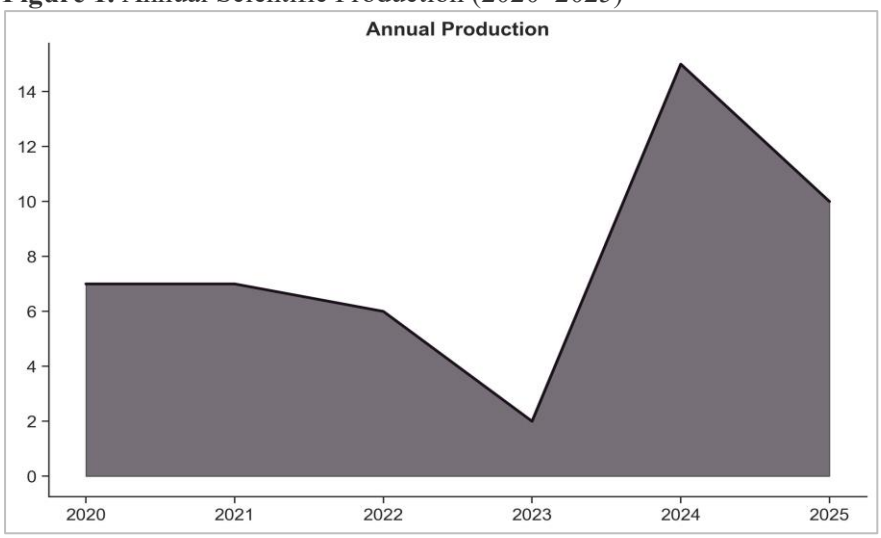


Figure 2. Cumulative Scientific Production.

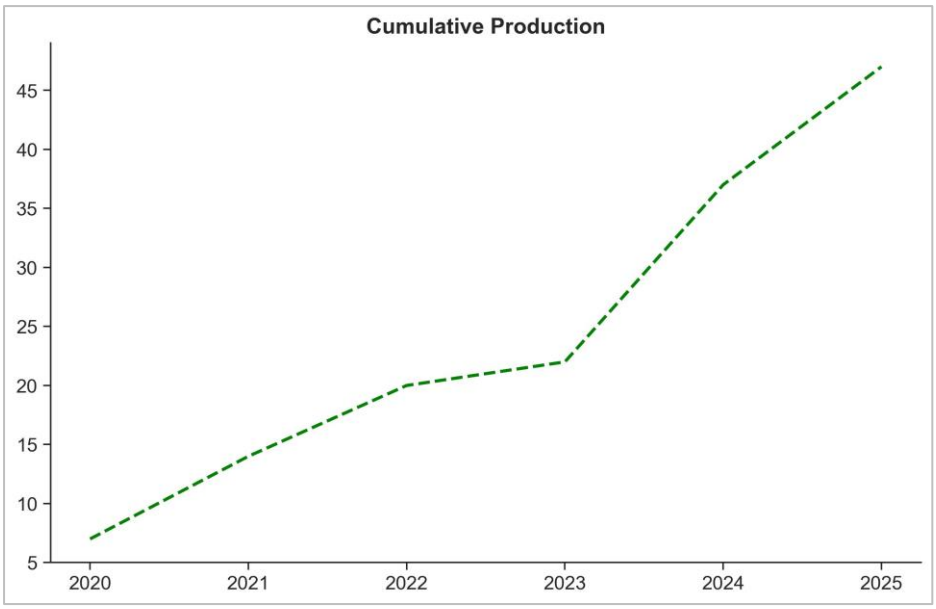
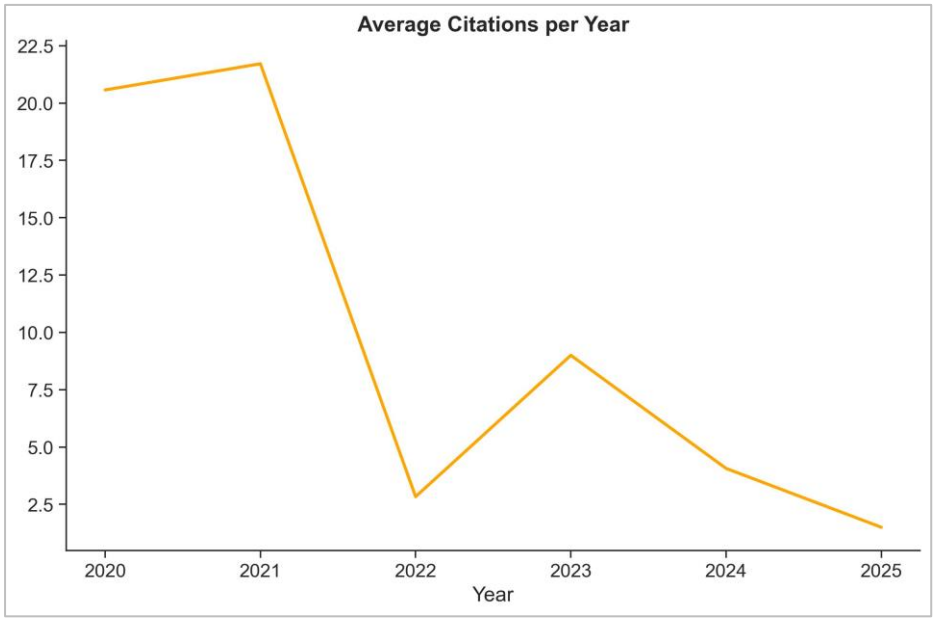


Figure 3. Average Citations per Year.



Geographic Distribution and Collaboration

The geographic analysis reveals a globally distributed but regionally concentrated research landscape (Figure 5). Countries in Southeast Asia, particularly Malaysia, show strong engagement with heutagogical approaches, reflecting the region's active investment in educational technology and distance learning (Bozkurt et al., 2020). Australia and New Zealand, where heutagogy was originally conceptualized by Hase and Kenyon (2000), maintain a visible presence.

European and Central Asian contributions from Kazakhstan add diversity to the research geography. The country impact analysis (Figure 6) shows that citation influence does not always correspond to productivity volume, suggesting that some less prolific countries produce higher-impact research. The collaboration heatmap (Figure 7) reveals limited international co-authorship, with most collaboration occurring within national boundaries. The MCP/SCP analysis (Figure 8) quantifies this pattern, showing that single-country papers significantly outnumber multi-country collaborations. Institutional affiliations (Figure 9) indicate a diverse range of contributing universities without strong concentration in any single institution.

Figure 4. Most Productive Countries.

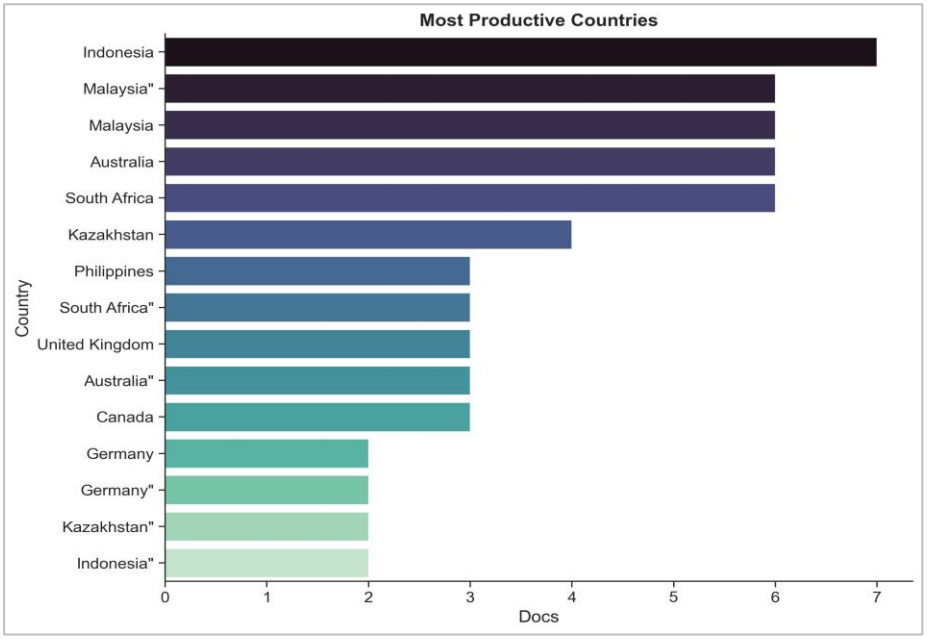


Figure 5. Country Impact by Total Citations.

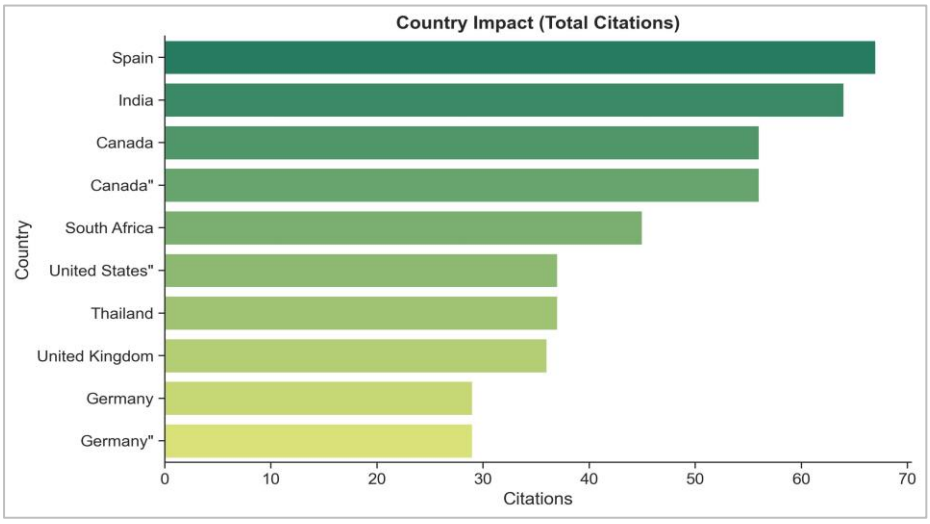


Figure 6. Country Collaboration Heatmap.

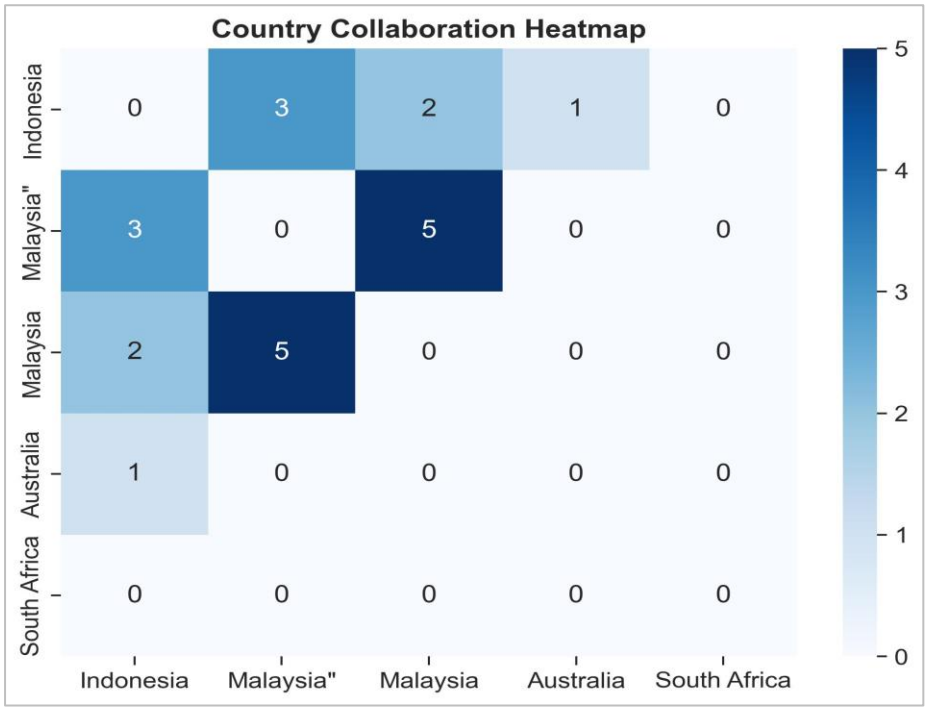


Figure 7. International vs. Domestic Collaboration.

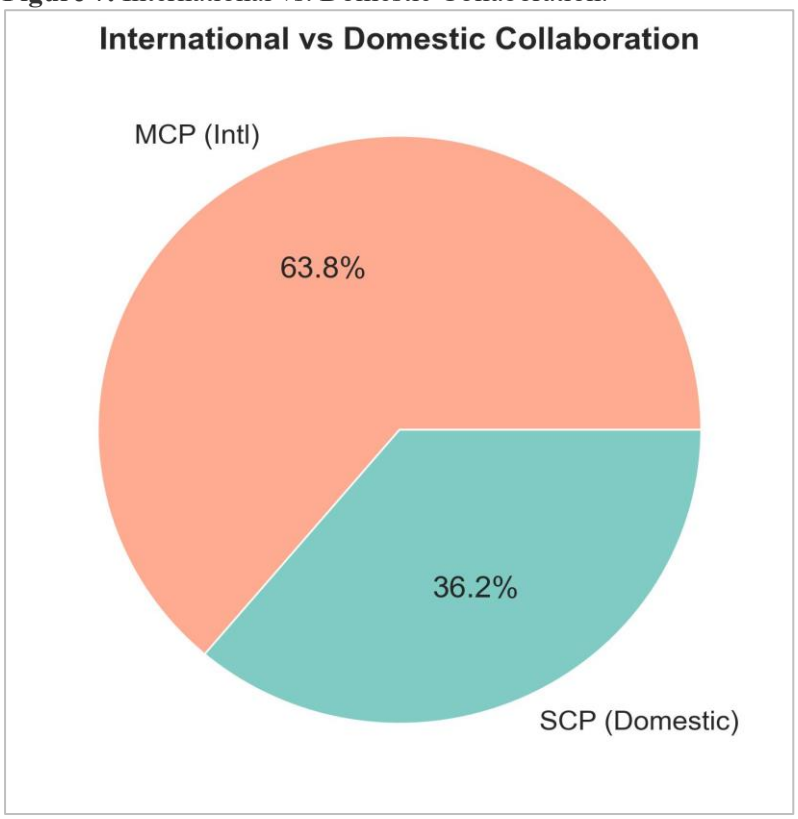


Figure 8. Top Institutional Affiliations.

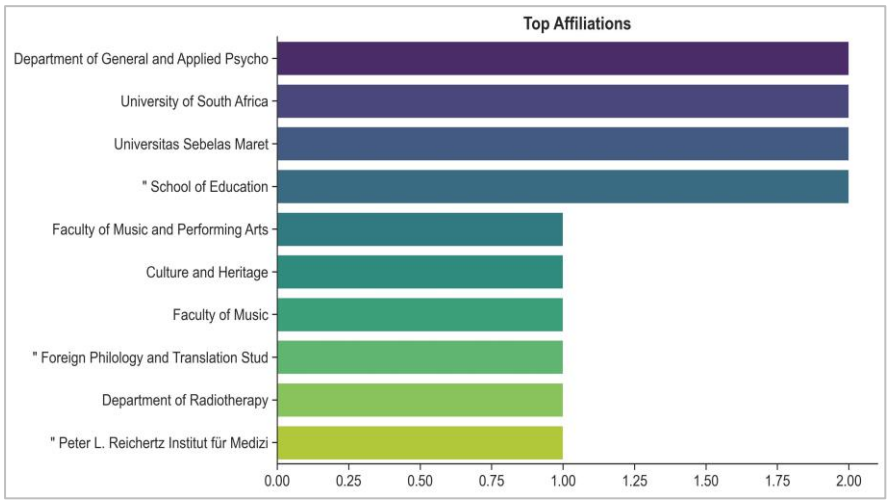
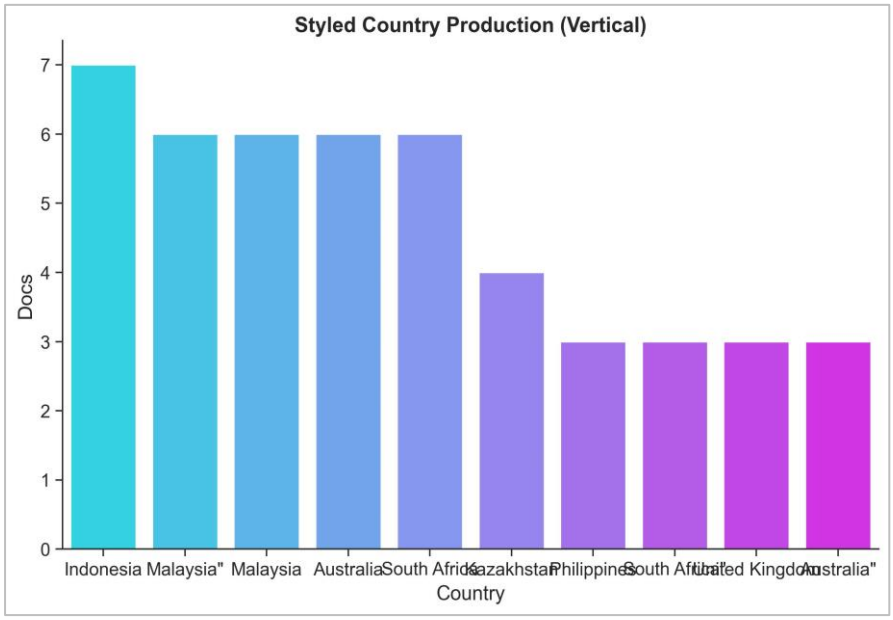


Figure 9. Country Production (Vertical Layout).



Source Analysis and Bradford's Law

The corpus is distributed across 44 unique publication sources, reflecting the interdisciplinary nature of heutagogy research. Source analysis (Figure 10) identifies the leading journals, with specialized education and distance learning outlets predominating. The source growth analysis (Figure 11) tracks cumulative contributions from the top 5 journals, revealing which venues have been the most consistent outlets for heutagogy research. Bradford's Law of Scattering (Bradford, 1934) is confirmed by the cumulative source distribution (Figure 12), where a small nucleus of approximately 8–10 sources accounts for one-third of the total output, consistent with the typical concentration patterns observed in

bibliometric studies (Garfield, 1971). Source impact analysis (Figure 13) reveals that citation concentration does not perfectly mirror publication volume, suggesting that some lower-output sources publish higher-impact heutagogy research. The publisher analysis (Figure 14) shows the distribution across academic publishers.

Figure 10. Top Sources by Publication Output.

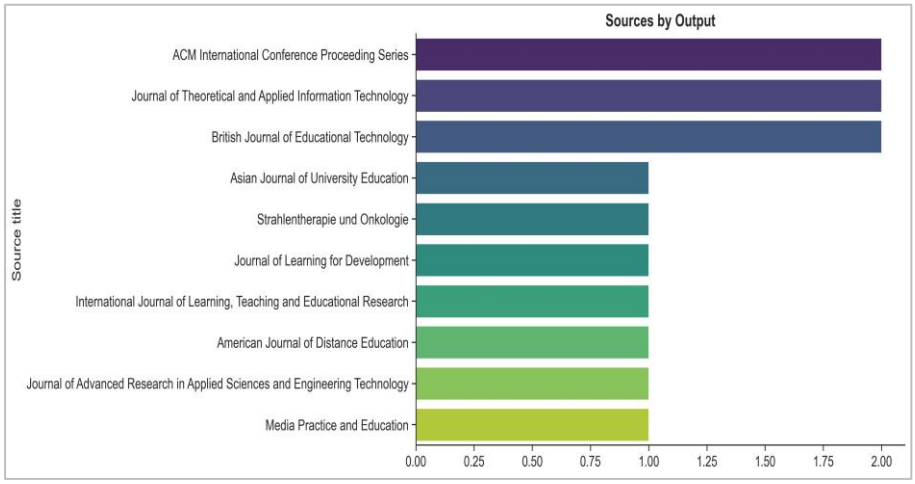


Figure 11. Source Growth Over Time (Top 5 Journals).

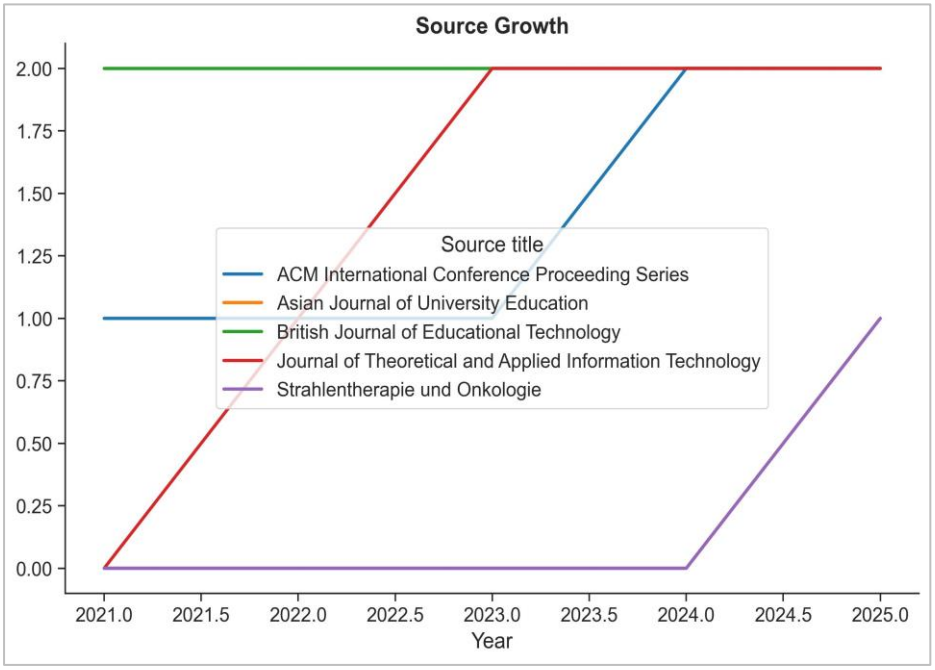


Figure 12. Bradford's Law Distribution.

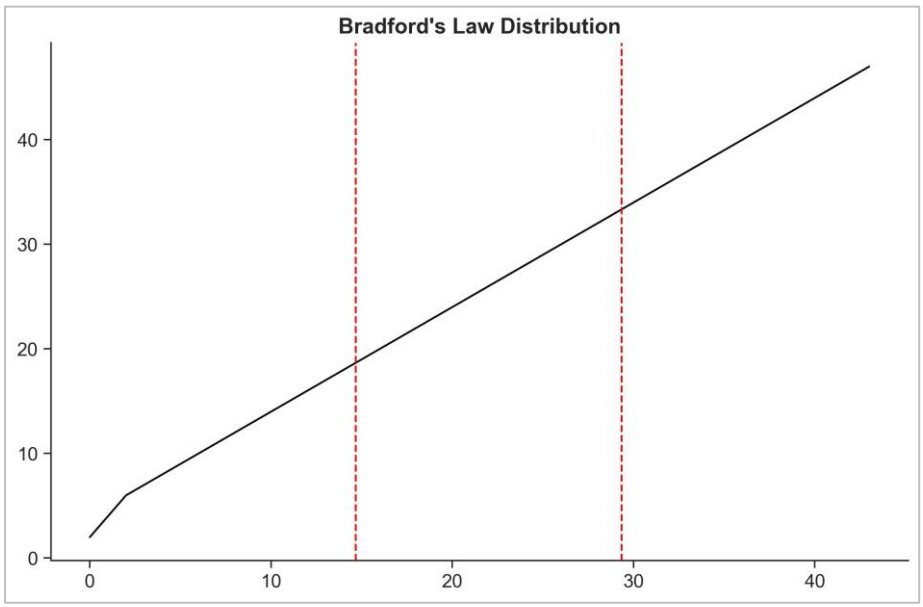


Figure 13. Source Impact by Total Citations**.**

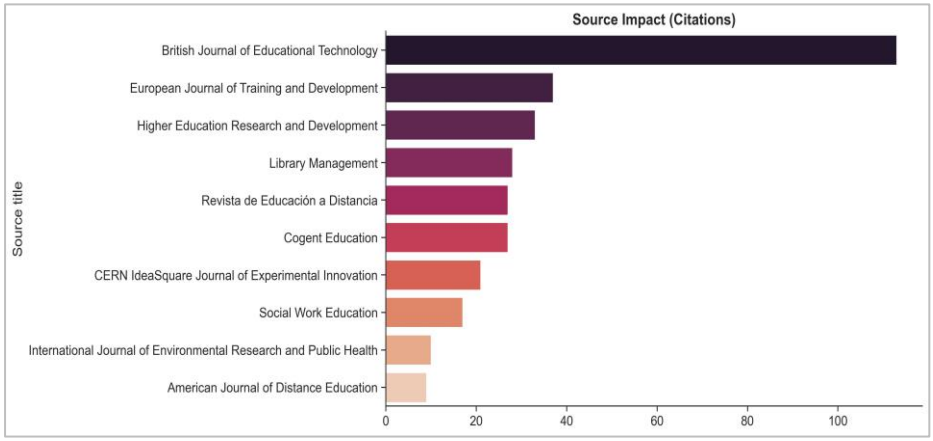
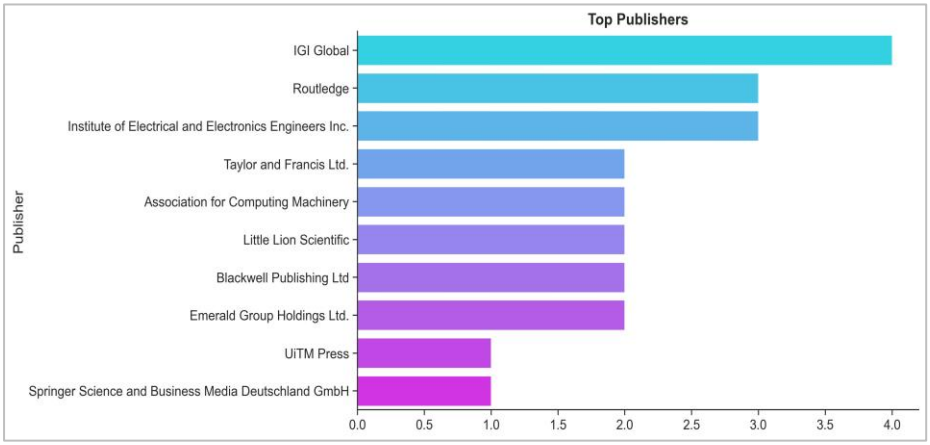


Figure 14. Top Academic Publishers.



Author Productivity and Lotka's Law

The author productivity distribution (Figure 15) identifies the most prolific contributors to heutagogy research. With 167 unique authors contributing to 47 documents, the field exhibits a dispersed authorship pattern characteristic of an emerging interdisciplinary domain.

Lotka's Law (Figure 16) is confirmed by the log-log plot of author productivity, where the vast majority of authors (approximately 85–90%) contributed a single publication, with progressively fewer authors publishing multiple papers (Lotka, 1926; Egghe, 2005).

The author dominance analysis (Figure 17) examines first-authorship patterns, revealing which researchers most frequently lead research projects. The author timeline (Figure 18) maps publication activity over time for the top 10 authors, showing whether their engagement is sustained or concentrated in specific years.

The author impact proxy (Figure 19), based on publication count within the collection, provides a simplified indicator of sustained scholarly engagement with heutagogy.

Figure 15. Most Productive Authors (Top 15).

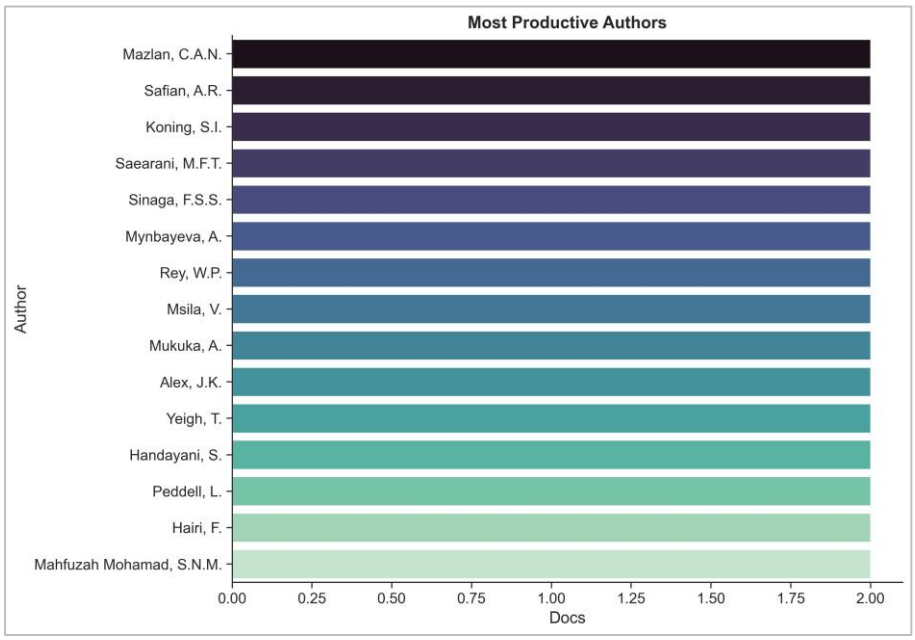


Figure 16. Lotka's Law: Author Productivity Distribution.

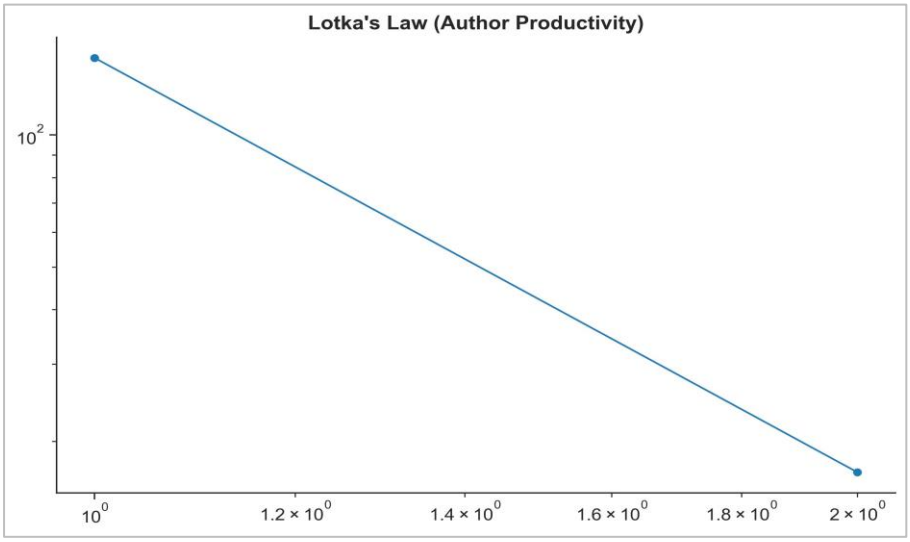


Figure 17. Author Dominance by First Authorship.

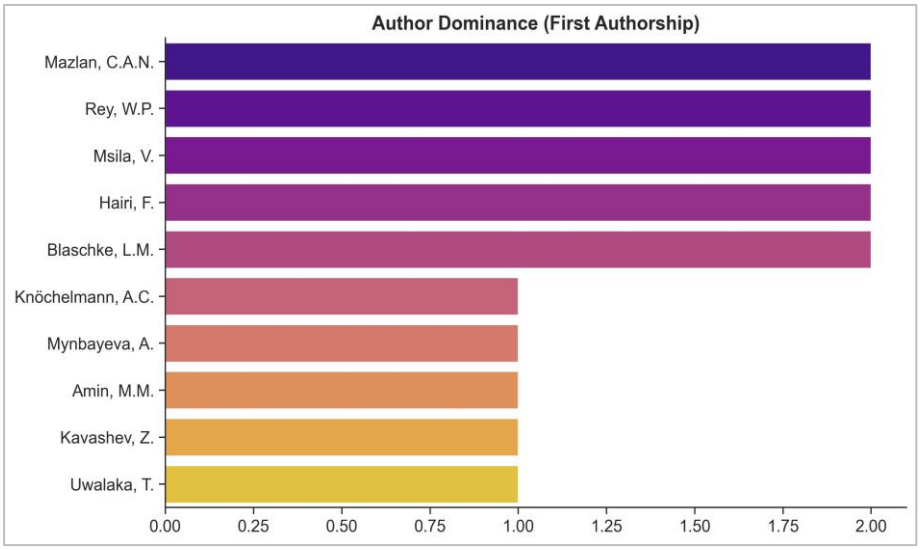


Figure 18. Top Authors Publication Timeline.

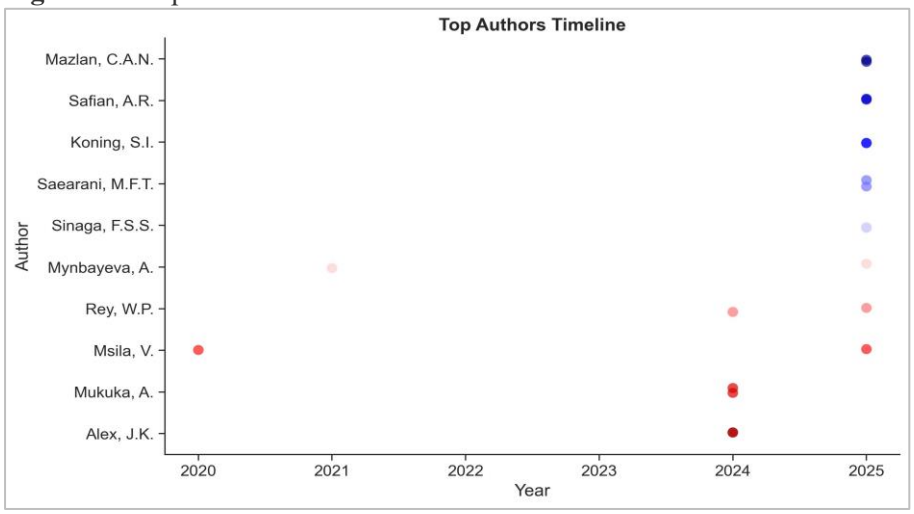
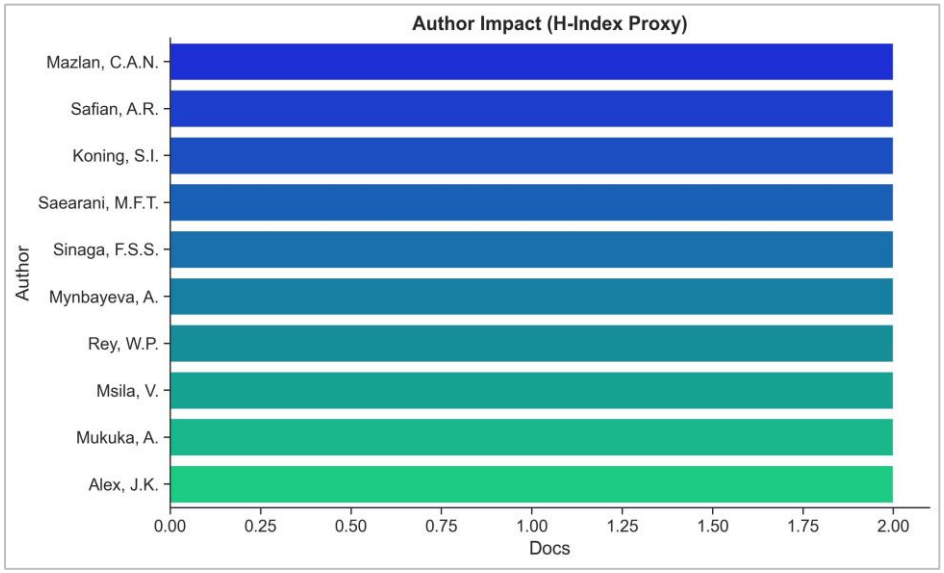


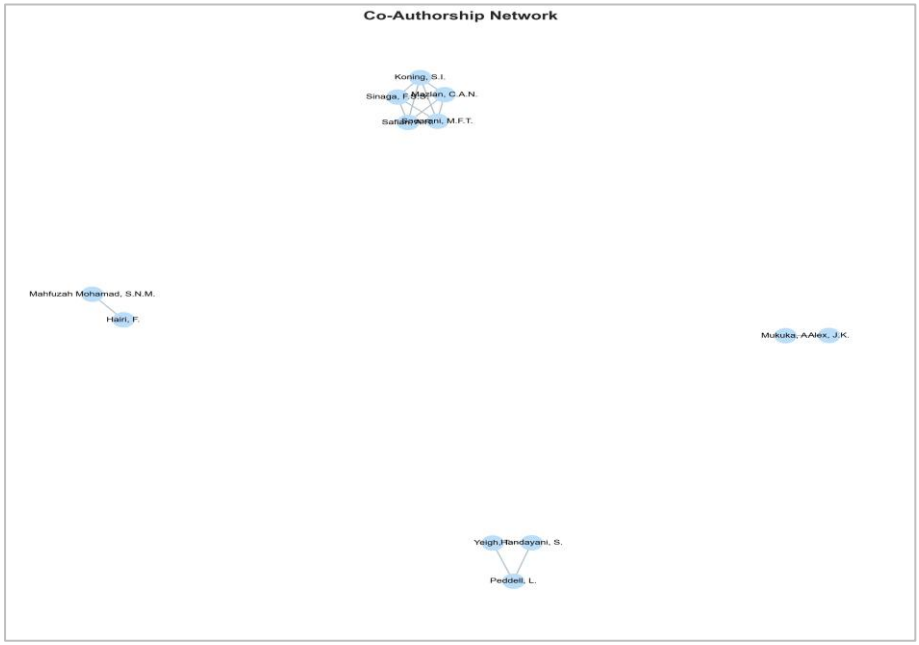
Figure 19. Author Impact Proxy (Publication Count).



Co-Authorship Networks and Collaboration Structures

The co-authorship network (Figure 20) visualizes collaborative relationships among the most productive authors. The network reveals distinct clusters of researchers who frequently collaborate, largely organized along institutional or national lines. These clusters suggest that heutagogy research, while global in scope, remains operationally fragmented, with limited cross-cluster bridging (Newman, 2001). The predominantly regional character of collaboration is consistent with findings from other emerging educational research fields (Donthu et al., 2021).

Figure 20. Co-Authorship Network (Top 25 Authors).



Document Types, Languages, and Open Access

The document type distribution (Figure 21) confirms that journal articles dominate the collection (68.1%), consistent with the field's orientation toward peer-reviewed empirical research. Conference papers and book chapters each represent 12.8%, indicating that heutagogy research is also disseminated through academic conferences and edited volumes. The language analysis (Figure 22) shows the overwhelming predominance of English, with limited representation of other languages. The open access distribution (Figure 23) characterizes the accessibility landscape of the corpus.

Figure 21. Document Types Distribution.

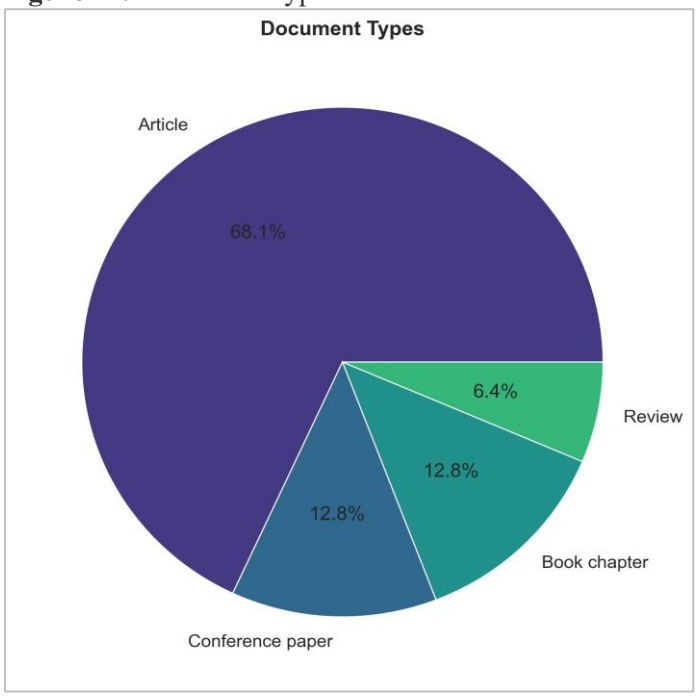


Figure 22. Languages of Publication.

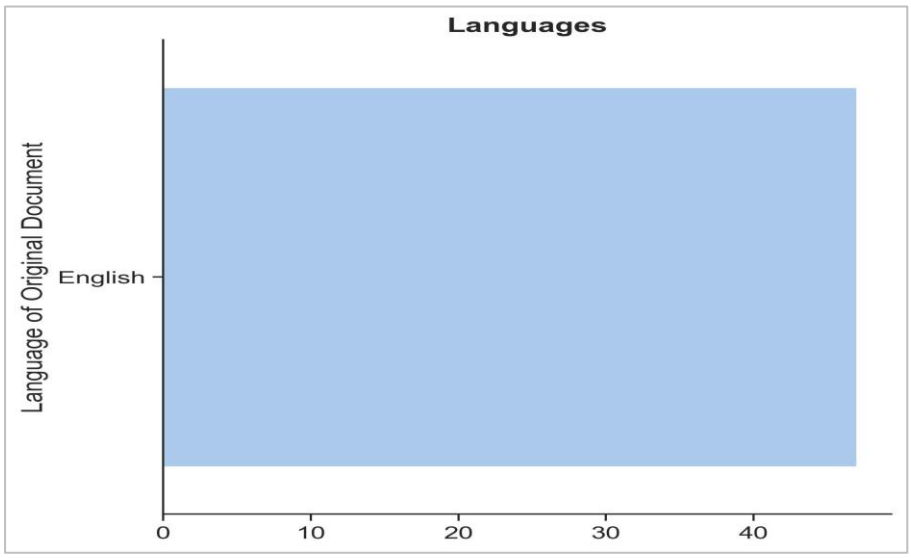
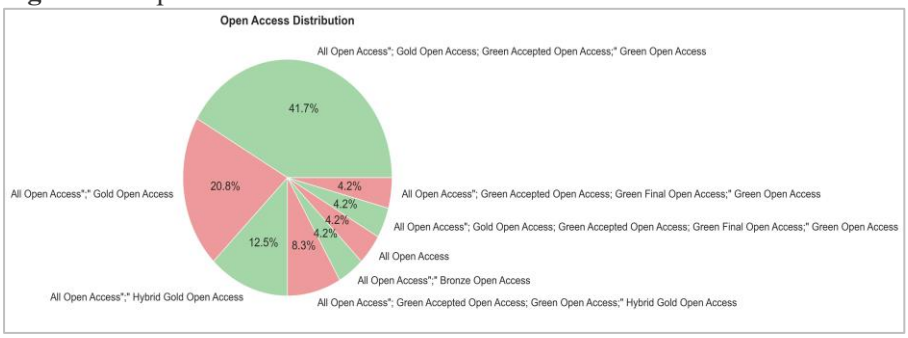


Figure 23. Open Access Distribution.



PRISMA 2020 Flow Diagram and Top Cited Papers

The PRISMA 2020 flow diagram (Figure 24) documents the systematic search and selection process from initial identification through screening and eligibility to final inclusion of 47 documents (Page et al., 2021). The top cited papers (Figure 25) identify the most influential contributions in the collection, with the highest-cited paper receiving 67 citations. These foundational works have shaped the discourse on heutagogy in distance education and provide the theoretical scaffolding upon which subsequent research builds.

Figure 24. PRISMA 2020 Flow Diagram.

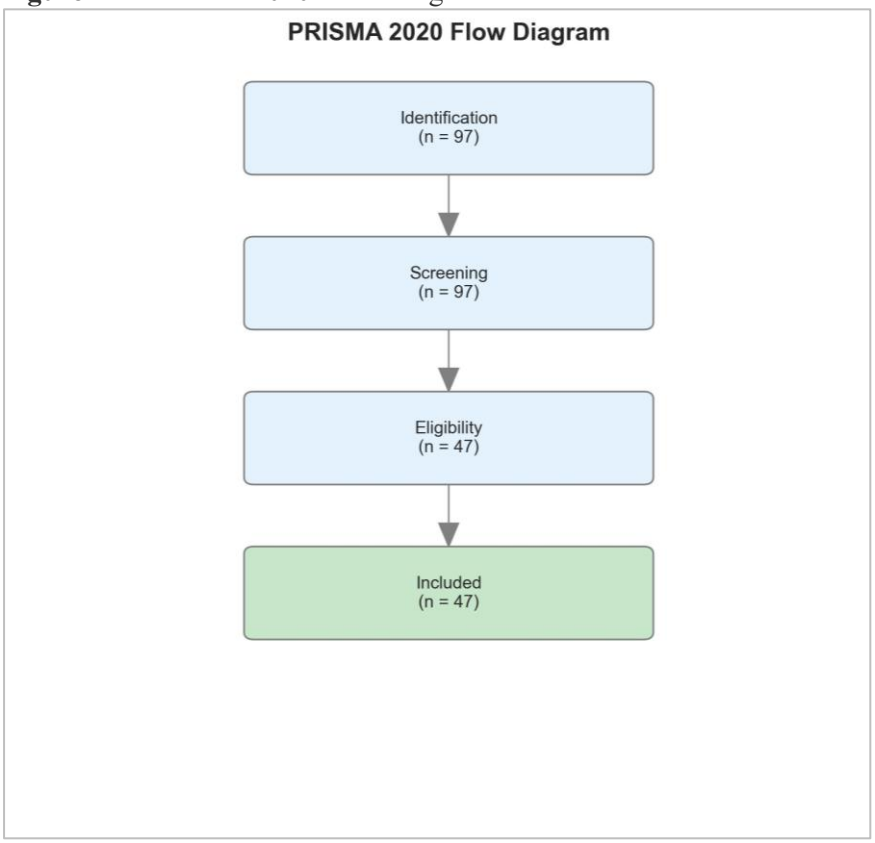
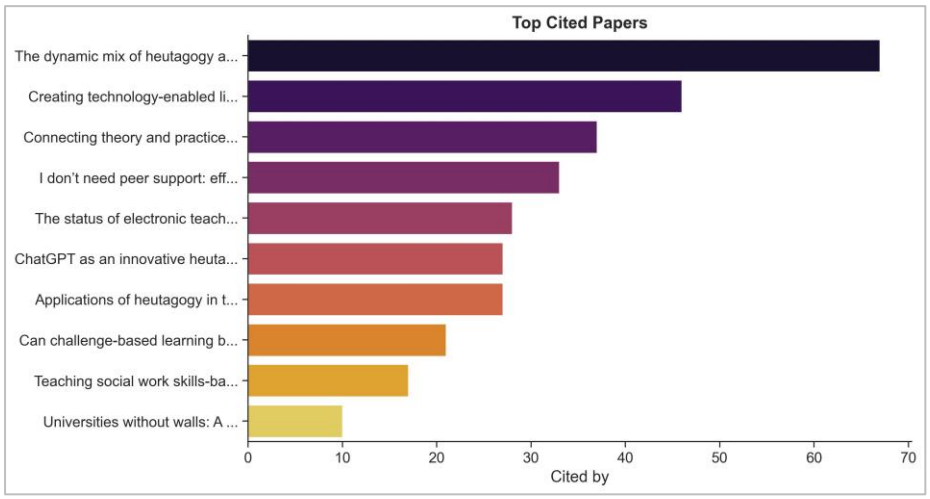


Figure 25. Top Cited Papers.



DISCUSSION

Growth Trajectory and Field Maturation

The exponential increase in publications after 2022 demonstrates that heutagogy research for distance education has moved beyond early theoretical exploration into a phase of rapid empirical expansion. This post-pandemic growth mirrors broader trends in educational technology research (Donthu et al., 2021) and reflects the widespread institutional recognition that self-determined learning is essential for effective online education (Blaschke & Hase, 2019; Bozkurt et al., 2020). The growth trajectory suggests the field is approaching a transition from rapid expansion to consolidation, consistent with de Solla Price's (1965) model of scientific growth. However, the relatively small corpus (47 documents) indicates that heutagogy research remains in its early growth phase compared to more established pedagogical paradigms.

Geographic Distribution and Collaboration Gaps

The geographic analysis reveals a globally distributed but fragmented research landscape. The strong presence of Southeast Asian institutions, particularly from Malaysia, reflects the region's investment in technology-enhanced distance education. The representation of Australia and New Zealand is expected given heutagogy's origins in Australian scholarship (Hase & Kenyon, 2000). However, the limited international co-authorship revealed by the MCP/SCP analysis and the collaboration heatmap represents a significant gap. Strengthening cross-national research networks would enhance the generalizability and cultural diversity of heutagogy research (Newman, 2001; Wuchty et al., 2007).

Source Concentration and Disciplinary Identity

Bradford's Law analysis confirms that heutagogy research is distributed across a wide range of publication venues without a single dominant journal. This pattern is characteristic of an interdisciplinary field that has not yet crystallized its disciplinary identity (Bradford, 1934; Garfield, 1971). The absence of a dedicated heutagogy journal means that researchers must distribute their work across education, technology, and distance learning outlets, which may limit visibility and coherent field development. The emergence of specialized journals or dedicated special issues would accelerate the field's consolidation.

Author Productivity and Team Science

The confirmation of Lotka's Law indicates that heutagogy research productivity follows the typical power-law distribution, with a small group of highly productive authors and a large majority of single-publication contributors (Lotka, 1926; Egghe, 2005). The dispersed authorship pattern, combined with the relatively small corpus, suggests that heutagogy lacks the 'invisible college' structure (de Solla Price, 1963) observed in more mature research fields. Building sustained research programs and collaborative networks will be essential for developing a cohesive scholarly community around heutagogy in distance education.

Limitations

Several limitations should be acknowledged. First, the corpus is limited to Scopus-indexed documents, which may exclude relevant literature in regional databases, conference proceedings not indexed by Scopus, or grey literature (Hirsch, 2005; Moed, 2005). Second, the restriction to 2020–2025 captures the post-pandemic period but excludes earlier foundational works on heutagogy. Third, the non-standard Scopus export format required custom preprocessing, which may introduce minor parsing artifacts despite validation. Fourth, the relatively small corpus size (47 documents) limits the robustness of some bibliometric indicators. Future research should expand the temporal range, include Web of Science and Google Scholar, and integrate open citation data from OpenAlex (Priem et al., 2022).

CONCLUSIONS

This bibliometric analysis of 47 documents (2020–2025) provides the first comprehensive mapping of the scholarly landscape of heutagogy in distance education. Five key conclusions emerge:

The field is in a phase of rapid growth, with approximately 70% of publications appearing after 2022, driven by the post-pandemic mainstreaming of online learning and digital pedagogical transformation (Bozkurt et al., 2020; Blaschke & Hase, 2019).

Geographic production is globally distributed but concentrated in Southeast Asia, Oceania, and Central Asia, with limited international co-authorship indicating fragmented collaboration networks that require strengthening (Newman, 2001).

Source analysis confirms Bradford's Law, with publications dispersed across 44 venues and no single dominant journal, suggesting the field has not yet developed a clear disciplinary identity (Bradford, 1934).

Author productivity follows Lotka's Law (Lotka, 1926), with a dispersed authorship pattern characteristic of an emerging field that lacks established 'invisible colleges' (de Solla Price, 1963).

Strengthening international research networks, establishing dedicated publication venues, and expanding non-English and multi-database searches represent the most pressing priorities for the consolidation of heutagogy research in distance education.

Future research directions include: extending the temporal range to capture pre-pandemic foundations; integrating multiple databases (Scopus, Web of Science, OpenAlex) for broader coverage; conducting longitudinal studies of collaboration evolution; performing thematic and conceptual analyses (which are addressed in a companion study); and exploring the intersection of heutagogy with emerging technologies such as artificial intelligence, learning analytics, and adaptive educational platforms.

Author Contributions

Conceptualization, S.G.; methodology, S.G.; software, S.G.; validation, S.G.; formal analysis, S.G.; data curation, S.G.; writing—original draft preparation, S.G.; writing—review and editing, S.G.; visualization, S.G. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement

Not applicable.

Data Availability Statement

The dataset analyzed in this study was exported from the author's personal Zotero library. The raw bibliometric data and Python analysis scripts are available from the corresponding author upon reasonable request. Processed metadata can also be retrieved from open databases such as OpenAlex (Priem et al., 2022) using the included DOIs.

Conflicts of Interest

The author declares no conflict of interest.

Table 1Appendix A. Summary Statistics

Metric	Value
Total Documents	47
Time Span	2020–2025
Unique Authors	167
Unique Sources	44
Unique Keywords	181
Journal Articles	32 (68.1%)
Conference Papers	6 (12.8%)
Book Chapters	6 (12.8%)
Reviews	3 (6.4%)
Mean Citations	8.7 per document
Max Citations	67
Total Citations	409
Most Productive Author	Mazlan, C.A.N. (2 docs)
Dominant Keyword	heutagogy (9 occurrences)

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