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## Global Trends in ICT-Enhanced English Instruction: Insights from a Bibliometric Analysis (2000–2025)

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**Abstract.** This study presents a comprehensive bibliometric analysis of research trends in the use of Information and Communication Technology (ICT) in English language teaching over a 25-year period (2000–2025). Drawing on 477 peer-reviewed documents retrieved from the SCOPUS database, this research investigates the temporal growth of scholarly output, identifies the most influential authors, sources, and countries, and maps the conceptual evolution of the field. The analysis employs advanced bibliometric tools, including Biblioshiny and VOSviewer, to examine co-authorship networks, keyword co-occurrences, citation patterns, and thematic developments. Results reveal a significant increase in research activity, particularly from 2010 onward, with a peak during the COVID-19 pandemic era. Malaysia and Indonesia emerge as leading contributors, while authors such as Yunus M.M. and Hennessy S. hold substantial academic influence. Core research themes include ICT integration, digital literacy, blended learning, and teacher professional development, demonstrating the field's responsiveness to technological and pedagogical changes. Thematic mapping highlights the transition from foundational ICT use toward more sophisticated and context-specific applications in English instruction. These findings contribute to a nuanced understanding of the intellectual and social structure of the field, offering strategic insights for educators, researchers, and policymakers in navigating the evolving landscape of ICT-mediated language education.

**Keywords:** ICT in English language teaching; digital literacy; bibliometric analysis

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## 1. Introduction

The integration of ICT in English language instruction has reshaped global educational practices. Although numerous studies address ICT tools and teaching strategies, few offer longitudinal bibliometric syntheses. This study bridges that gap by mapping scholarly patterns and thematic evolution from 2000–2025. Driven by rapid technological advancement, ICT tools have become instrumental in reshaping pedagogical approaches, enhancing learner engagement, and supporting language acquisition in diverse educational contexts (Alm, 2006; Hockly, 2012; Warschauer & Kern, 2000). As digital literacy gains prominence, the demand for innovative teaching strategies leveraging ICT continues to grow (Hockly, 2012). The adoption of ICT in English language instruction addresses not only functional language skills but also fosters critical thinking, collaboration, and digital citizenship among learners, making it a central component of contemporary language pedagogy.

The evolution of ICT-enhanced English teaching aligns with broader shifts in educational policy, institutional investment, and technological infrastructure across countries. The literature underscores the increasing emphasis on digital tools such as learning management systems, mobile applications, virtual classrooms, and social media platforms in facilitating language instruction (Chinnery, 2006; Yunus et al., 2013). Particularly in the wake of the COVID-19 pandemic, ICT has transitioned from a supplementary resource to a core medium of instruction, catalyzing a re-evaluation of instructional design, teacher readiness, and curriculum frameworks. This transition is evident in the scholarly discourse, as reflected in the growing body of research focusing on the effectiveness, challenges, and pedagogical implications of ICT in English language teaching.

Recent studies emphasize the role of ICT in enhancing student motivation, promoting learner autonomy, and supporting the development of digital literacy skills (Afni et al., 2024; Le Thi Mai, 2020). However, the integration of ICT also presents challenges such as limited infrastructure, lack of teacher training, and resistance to pedagogical change (Lituañas & Fernal, 2025; Mrosso & Ndibalema, 2024). These findings suggest that while the integration of ICT in English language teaching holds significant promise, it requires comprehensive institutional support, targeted professional development, and continuous curriculum innovation to be effectively implemented.

Despite the proliferation of research on ICT in language education, a systematic understanding of its scholarly evolution remains underdeveloped. Existing studies often focus on case-specific implementations, localized interventions, or individual technological tools, lacking a comprehensive perspective on longitudinal trends and global scholarly output (Heriyanto et al., 2025; Sabiri, 2020). The absence of a holistic synthesis impedes the identification of dominant research themes, influential contributors, and emergent directions in ICT-mediated English language instruction (Afni et al., 2024; Shruthi et al., 2025). Consequently, stakeholders, including educators, policymakers, and researchers, face challenges in accessing evidence-based insights to inform practice and policy.

To address this gap, bibliometric analysis offers a robust methodological framework to map the intellectual structure, social networks, and conceptual evolution within a research domain (Donthu et al., 2021). By quantifying publication outputs, citation impact, co-authorship networks, and keyword trends, bibliometric mapping facilitates a nuanced understanding of how ICT in English teaching has developed over time (González-Valiente et al., 2019). This approach not only reveals patterns of scholarly productivity and collaboration but also uncovers thematic trajectories that inform future inquiry (Alam et al., 2025).

As such, a bibliometric synthesis is well-positioned to offer strategic insights into the dynamics shaping this field from 2000 to 2025. Several studies have demonstrated the utility of bibliometric approaches in examining educational technologies. Aria & Cuccurullo (2017) introduced the Bibliometric R package, which enables comprehensive performance and science mapping analysis. This tool has since been used to explore diverse educational domains by enabling visual and statistical interpretation of complex bibliographic data.

In subsequent work, Aria et al., (2023, 2024) extend this framework through comparative science mapping and data integration techniques, providing methodological innovations that enhance thematic identification and conceptual clustering. Van Eck & Waltman (2017) contributed to the methodological rigor by introducing VOSviewer, a software tool for constructing and visualizing bibliometric networks. Through citation-based clustering, VOSviewer facilitates the exploration of author collaborations, country-level linkages, and thematic developments, thereby complementing the analytic capabilities of Bibliometrix. These advancements have enabled more precise and reproducible evaluations of scholarly landscapes, including those related to ICT in education.

Recent empirical applications underscore the relevance of these tools in the current context. Nanda et al., (2025) conducted a bibliometric review of urban flood modeling, demonstrating the adaptability of these methods across disciplines. Similarly, Bancong (2024) applied bibliometric analysis to trace research on thought experiments in science education, illustrating the value of this approach in uncovering conceptual evolution. These precedents affirm the appropriateness of bibliometric mapping for analyzing the ICT in English teaching literature over an extended time frame.

Despite the availability of bibliometric tools and precedent studies, few apply such analyses specifically to the domain of ICT in English language teaching. A significant gap exists in capturing the comprehensive trajectory of scholarly discourse, particularly concerning source contributions, author prominence, and thematic diversity (Baako & Abroampa, 2023). While numerous studies explore the pedagogical effectiveness of ICT tools or teacher perceptions, there is a limited understanding of the field's structural dynamics as reflected in publication and citation patterns across time (Hidayat et al., 2024).

Moreover, most prior investigations fail to integrate geographic, institutional, and keyword-level analyses, which are crucial for identifying centers of excellence and emerging thematic clusters (Fang & Abdullah, 2023). The absence of such an integrated bibliometric synthesis restricts the strategic alignment of future research efforts and the design of informed policy interventions (Wahyuni, 2024). Consequently, there is an urgent need for a comprehensive bibliometric study that spans multiple dimensions of scholarly activity in ICT for English language education.

This study aims to conduct a bibliometric analysis of research trends in ICT in English language teaching over the 2000–2025 period. It seeks to answer the following research questions: (1) What is the annual growth trend of research on ICT in English teaching? (2) Which journals and authors are most influential? (3) Which countries dominate in research productivity and collaboration? (4) What are the prevailing themes and keywords? (5) How has the field evolved thematically over time?

The novelty of this study lies in its methodological integration and temporal scope. By combining advanced bibliometric tools (Bibliometrics, Biblioshiny, and VOSviewer) and using a 25-year data range from the SCOPUS database, this study offers a unique longitudinal and multidimensional perspective. This enables the identification of temporal shifts, thematic progressions, and collaborative patterns that have shaped the discourse on ICT in English teaching. The findings are expected to inform both academic scholarship and practical applications in policy and pedagogy, providing strategic insights for stakeholders in education and technology.

## 2. Methodology

This study employed a bibliometric mapping approach to investigate the scholarly landscape of ICT in teaching English between 2000 and 2025. The SCOPUS database (<https://www.scopus.com>), a comprehensive and widely used bibliographic platform, was selected due to its broad indexing of peer-reviewed articles in educational technology and applied linguistics (Visser et al., 2021). The search was conducted on June 17, 2025, using the “ICT in teaching English” in TITLE-ABS-KEY field, which filters documents based on their titles, abstracts, and author-defined keywords. The keyword used for this study was “ICT in teaching English,” resulting in the initial retrieval of 1,202 documents.

A series of exclusion criteria was applied to refine the data. First, the document type filter limited the corpus to journal articles, yielding 842 records. Second, only documents written in English were retained, resulting in a final dataset comprising 477 publications. The screening process adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, as illustrated in Figure 1. This ensured transparency and reproducibility in data selection.

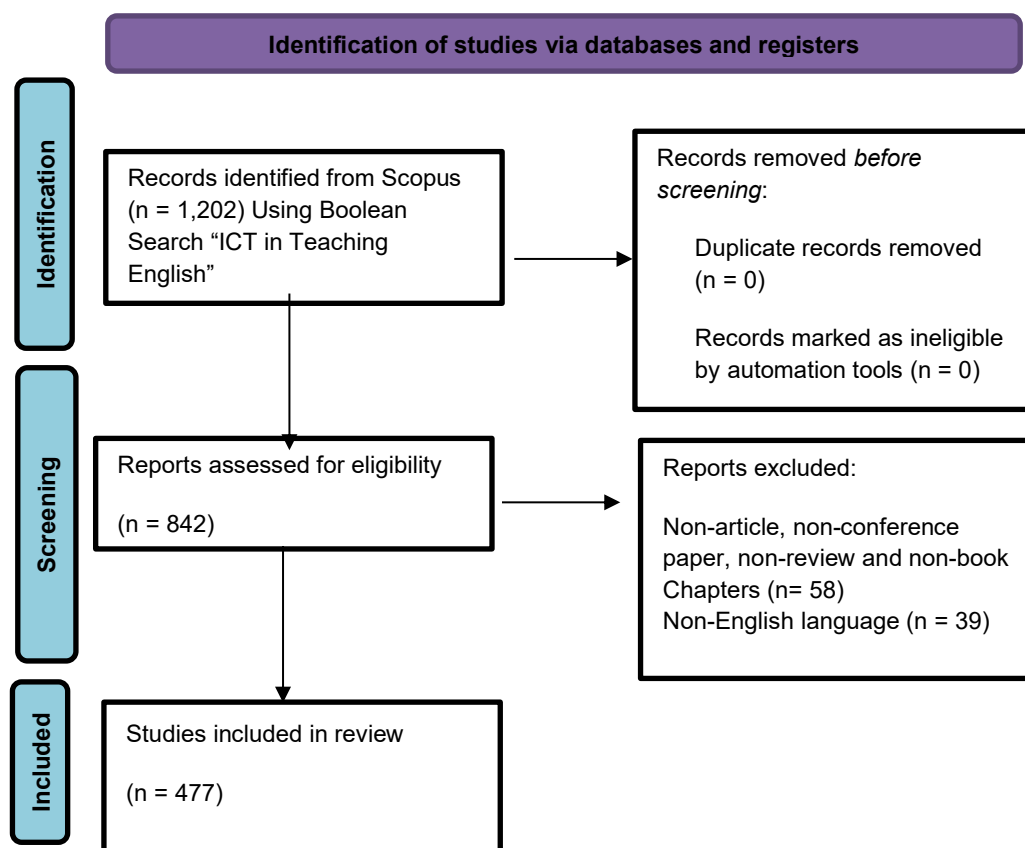


Figure 1: The PRISMA flow diagram detailing the screening and selection process of the literature

## 2.1 Sample Preparation

Following data collection, the documents were exported in both comma-separated value (CSV) and Research Information Systems (RIS) formats. These formats are compatible with the analytical tools used in this study, including Microsoft Excel, VOSviewer, and Biblioshiny. The CSV files were primarily used for quantitative summaries and visualization in Excel, while RIS files supported advanced analyses in Biblioshiny, a web interface for the Bibliometrix R package (Aria & Cuccurullo, 2017; Aria et al., 2023).

Data preparation involved removing duplicates, standardizing author and institution names, and harmonizing keyword variants. Bibliometric mapping included citation analysis, keyword co-occurrence, co-authorship networks, and thematic evolution. VOSviewer's clustering functions and Biblioshiny's centrality-density model guided our thematic interpretation. Metadata were preprocessed using Biblioshiny's internal functions, which support normalization of textual data for consistent bibliometric mapping (Goutsmedt, 2022).

## 2.2 Experimental Set-up

The analytical framework was based on bibliometric mapping techniques, as conceptualized in Bibliometrix (Aria & Cuccurullo, 2017) and extended through comparative structure analysis (Aria et al., 2024). Microsoft Excel facilitated

preliminary descriptive analysis, including tabulation of annual publication trends, citation metrics, and basic source statistics. These summaries provided an overview of temporal publication dynamics and citation distributions.

Biblioshiny was used to conduct performance analysis and science mapping, including author productivity, source relevance, institutional collaboration, and keyword evolution. Thematic structures were analyzed using multiple correspondence analysis and factorial mapping features, enabling the identification of major research themes and their development over time.

VOSviewer supported network visualizations for co-authorship, bibliographic coupling, and keyword co-occurrence, with clustering algorithms designed to detect thematic and intellectual groupings (Van Eck & Waltman, 2017). Visual outputs from these tools were systematically interpreted. VOSviewer's citation-based clustering offered insights into the intellectual structure of the field, while Biblioshiny's thematic evolution tools revealed shifts in dominant concepts across the study period. These approaches ensured a multidimensional understanding of both the social and conceptual facets of ICT integration in English language instruction.

### **2.3 Parameters**

This study evaluated several bibliometric and scientometric parameters. Quantitative metrics included the total number of publications per year, total and average citation counts, author H-index values, and publication productivity by country and institution. These indicators captured the productivity and academic impact of researchers and their affiliations. Social network metrics, such as total link strength and co-authorship frequencies, were employed to assess collaboration intensity across authors and institutions. These were particularly useful in understanding the formation of research clusters and the centrality of actors within the scholarly community. Country-level analyses explored single-country and multi-country collaborations, providing insight into international research dynamics.

Conceptual parameters included keyword frequency, co-occurrence patterns, and thematic classifications. Author keywords were analyzed to identify dominant and emerging terms within the literature. These were mapped to thematic clusters using the centrality-density model, which categorized research themes as motor (central and well-developed), basic (central but underdeveloped), emerging/declining (marginal and underdeveloped), or niche (well-developed but peripheral) (Aria et al., 2024; Bancong, 2024).

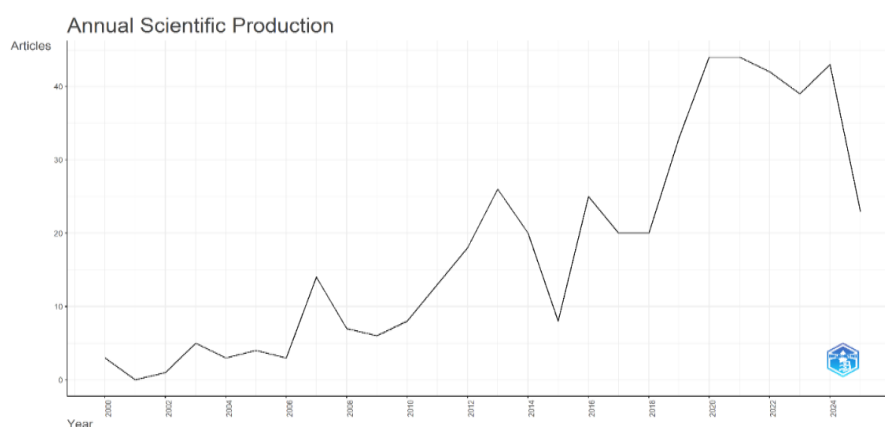
### **2.4 Statistical Analysis**

Statistical analyses were conducted using the Bibliometrix R package through its Biblioshiny interface. Performance analyses included frequency distributions, citation analysis, and productivity metrics, while science mapping encompassed co-word, co-citation, and bibliographic coupling analyses. Multiple correspondence analysis and thematic mapping provided visual and statistical validation of research clusters and topic evolution (Aria & Cuccurullo 2017; Aria et al., 2024).

VOSviewer was used to generate citation-based visualizations of co-authorship and keyword relationships. These networks were evaluated based on node size (indicating frequency or impact), edge thickness (indicating relationship strength), and clustering (indicating thematic similarity). The methodological rigor of this approach is consistent with recommendations by Nanda et al., (2025) and Van Eck and Waltman (2017). To ensure data reliability, results from Biblioshiny and VOSviewer were cross validated. Any discrepancies in node or cluster labeling were manually reviewed. This triangulation approach provided robustness to the analytical process and improved the validity of interpretations derived from the data.

### 3. Results

#### 3.1 Yearly Trend of Publications and Citations



**Figure 2: Number of articles published each year from 2000 to 2025**

Figure 2 presents the annual scientific production on the integration of Information and Communication Technology (ICT) in teaching English from 2000 to 2025, based on 472 documents extracted from the SCOPUS database. The data reveal a general upward trend in publication volume over the 25 years, with noticeable fluctuations across different periods. Initial output from 2000 to 2006 remained relatively low, averaging fewer than five articles per year. A modest increase was observed from 2007 to 2012, followed by a sharp rise peaking in 2013. The publication rate experienced further fluctuations between 2014 and 2019 before a dramatic surge occurred in 2020, maintaining a peak level until 2022, with over 40 documents published annually. However, a notable decline is visible in 2025.

**Table 1: Highly cited ICT in teaching English research**

<b>Rank</b>	<b>Title</b>	<b>Year</b>	<b>Source title</b>	<b>Cited by</b>	<b>Authors</b>
1	Teacher Perspectives on Integrating ICT into Subject Teaching: Commitment, Constraints, Caution, and Change	2005	Journal Of Curriculum Studies	376	Hennessy S.
2	Integrating Social Networking Tools into ESL Writing Classroom: Strengths and Weaknesses	2012	English Language Teaching	93	Yunus M.M.
3	Malaysian ESL Teachers' Use of ICT in their Classrooms: Expectations and Realities	2007	Recall	74	Yunus M.M.
4	Incorporating Internet Resources into Classroom Practice: Pedagogical Perspectives and Strategies of Secondary-School Subject Teachers	2005	Computers And Education	67	Ruthven K.
5	The Use of Information and Communication Technology (ICT) In Teaching ESL Writing Skills	2013	English Language Teaching	43	Embi M.A.
6	Pros and Cons of Using ICT in Teaching ESL Reading and Writing	2013	International Education Studies	37	Salehi H.
7	Pupil Perspectives on the Contribution of Information and Communication Technology to Teaching and Learning in the Secondary School	2003	Research Papers in Education	35	Deaney R.
8	Emerging Teacher Strategies for Mediating 'Technology-Integrated Instructional Conversations': A Socio-Cultural Perspective	2005	Curriculum Journal	34	Hennessy S.
9	The Potential Use of Social Media on Malaysian Primary Students to Improve Writing Computer Phobia Among Adult University Students	2019	International Journal of Education and Practice International Journal of Applied Linguistics and English Literature	32	Yunus M.M.
10	Information & Communication Technology (ICT) Tools in Teaching and Learning Literature Component in Malaysian Secondary Schools	2014	Asian Social Science	27	Yunus M.M.



Table 1 lists the top 10 most cited publications in the field. The most highly cited article is by Hennessy et al. (2005), titled *Teacher Perspectives on Integrating ICT into Subject Teaching*, cited 376 times. This is followed by Yunus (2012) with 93 citations and Yunus (2007) with 74 citations, indicating the significant influence of Malaysian researchers in the domain. The top-cited works predominantly focus on pedagogical strategies, teacher perspectives, and integration challenges. Notably, studies from the early 2000s continue to receive many citations, indicating their foundational impact on subsequent research in ICT-enhanced English language teaching.

### 3.2 Most Relevant Sources

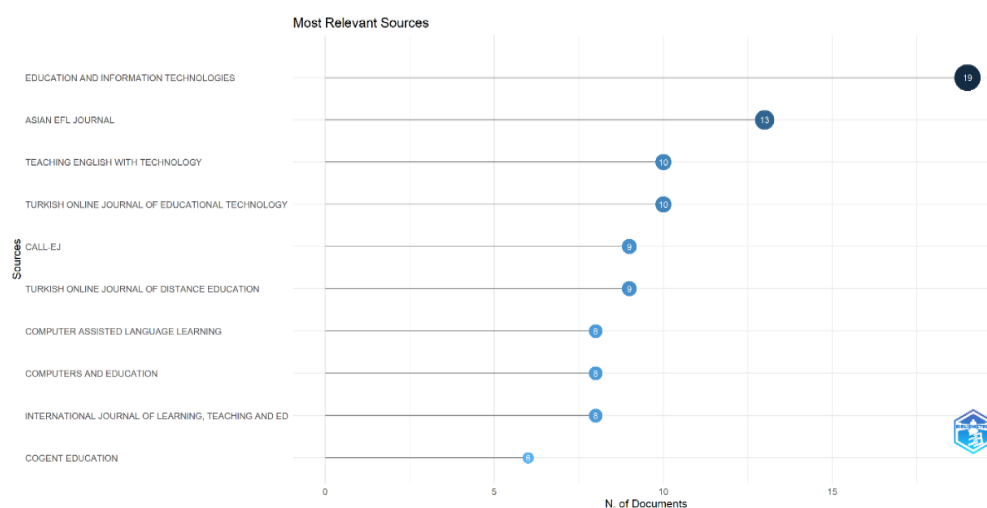


Figure 3: Sources' production over time

Table 2: Most source titles that contribute to the publication on ICT in teaching English research

Rank	Relevant sources	Document	Citation	Total link strength
1	Education and Information Technologies	19	236	6
2	Asian EFL Journal	13	54	0
3	Turkish Online Journal of Educational Technology	11	76	3
4	Teaching English with Technology	10	106	4
5	Call-ej	10	36	2
6	Turkish Online Journal of Distance Education	9	67	3
7	Computer and Education	8	740	3
8	Computer Assisted Language Learning	8	324	3
9	International Journal of Learning, Teaching,	8	61	0
10	English Language Teaching	6	163	1

Figure 3 and Table 2 present the most prolific source titles contributing to research on ICT in teaching English. The journal *Education and Information Technologies* lead the field with 19 publications and a total of 236 citations, demonstrating its central role in disseminating high-impact research. *Asian EFL Journal* follows with 13 documents, although with relatively fewer citations (54), indicating active participation but possibly lower citations per article. The *Turkish Online Journal of Educational Technology* also shows a strong presence with 11 publications and 76 citations.

Journals such as *Teaching English with Technology* and *CALL-EJ* have each published 10 documents, with the former achieving 106 citations and a link strength of 4, suggesting higher interconnectivity and academic influence. The *Turkish Online Journal of Distance Education* contributes nine publications and 67 citations, reflecting regional focus and relevance. Notably, *Computers and Education* and *Computer Assisted Language Learning*, though contributing eight documents each, register exceptionally high citation counts—740 and 324, respectively—underscoring their foundational importance and influence in the academic discourse.

Overall, these sources reflect a multidisciplinary convergence of language education, technology integration, and applied linguistics, revealing the significant breadth of publication platforms supporting ICT-based English language teaching research.

### 3.3 Most Influential Authors

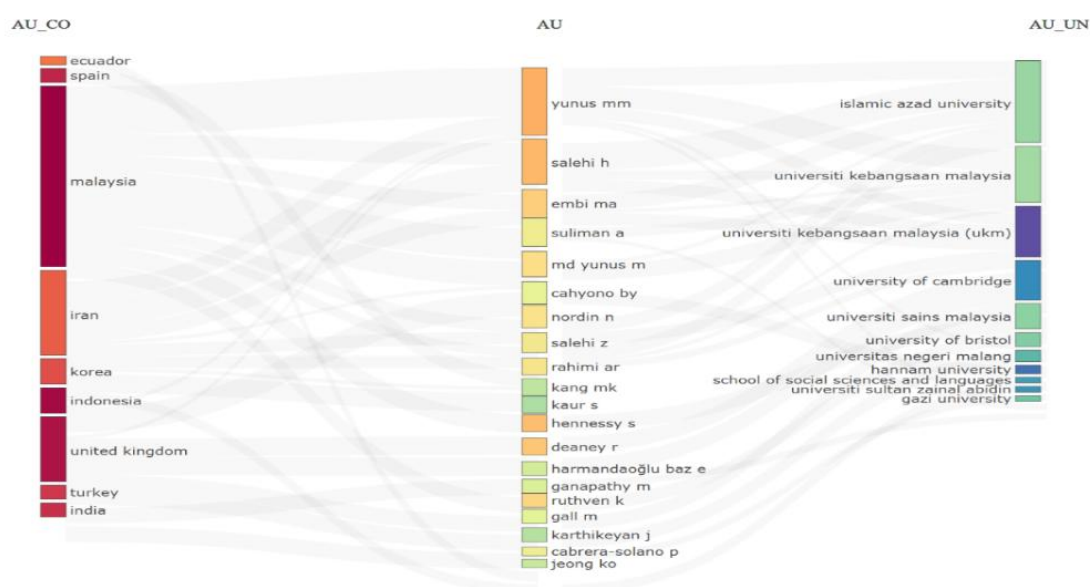
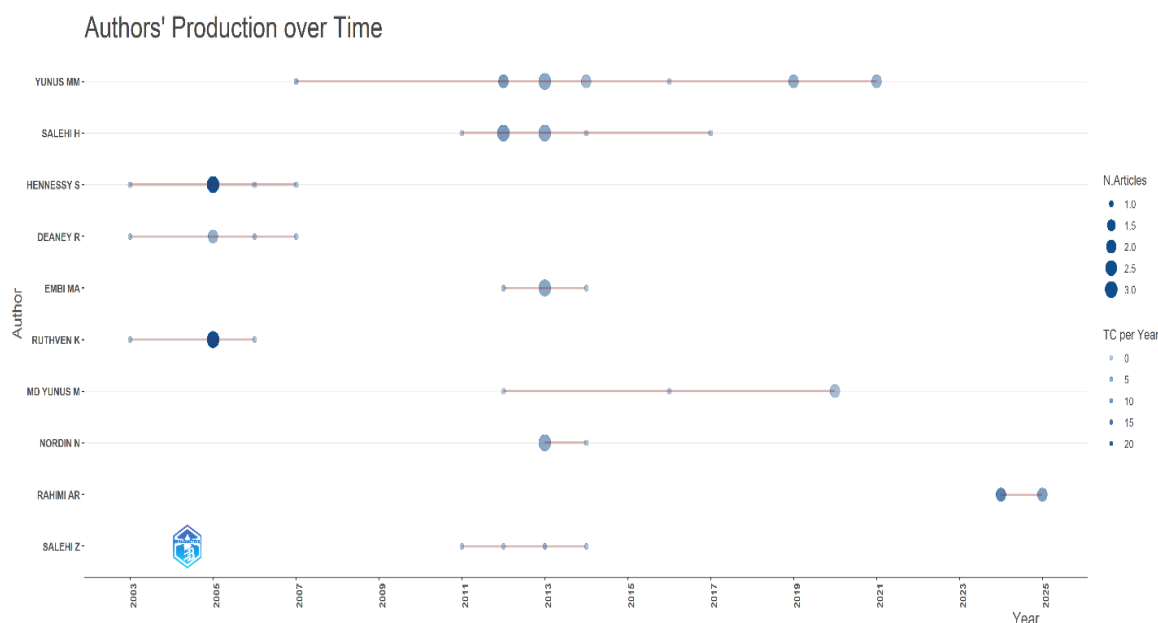


Figure 4: Three field plots of Authors, author country, and affiliation



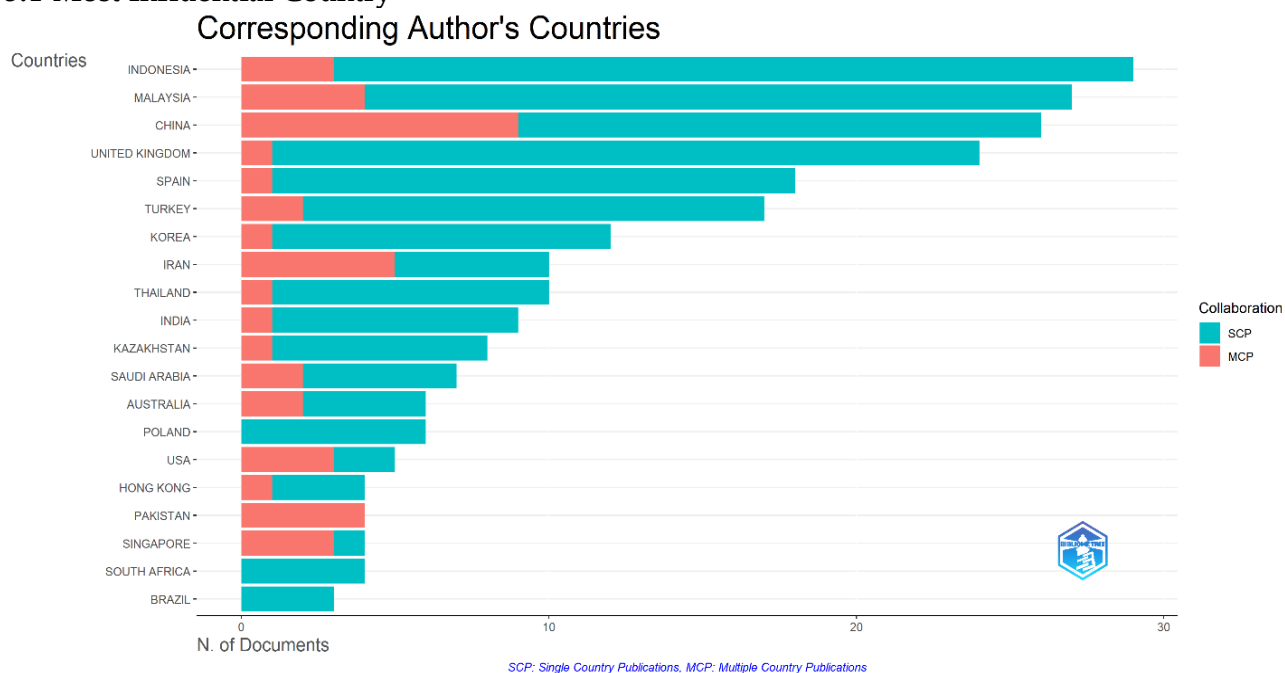
**Figure 5: Authors' production over time**

Figures 4 and 5 illustrate the most influential authors in ICT in English language teaching, their national affiliations, institutional contributions, and scholarly productivity over time. The three field plot (Figure 3) demonstrates that Malaysia is the most prolific country in terms of author contribution, prominently represented by authors such as Yunus M.M., Salehi H., Embi M.A., and Suliman A. These authors are affiliated with key Malaysian institutions, notably Universiti Kebangsaan Malaysia and Universiti Sains Malaysia. Additionally, significant contributions also emerged from Iran, the United Kingdom, Indonesia, and Turkey, reflecting a geographically diverse scholarly engagement.

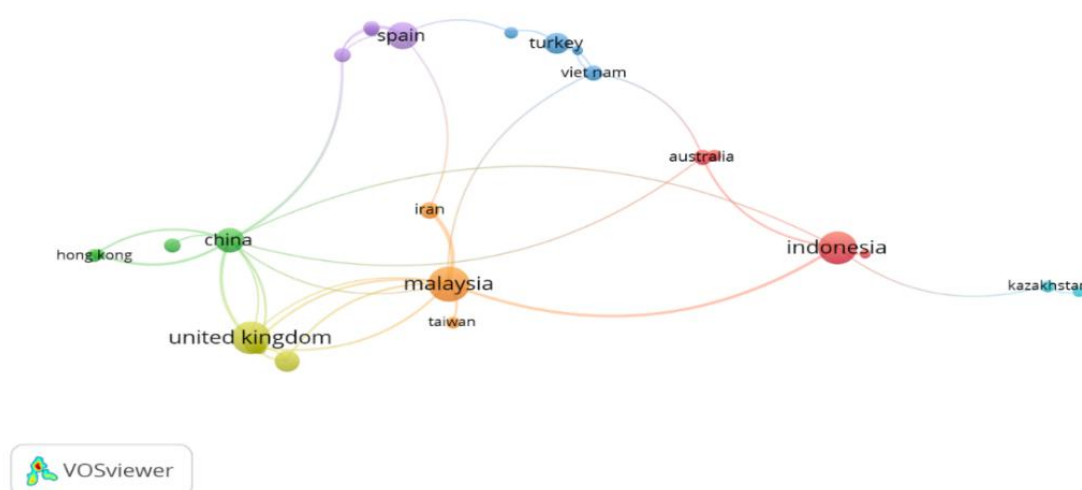
As shown in Figure 4, Yunus M.M. is the most consistently productive and cited author in this domain, publishing across two decades with a peak in activity between 2012 and 2020. Hennessy S. and Ruthven K., both from the United Kingdom, also demonstrate early and impactful contributions, particularly in 2005, aligning with the highest-cited articles in this field. Salehi H. and Embi M.A. show concentrated publication efforts around 2012–2014, coinciding with the proliferation of ICT in language education discussions in Southeast Asia and the Middle East. The longitudinal engagement of authors such as Md Yunus M. and Rahimi A.R. further reinforces their relevance and ongoing influence.

Collectively, these data underscore the critical role of Southeast Asian and British scholars in shaping the discourse on ICT integration in English language teaching. Their institutions have served as hubs for pedagogical innovation, especially in bridging digital tools and language pedagogy. These authors' sustained productivity and citation impact affirm their centrality in the evolution and dissemination of research within this domain.

### 3.4 Most Influential Country



**Figure 6: Corresponding author's countries: Geographical collaboration: single-country and multiple-country publications**



**Figure 7: Bibliographic coupling of countries**

Figures 6 and 7 provide insights into the geographical distribution and international collaboration in the field of ICT in English language teaching. As depicted in Figure 6, Indonesia leads with the highest number of corresponding authors, followed by Malaysia, China, the United Kingdom, and Spain. Indonesia

demonstrates a strong presence through both single-country publications (SCP) and multiple-country collaborations (MCP), indicating its active domestic research base and growing global research engagement. Malaysia similarly shows a balance between SCP and MCP, reinforcing its influential role in both regional and international academic networks.

Figure 7 illustrates bibliographic coupling among countries, highlighting Malaysia, Indonesia, China, and the United Kingdom as central nodes within a dense web of inter-country scholarly linkages. Malaysia appears to function as a critical hub, linking various countries across Asia, Europe, and the Middle East, with particularly strong connections to Iran, the UK, Indonesia, and China. The intensity and spread of these bibliographic ties suggest Malaysia's strategic role in advancing cross-border collaborations in ICT-enhanced English instruction. China and the United Kingdom also exhibit substantial linkage density, indicating their contributions to widely cited and interrelated literature.

Collectively, these data affirm Southeast Asia, particularly Indonesia and Malaysia, as the most prolific and influential regional contributors in this research domain, with robust institutional and authorial networks that support sustained and impactful scholarship.

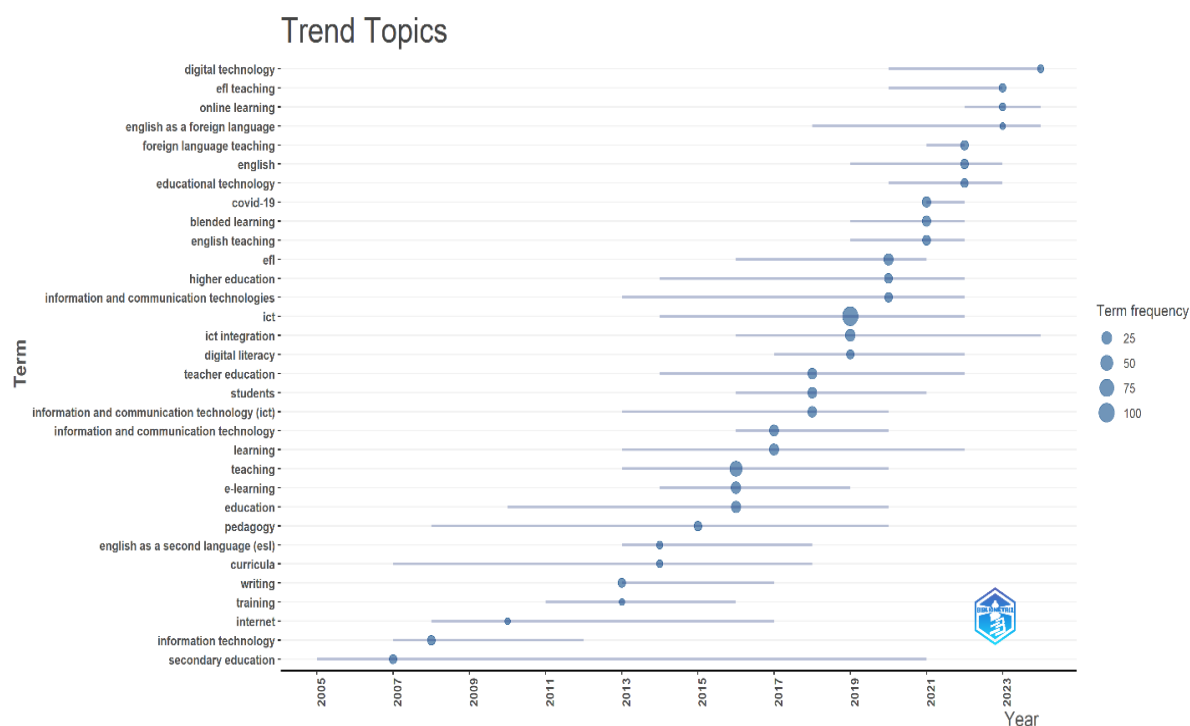
### 3.5 Most Relevant Keywords



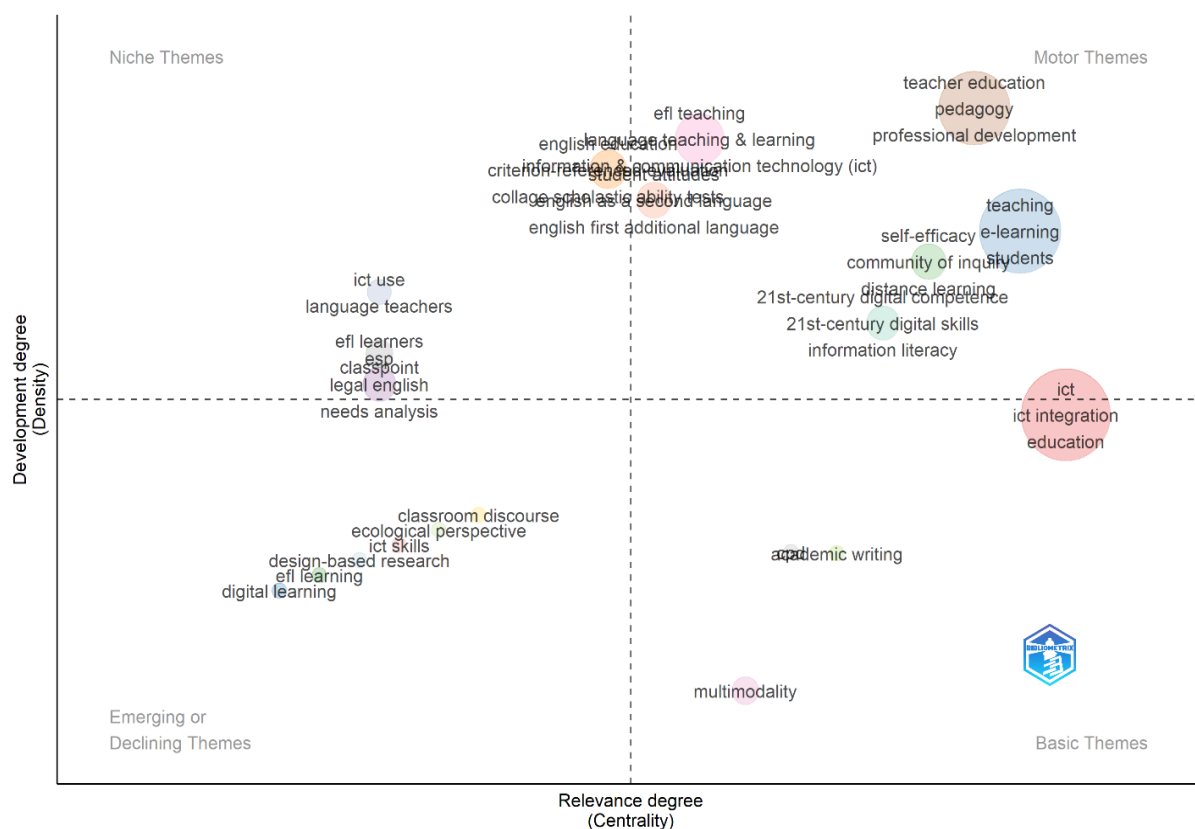
Figure 8: Tree map of authors' keywords



### 3.6 The Current Research Landscape in ICT in Teaching English Research

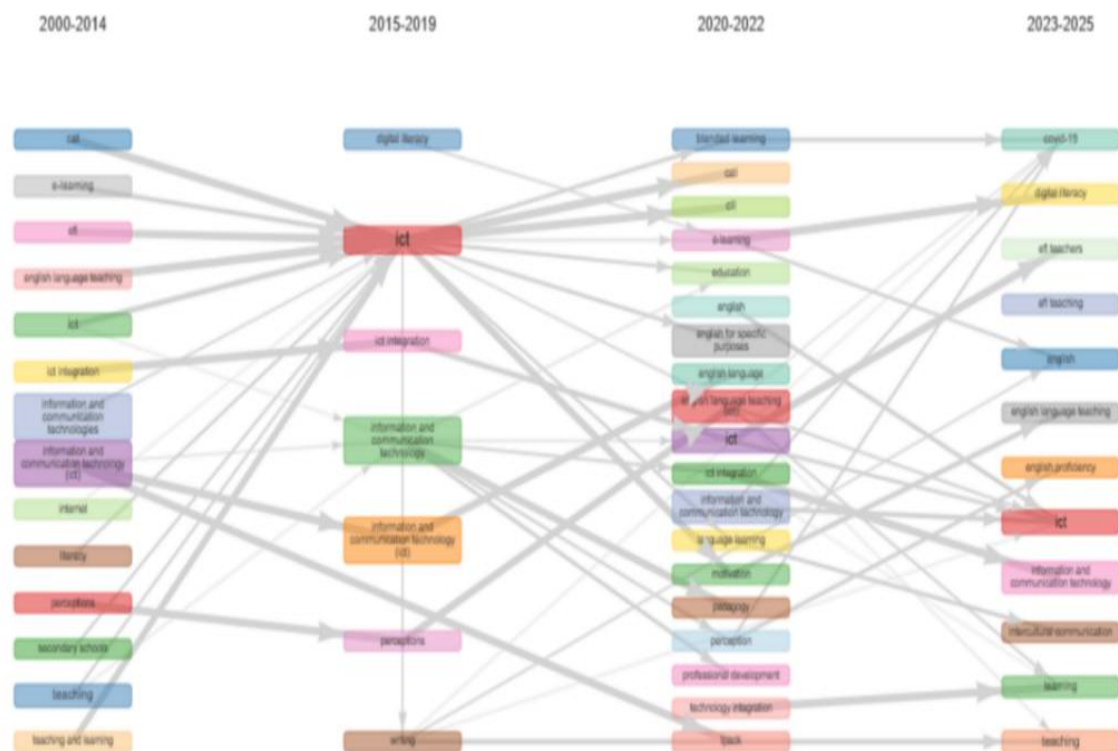


**Figure 10: Trend topics of ICT in teaching English research**



**Figure 11: Thematic map of ICT in teaching English research**





**Figure 12: Thematic Evolution of ICT in teaching English**

Figures 10 to 12 collectively depict the evolving thematic focus and conceptual structure of ICT in English language teaching research from 2000 to 2025. As illustrated in Figure 9, the most prominent trend topics include “ICT,” “e-learning,” “teaching,” and “learning,” with increasing attention to “digital literacy,” “ICT integration,” and “COVID-19” in recent years. These shifts reflect the field’s responsiveness to global educational disruptions and the need for technological adaptation, especially during and after the pandemic era.

Figure 11 presents a thematic map positioning research theme based on centrality and density. The quadrant of **motor themes**—those both highly developed and relevant—includes “teacher education,” “pedagogy,” “professional development,” and “teaching,” indicating their critical role in driving the field forward. “ICT integration” and “education” are categorized as **basic themes**, which are foundational and broadly relevant across studies. In contrast, themes such as “digital learning” and “multimodality” are in the **emerging or declining** quadrant, suggesting either nascent exploration or waning scholarly interest. The **niche themes** quadrant houses specialized but less connected areas such as “legal English” and “ESP.”

Figure 12 demonstrates the **thematic evolution** across four distinct time periods. From 2000 to 2014, foundational topics such as “ICT,” “EFL,” and “e-learning” dominated. During 2015–2019, the discourse began to diversify, with “digital literacy,” “ICT integration,” and “writing” gaining traction. Between 2020 and 2022, a richer convergence emerged around “blended learning,” “professional development,” “language learning,” and “motivation,” likely influenced by rapid



digital transitions. Finally, for the period 2023–2025, the themes further evolved toward “English proficiency,” “intercultural communication,” and refined roles of “EFL teachers” and “digital literacy,” pointing to a maturing research landscape that integrates pedagogical outcomes and global communicative competencies.

Overall, the current landscape demonstrates a maturing field that has evolved from basic digital adoption in English language teaching toward more complex, integrated frameworks that account for teacher readiness, student agency, and multiliteracies in digitally mediated environments.

#### 4. Discussion

The integration of ICT in English language instruction has experienced considerable evolution from 2000 to 2025, a trajectory effectively captured through the present bibliometric analysis. The study addresses six central research questions, providing a detailed overview of the annual publication trends, prolific sources, influential authors and countries, key thematic terms, and the evolving research landscape. These findings provide not only empirical insights but also strategic implications for the field of language education and digital pedagogy (Alam et al., 2025; Ma et al., 2024; Verma & Gustafsson, 2024).

The annual scientific production demonstrates a consistent upward trend, particularly post-2010, with a notable surge in publications observed during the COVID-19 pandemic era (2020–2022), reflecting the intensified reliance on digital learning environments. This acceleration is in line with the global educational shift toward remote and hybrid modalities, confirming earlier findings that the pandemic catalyzed systemic technological integration in classrooms (Aria & Cuccurullo, 2017; Visser et al., 2021). The decline observed in 2025, as illustrated in Figure 1, warrants further scrutiny, potentially indicative of either publication delays or a stabilization in research intensity after the pandemic peak.

The citation data reveal a clear dominance of early foundational works, notably Hennessy et al. (2005), which continues to influence current discourse, particularly around teacher perspectives and institutional constraints. This sustained citation relevance underscores the long-term impact of pioneering studies that addressed systemic barriers to ICT adoption in educational contexts. Yunus M.M., a recurring author in highly cited works, also exemplifies a research trajectory that bridges theoretical and applied perspectives, particularly in Southeast Asian contexts, aligning with Malaysia’s documented leadership in the domain (Bancong, 2024; Nanda et al., 2025).

The source analysis in Table 2 highlights the multidisciplinary nature of the discourse, with journals such as *Education and Information Technologies*, *Computers and Education*, and *Computer Assisted Language Learning* emerging as pivotal publication venues. These journals not only host high volumes of output but also demonstrate substantial citation metrics, confirming their central role in disseminating impactful research. Their prominence also reflects the interdisciplinary intersection between applied linguistics, educational

technology, and instructional design, reaffirming the need for cross-domain integration in both scholarly inquiry and pedagogical practice (Aria et al., 2024).

From a social network perspective, Figures 3 and 4 show that Malaysia and Indonesia are regional leaders in ICT in English education, with prolific authorial outputs and institutional collaborations. The dominance of authors such as Yunus et al. (2012) and Embi and Yunus (2019), whose work spans extensive time frames and diverse thematic areas, underscores the significance of national policy support and institutional investment in sustaining research productivity. Malaysia's role as a geographic hub of bibliographic coupling, depicted in Figures 5 and 6, further reflects its strategic position in fostering international collaborations, particularly with countries in Asia and the Middle East.

Keyword analysis, presented in Figures 8 and 9, confirms the centrality of core themes such as "ICT," "e-learning," and "teaching." These terms signify the foundational discourse around the integration of digital tools in English instruction. The emergence of terms like "digital literacy," "blended learning," and "COVID-19" also illustrates the field's responsiveness to global disruptions and the evolving demands of digital pedagogy. The visualization of keyword co-occurrence networks suggests a cohesive thematic structure, with high interconnectivity among pedagogical, technological, and motivational constructs, supporting previous bibliometric findings by Aria et al. (2023) and methodological recommendations by Van Eck and Waltman (2017).

Thematic mapping and evolution, as shown in Figures 10 through 12, offer critical insights into how the discourse has matured over time. The categorization of "teacher education," "pedagogy," and "professional development" as motor themes affirms their sustained relevance and central role in driving scholarly output. Notably, "ICT integration" transitions from a basic to an emerging motor theme over the study period, indicating increasing scholarly sophistication and practical application. This evolution is reflective of the broader educational shift toward competence-based frameworks that emphasize teacher readiness, digital competencies, and learner autonomy (Aria & Cuccurullo, 2017).

The study's findings align with the methodological principles of comprehensive science mapping (Aria & Cuccurullo, 2017) and extend them through longitudinal analysis. For instance, the trend from general ICT adoption to more granular subtopics such as "intercultural communication," "TPACK," and "ESP" demonstrates thematic diversification and maturity. This trend aligns with Bancong's (2024) assertion that bibliometric analysis can uncover latent intellectual structures and anticipate emergent scholarly directions. The shift also resonates with Nanda et al.'s (2025) call for dynamic mapping of conceptual evolution in response to external disruptions, such as pandemics and technological shifts.

The implications of these findings are multifaceted. First, the sustained prominence of authors and institutions from Southeast Asia suggests that regional ecosystems with supportive research policies and funding mechanisms can

produce globally relevant scholarships. Second, the identified thematic clusters offer a roadmap for future research, pointing to areas such as digital inclusivity, AI in language learning, and intercultural pedagogy as prospective growth fields. Third, the co-authorship and bibliographic coupling networks indicate that strengthening cross-national collaboration could enhance knowledge transfer and methodological innovation. This study contributes to the existing body of knowledge by offering a comprehensive, multidimensional mapping of research in ICT-enhanced English instruction over a 25-year span. By integrating publication trends, citation analyses, authorial influence, geographic patterns, keyword networks, and thematic evolution, it presents a robust synthesis of the field's intellectual and social architecture. The use of advanced bibliometric tools such as Biblioshiny and VOSviewer reinforces the reproducibility and analytical depth of the study, aligning with best practices outlined by Aria et al. (2023, 2024).

In conclusion, the findings underscore a field that has transitioned from exploring the possibilities of ICT in English instruction to establishing nuanced, evidence-based pedagogical frameworks. The scholarly discourse reflects increased methodological rigor, thematic sophistication, and global engagement, signaling a maturing academic landscape. Future research should focus on evaluating the pedagogical efficacy of emergent technologies, understanding the equity implications of digital learning, and fostering interdisciplinary collaborations to address the complex challenges of language education in the digital age. Through such efforts, the integration of ICT in English language teaching can continue to evolve as a dynamic, inclusive, and impactful domain of inquiry.

## 5. Conclusion

This study provides a longitudinal bibliometric synthesis of ICT-enhanced English instruction research from 2000 to 2025. By mapping productivity, influence, and thematic development, we offer strategic insights for scholars, educators, and policymakers. As ICT continues to evolve, future studies should explore AI, adaptive learning systems, and equitable access to digital resources. The findings demonstrate a consistent increase in scholarly interest over the past two decades, with significant acceleration during the COVID-19 pandemic, reflecting the sector's adaptability to crisis-driven digital transformation.

Key contributions of this study include the identification of dominant authors such as Yunus M.M. and Hennessy S., influential journals like *Education and Information Technologies* and *Computers and Education*, and emerging research topics including digital literacy, blended learning, and professional teacher development. The analysis shows that Malaysia and Indonesia are central to the scholarly network, both in terms of volume and bibliographic coupling strength, underscoring their strategic role in shaping the field. The use of Biblioshiny and VOSviewer enabled an accurate, reproducible mapping of the social and intellectual structure of the literature, affirming the robustness of the methodological approach.

The implications of this study are significant for researchers, educators, and policymakers. By highlighting thematic trajectories and collaborative patterns, the

findings offer a strategic roadmap for advancing research and practice in ICT-mediated English language education. This work not only consolidates existing knowledge but also paves the way for future inquiries into the pedagogical efficacy of emerging digital tools, equity in technology access, and global pedagogical innovations. As the educational landscape continues to evolve, this research underscores the need for continuous, data-informed evaluation of ICT's role in language education to support inclusive, effective, and forward-looking teaching practices.

## 6. Conflict of Interest and Author Contributions

**Conflict of Interest:** The authors declare no conflict of interest.

**Author Contributions:** All authors contributed equally to the conception, design, data collection, analysis, and writing of the manuscript. All authors have read and approved the final version of the manuscript.

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