International Journal of Learning, Teaching and Educational Research
Vol. 25, No. 2, pp. 921-952, February 2026
https://doi.org/10.26803/ijlter.25.2.41
Received Oct 21, 2025; Revised Jan 26, 2026; Accepted Jan 28, 2026

Blended Learning in English Language Education from Inception to 2025: A Global Bibliometric Analysis of Trend Topics, Research Themes, Gaps, and Future Directions

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Abstract. Blended learning has established itself as the foundation for English language education in the digital age, with advanced technologies such as artificial intelligence enhancing rather than replacing this approach. Previous bibliometric studies examined blended learning generally in higher education contexts but not specifically in English language education. This study addresses this gap by conducting a comprehensive bibliometric analysis of blended English language learning, examining publication trends, citation impact, influential works, trend topics, research themes, and research gaps with future research directions using 499 valid documents retrieved from Scopus database. biblioMagika was employed for citation metrics analysis, Biblioshiny for identifying top-cited documents and trend topics, and VOSviewer for research themes mapping through author keywords co-occurrence. The findings reveal steady publication growth from 2005 to 2025, with trend topics evolving across three phases: technological foundations (2016 – 2020), learner-centred investigations (2021 – 2023), and data-driven optimisation (2024 – 2025). Network visualisation identifies three major research clusters: pedagogical approaches and quality evaluation, effectiveness evaluation and implementation barriers, and learner psychological factors with technology acceptance. Critical research gaps emerge in technology acceptance mechanisms, where investigations focus narrowly on basic Technology Acceptance Model constructs without comprehensive frameworks. Future research should apply extended frameworks such as UTAUT2, examining attitude as a mediator and self-directed learning readiness as a moderator affecting learners' behavioural intention to use blended English language learning.

Keywords: English language education; blended learning; bibliometric analysis; trend topics; research themes

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1. Introduction

The status of English as a lingua franca across academic, technological, business, and diplomatic domains continues to drive global demand for high-quality English language education (Albl-Mikasa et al., 2024; Crystal, 2017; Jenkins & Morán Panero, 2024b; Mauranen & Vetchinnikova, 2020; Xie & Fang, 2024). Consequently, diverse educational implementations, including English as a Second Language (ESL), English as a Foreign Language (EFL), English for Specific Purposes (ESP), and English for Academic Purposes (EAP), continue to expand substantially worldwide (Jenkins & Morán Panero, 2024a; Jiang & Su, 2025; Lee, 2025; Starfield, 2025; Victoria et al., 2025).

However, while effective language learning requires a significant investment of time, learners and educators face time constraints in traditional classroom-based instruction (Hrastinski, 2019; Jendli & Albarakati, 2024; Taye & Mengesha, 2024). Effective language learning requires approximately 200 guided learning hours to progress from one Common European Framework of Reference for Languages (CEFR) level to the next (Guided Learning Hours, 2024), yet institutional timetables typically allocate only a few hours per week for English instruction (Richards, 2015). This disparity between pedagogical requirements and institutional time allocation creates a significant gap hindering learners' English proficiency enhancement.

Blended learning addresses these time constraints while meeting increasing demands for English language education. Blended learning represents a thoughtful combination of face-to-face and online learning (Cheung & Wang, 2019; Garrison & Kanuka, 2004; Graham, 2006), maximising English language learning opportunities while preserving essential collaborative and communicative dimensions. Compared with fully online learning, blended learning provides opportunities for learners to collaborate and engage with peers and educators face-to-face (Dziuban et al., 2006; Hassan et al., 2021; Raes et al., 2020; Wu & Luo, 2022). Compared with solely face-to-face learning, blended learning provides online spaces and extended study time for learners to engage at their own pace, thereby increasing overall English learning time (Dziuban et al., 2018; Tong et al., 2022). Combining the strengths of both modalities (Graham, 2006; Mustapha et al., 2022; Singh et al., 2021), blended learning establishes itself as the foundation for English language education in this digital age.

While advanced technologies such as artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) are increasingly integrated into English language education, these technologies enhance rather than replace blended learning (Cao & Phongsatha, 2025; Khodabandeh & Mombini, 2024; H. Li, 2024; J. Liu, 2025; Shi et al., 2023; Zhang, 2023). Blended learning remains essential because language acquisition inherently requires both independent learning and social interaction with peers and instructors for knowledge construction, as conceptualised in Vygotsky's (1978) Zone of Proximal Development. Furthermore, effective learning requires the integration of social, cognitive, and teaching presences, as established in the Community of Inquiry (CoI) framework (Garrison et al., 1999; Garrison, 2017). These collaborative and communicative dimensions distinguish

English language education from general higher education contexts. Given blended learning's established importance in English language education and the continued expansion of research in this domain, a comprehensive bibliometric analysis is necessary to map the field's intellectual structure, identify research trends, and reveal gaps requiring investigation. This study aims to provide such an analysis, examining publication trends, citation impact, influential works, trend topics, research themes, and research gaps with future research directions in blended English language learning from its inception to the present.

2. Literature Review

As blended learning has become the educational norm, bibliometric analyses examining this approach have proliferated since 2021 (Bich et al., 2024; Cruz-Cárdenas et al., 2023; Hebebci & Ozer, 2023; Ishmuradova et al., 2024; Mahlangu, 2024; Maridueña et al., 2024; Raman et al., 2021; Rosalinda et al., 2022). However, these studies predominantly focus on blended learning implementation in higher education generally rather than discipline-specific contexts. Among the few scholars examining language-specific applications, English has been identified as the most common target language in blended language learning studies (R. Li, 2022), and researchers have emphasised the need to focus on blended learning implementation for meeting learners' needs in specific educational fields, including English language education (Qi et al., 2024). These findings highlight a critical gap: the absence of comprehensive bibliometric analysis examining blended learning specifically within English language education. To date, only two bibliometric analyses have examined blended learning in English language education, and both are constrained by narrow contextual and methodological parameters, as shown in Table 1.

Table 1: Bibliometric analyses on blended learning in English language education

Author(s) (Year)	Sun et al. (2024)	Wang et al. (2025)
Keywords used	"blended learning" and "business English"	"Production-oriented Approach" and "English reading instruction"
Database	China National Knowledge Infrastructure (CNKI)	
Coverage	1st January 2012 – 31st December 2022	1st January 2015 – 20th December 2023
Total Documents Examined	345 valid documents	128 valid documents
Bibliometric Tools	VOSviewer	CiteSpace
Attributes Examined	• Publication trend • Authors co-occurrence • Institutions • Top 10 highly cited publications • Keywords co-occurrence • Research themes based on keywords clusters	• Publication trend • Citation analysis • Institutions • Keywords co-occurrence • Keywords clusters • Timeline of keywords • Keywords with highest citation

Sun et al. (2024) conducted a specialised bibliometric analysis focusing exclusively on blended learning implementation within Business English courses in China's higher education contexts. Meanwhile, Wang et al. (2025) performed a targeted bibliometric examination of blended learning implementation employing the Production-Oriented Approach (POA) specifically in English reading instruction within China's educational settings. Critically, both studies relied exclusively on the CNKI database, thereby excluding international scholarship from their analyses. These two valuable but circumscribed analyses represent important initial efforts that have yet to capture the full intellectual structure and evolutionary trajectory of blended English language learning research across diverse global contexts and skill domains.

Given this gap, the present study conducts a comprehensive global bibliometric analysis of blended English language learning literature from database inception, using an international database that encompasses diverse ESL and EFL settings worldwide. This approach enables examination of the field's intellectual development beyond the limitations of single-country contexts. The research objectives (ROs) and corresponding research questions (RQs) are presented in Table 2 below.

Table 2: Research objectives and research questions

Research Objectives (ROs)	Research Questions (RQs)
1. Publication Trends & Citation Metrics	1. What are the publication trends and citation impact metrics in blended English language learning research from its inception until the present?
2. Current Most Influential Publications	2. Which are current most influential publications in blended English language learning literature?
3. Trend Topics	3. How have research topics in blended English language learning field evolved from inception to the present?
4. Research Themes	4. What are the major research themes in blended English language learning literature?
5. Research Gaps & Future Research Directions	5. What are the potential research gaps or future research directions that support the growth of blended English language learning?

3. Methodology

3.1 Data Collection

The metadata used in this study was retrieved from the Scopus database on 22nd July 2025. Scopus was selected as the data source for this bibliometric analysis because it offers larger journal coverage in all fields compared to Web of Science (Mongeon & Paul-Hus, 2016), with particular strength in education research domains (Hallinger & Chatpinyakoop, 2019; D. Li et al., 2025). Additionally, Scopus employs rigorous and consistent inclusion criteria for indexed publications (Bich et al., 2024) while providing more reliable citation data than Web of Science (D. Li et al., 2025). Therefore, Scopus was considered the most suitable for this study.

In the Scopus database, the search was conducted using a title-specific search string, as shown in Figure 1. By restricting the search to publication titles only, this approach ensured precise identification of core research focused explicitly on blended English language learning. The search string comprised two components: (1) synonyms of "blended learning", and (2) various forms of English language education, to comprehensively capture the diverse terminology used to refer to blended English language learning. The flowchart illustrates the systematic identification, screening, and inclusion process.

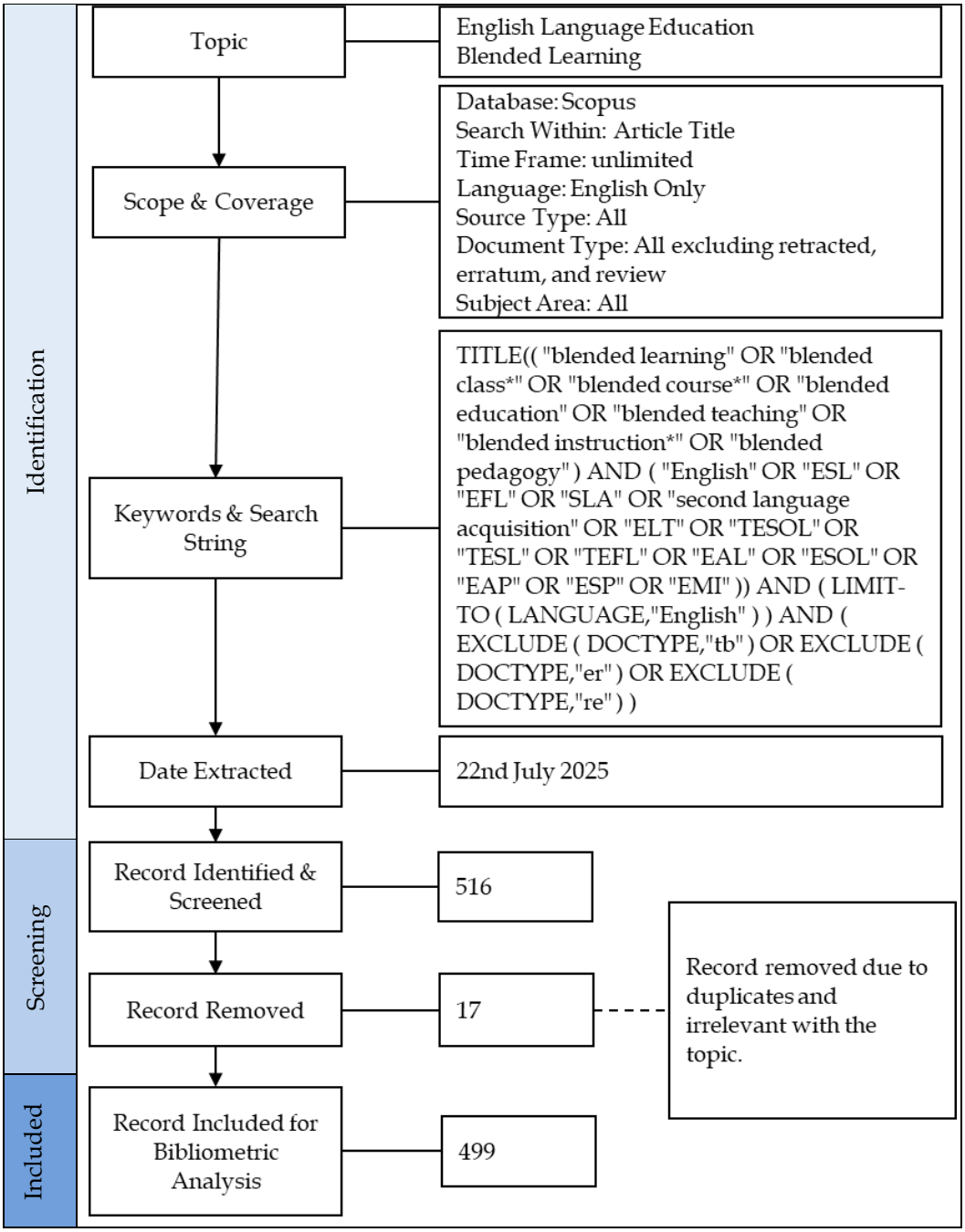


Figure 1: Flow chart of identification, screening, and inclusion of studies

3.2 Data Cleaning

The initial search yielded 553 documents. The search results were refined by limiting to English language publications and excluding erratum, review, and retracted publications. At this stage, 516 documents were identified. Manual screening was then conducted to remove duplicates and irrelevant documents. 17 documents were removed in this screening process, resulting in 499 valid documents for analysis. According to Donthu et al. (2021), bibliometric analysis is warranted when a research field yields several hundred publications (500 or more), while fields with fewer than 300 publications are considered too limited in scope. With 499 valid documents, this study falls within the acceptable range for bibliometric analysis.

The metadata of these 499 valid documents was downloaded in the form of Scopus full-record format and Export Refine Value format on 22nd July 2025. Since the 2025 data only covers publications up to July, it should be considered partial and may not fully reflect 2025 annual trends. For initial data organisation, biblioMagika 2.10.1 (Ahmi, 2024a, 2024b) was used to transform the Scopus metadata of the 499 valid documents into various metrics and facilitate data cleaning.

Subsequently, OpenRefine 3.9.3 was employed to further clean and harmonise author keywords (Ahmi, 2023). This data cleaning process is a crucial step to ensure the accuracy and reliability of bibliometric analysis results because author keywords contain spelling and terminology inconsistencies (Lim et al., 2024). For instance, the same keyword could be spelt inconsistently, such as “learner’s attitude” versus “learner attitudes” or “ESL” versus “English as a Second Language”. Additionally, the same concept could be expressed using different terminologies, such as “blended learning”, “blended courses”, and “blended classroom”.

3.3 Data Analysis

Following the comprehensive data cleaning and harmonisation process, bibliometric analysis was carried out using specialised software tools to address each research objective systematically, as shown in Table 3 below. biblioMagika provides comprehensive citation metrics, Biblioshiny enables trend topic analysis through its dynamic visualisation interface, and VOSviewer offers robust network visualisation for co-occurrence mapping.

Table 3: Data analysis method

Research Objectives	Analysis Output	Data Analysis Software
1. Publication Trends & Citation Metrics	Annual publication frequencies and citation metrics	biblioMagika 2.10.1 (Ahmi, 2024a)
2. Current Most Influential Publications	Top 10 most cited documents based on normalised total citations	Biblioshiny in RStudio 4.5.1 (Aria & Cuccurullo, 2017)
3. Trend Topics	Temporal distribution of high-frequency author keywords	

4. Research Themes	Network visualisation, overlay visualisation, and density visualisation of research clusters based on author keywords co-occurrences	VOSviewer 1.6.20 (van Eck & Waltman, 2010)
5. Research Gaps & Future Research Directions	Integration of temporal and network analysis	Integrated analysis using Biblioshiny and VOSviewer

4. Results and Discussion

4.1 Document Profiles

As shown in Table 4, the cleaned dataset consists of 499 published documents. The majority of the published documents are articles (61.72%). Other publications included in the cleaned dataset are conference papers (33.87%), book chapters (4.21%), and a book (0.20%).

Table 4: Document type

Document Type	Total Publication	%
Article	308	61.72%
Conference Paper	169	33.87%
Book Chapter	21	4.21%
Book	1	0.20%
Total	499	100%

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024a)

Table 5 presents the source types of the 499 published documents. Journals are the most prominent source of publications, accounting for 61.72% of all documents. Conference proceedings, book series, and books constitute a smaller proportion, representing 26.85%, 7.62%, and 3.81% respectively.

Table 5: Source type

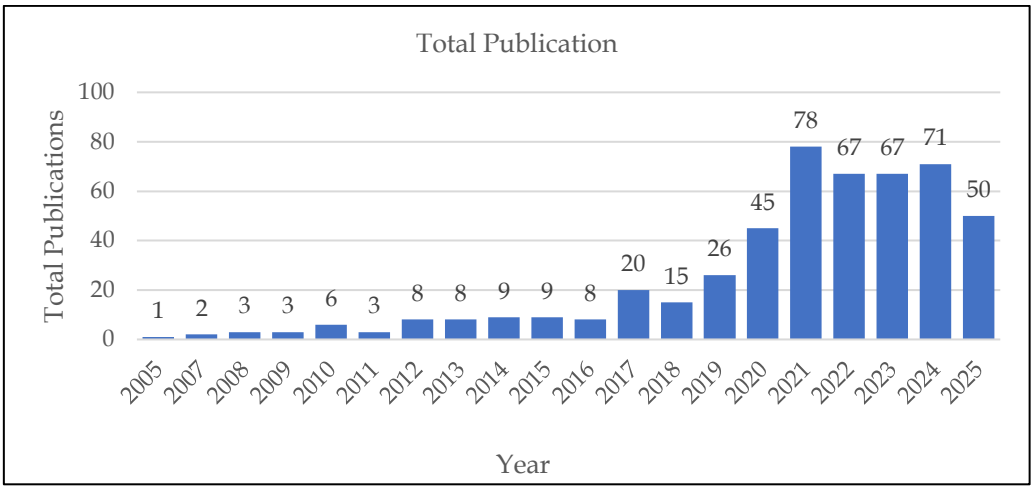
Source Type	Total Publication	%
Journal	308	61.72%
Conference Proceeding	134	26.85%
Book Series	38	7.62%
Book	19	3.81%
Total	499	100%

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024a)

4.2 Publication Trends & Citation Metrics (RO1)

Figure 2 and Table 6 show that publications on blended English language learning began in 2005. The number of publications remained low from 2005 until 2018. Since 2019, publications increased steadily and peaked in 2021, coinciding with heightened research interest in technology-enhanced language education during the COVID-19 pandemic. In the post-pandemic years (2023 to July 2025), publications have remained high, indicating that blended learning has become an established approach in English language education.

Table 6 shows that the 499 publications published between 2005 and 2025 (21 citable years) have collectively garnered 4,023 citations, which translates into 8.06 citations per publication (or 11.94 per cited publication) and an average of 201.15 citations per year. A total of 1,083 authors contributed to these publications, producing an average of 2.17 authors per publication and generating 3.71 citations per author. Furthermore, the impact indicators confirm the blended English language learning field's solid scholarly footprint, including an h-index of 30, g-index of 50, and m-index of 1.429. A total of 3,336 citations are concentrated in the h-Core. These metrics demonstrate both the breadth of participation in blended English language learning and the sustained attention the literature has attracted over the past two decades.



Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024a)

Figure 2: Total publications by year

Table 6: Citation metrics

Main Information	**Data**
Publication Years	2005 - 2025
Total Publications	499
Citable Year	21
Number of Contributing Authors	1083
Number of Cited Papers	337
Total Citations	4,023
Citation per Paper	8.06
Citation per Cited Paper	11.94
Citation per Year	201.15
Citation per Author	3.71
Author per Paper	2.17
Citation sums within h-Core	3,336
h-index	30
g-index	50
m-index	1.429

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024a)

4.3 Current Most Influential Publications (RO2)

Normalisation is necessary in citation analyses because recent publications usually have insufficient time to accumulate a large number of citations (Bornmann & Marx, 2014; Bornmann & Wohlrabe, 2019; Hicks et al., 2015; Schubert & Braun, 1993). To identify the most recent advances in the blended English language learning field, this study uses the normalised total citations (NTC) generated by Biblioshiny (Aria & Cuccurullo, 2017). The NTC is calculated by dividing the total number of citations that a publication has received by the average number of citations of all publications from the same year (bibliometrix, 2025). Thus, NTC indicates how many times more or fewer citations a publication has obtained compared with the average publication from its year of publication (Sandu et al., 2024).

The top 10 most cited documents, based on NTC, are presented in Table 7. Their NTC values ranged from 6.38 to 23.91. This means these publications received approximately six to 24 times as many citations as the average publication from their respective years. Table 7 provides full author names to avoid confusion, as different authors may share the same surnames. Notably, three of the ten most cited documents were authored by Jiang, Liping. These top 10 most cited documents were published between 2020 and 2025. Their titles focus on EFL blended learning, indicating that this area has attracted substantial scholarly attention in recent years. Three journals demonstrated particular prominence in publishing these highly cited documents. Asia-Pacific Education Researcher, Computer Assisted Language Learning, and Interactive Learning Environments, each published two of them.

4.4 Trend Topics (RO3)

Author keywords represent main research directions, and their co-occurrence frequency reflects research hotspots within academic fields (Aria & Cuccurullo, 2017; Cobo et al., 2011). Instead of presenting only the most frequent keywords from 2005 to 2025, this study employs co-occurrence analysis to track trend topics across different periods, offering a more nuanced view of how research focus has evolved in the blended English language learning field. This approach enables the identification of salient topics and their evolutionary trajectories over time.

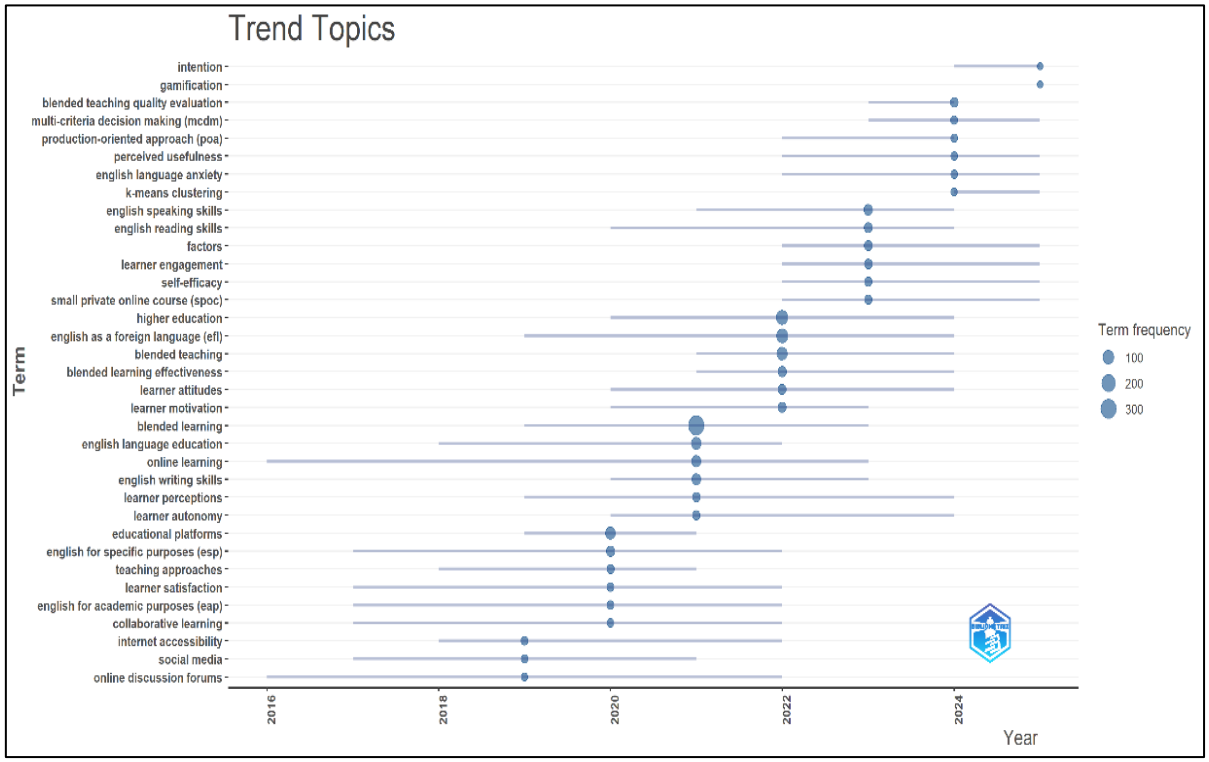
Trend topics, as shown in Figure 3, were generated using Biblioshiny with analysis parameters set at a minimum keyword frequency of four occurrences and six keywords per year. Although the bibliometric dataset encompassed publications from 2005 through July 2025, trend topics only emerged from 2016 onwards, suggesting insufficient keyword density prior to 2016 to establish meaningful temporal patterns. In Figure 3, each horizontal line represents an author keyword's active research period. Dot size reflects keyword frequency, with larger dots indicating higher occurrences. Dot positioning shows the median year of peak research activity for each topic. Based on these patterns, three distinct evolutionary phases of blended English language learning research are identified and discussed in the following subsections.

Table 7: Top 10 most highly cited documents based on NTC

Ranking	Authors' Full Names	Year	Title	Journal	Total Citations	Total Citations per Year	Normalised Total Citations
1.	Qiao, Shen; Chu, Samuel Kai Wah; Yeung, Susanna Siu-sze	2025	Understanding how gamification of English morphological analysis in a blended learning environment influences students' engagement and reading comprehension	Computer Assisted Language Learning	11	11.00	23.91
2.	Jiang, Liping	2024	Factors influencing EFL teachers' implementation of SPOC-based blended learning in higher vocational colleges in China: A study based on grounded theory	Interactive Learning Environments	29	14.50	23.40
3.	Wang, Na; Chen, Juanwen; Tai, Mankin; Zhang, Jingyuan	2021	Blended learning for Chinese university EFL learners: learning environment and learner perceptions	Computer Assisted Language Learning	115	23.00	15.96
4.	Jiang, Liping; Lv, Menglei Cheng, Mengmeng; Chen, Xia	2025	Design and implementation effects of SPOC-based blended teaching from the perspective of deep teaching: A case study of EFL students	Innovations in Education and Teaching International	6	6.00	13.04
5.	Su, Xiaoli; Lee, Icy	2024	Emotion regulation of EFL teachers in blended classroom assessment	Asia-Pacific Education Researcher	12	6.00	9.68
6.	Taghizadeh, Mahboubeh; Hajhosseini, Fatemeh	2021	Investigating a blended learning environment: contribution of attitude, interaction, and quality of	Asia-Pacific Education Researcher	66	13.20	9.16

			teaching to satisfaction of graduate students of TEFL				
7.	Wong, Kung-Teck; Hwang, Gwo-Jen; Goh, Pauline Swee Choo; Mohd Arrif, Siti Khadijah	2020	Effects of blended learning pedagogical practices on students' motivation and autonomy for the teaching of short stories in upper secondary English	Interactive Learning Environments	61	10.17	7.04
8.	Peng, Renzhong; Fu, Rongrong	2021	The effect of Chinese EFL students' learning motivation on learning outcomes within a blended learning environment	Australasian Journal of Educational Technology	49	9.80	6.80
9.	Jiang, Liping; Liang, Xiaodong	2023	Influencing factors of Chinese EFL students' continuance learning intention in SPOC-based blended learning environment	Education and Information Technologies	29	9.67	6.39
10.	Jiang, Yuhong; Chen, Yingying; Lu, Jiasheng; Wang, Yiqing	2021	The effect of the online and offline blended teaching mode on EFL learners' listening performance in a Chinese context	Frontiers in Psychology	46	9.20	6.38

Source: Generated by the author(s) using Biblioshiny (Aria & Cuccurullo, 2017)



Source: Generated by the author(s) using Biblioshiny (Aria & Cuccurullo, 2017)

Figure 3: Trend topics of blended English language learning research

4.4.1 Phase 1: Technological and Pedagogical Foundations (Median year: 2016 – 2020)
The foundational phase (2016 – 2020) established the technological infrastructure and pedagogical frameworks necessary for implementing blended English language learning.

Trend topics centred on essential platforms and tools required for blended delivery. These included "Online Discussion Forums" (7 occurrences), "Social Media" (8 occurrences), "Internet Accessibility" (11 occurrences), and "Educational Platforms" (65 occurrences). The notably high frequency of "Educational Platforms" underscores the centrality of learning management systems in early blended learning implementation, reflecting a period when research prioritised technical feasibility and the integration of digital tools into language teaching contexts.

Pedagogical foundations also emerged in this phase. Keywords such as "Collaborative Learning" (12 occurrences) and "Teaching Approaches" (14 occurrences) indicate early instructional adaptations to blended environments by developing effective delivery methods that combined face-to-face and online instruction. Additionally, "EAP" (12 occurrences) and "ESP" (33 occurrences) demonstrated researchers' focus on adapting blended approaches across diverse English language educational contexts, particularly professional and academic fields.

In this foundational phase, "Learner Satisfaction" (12 occurrences) began gaining prominence in 2017 (median year: 2020), maintaining relevance until 2022 (Phase

2). This emergence signalled an incipient paradigm shift from implementation-focused research towards learner-centred perspectives in the next phase.

4.4.2 Phase 2: Learner-Centred Perspectives and Skills Development (Median year: 2021 – 2023)

Building on the technological foundations established in Phase 1, the middle phase (2021 – 2023) marked a definitive paradigm shift towards learner-centred research. This shift was influenced by the COVID-19 pandemic experience, which highlighted the irreplaceable value of face-to-face interaction and prompted increased research interest in blended learning as the sustainable post-pandemic model.

Psychological and experiential keywords emerged prominently as evidence of this shift, including "Learner Autonomy" (19 occurrences), "Learner Perceptions" (21 occurrences), "Learner Motivation" (25 occurrences), "Learner Attitudes" (26 occurrences), "Self-Efficacy" (18 occurrences), "Learner Engagement" (22 occurrences), "Factors" (24 occurrences), and "Blended Learning Effectiveness" (29 occurrences). These keywords reflected the field's maturation from foundational concerns about technological access to sophisticated investigations of adoption factors and learning outcomes.

Three specific English language skills emerged as primary research foci: "English Writing Skills" (41 occurrences), "English Reading Skills" (27 occurrences), and "English Speaking Skills" (35 occurrences). This skills-oriented emphasis indicated researchers' shift towards examining blended learning's impact on concrete language competencies rather than general implementation concerns.

The educational context also evolved substantially. "EFL" (102 occurrences) superseded the Phase 1 emphasis on EAP and ESP, suggesting broader applicability beyond specialised academic and professional areas. Research concentrated predominantly on "Higher Education" (118 occurrences) contexts, with "Small Private Online Course (SPOC)" (17 occurrences) emerging as a specific delivery format receiving scholarly attention. The "Online Learning" (47 occurrences) component of the blended approach gained dedicated research focus, reflecting increased interest in optimising the technology-mediated dimension of blended learning approach. Sustained post-pandemic publication growth from 2023 to 2025 indicates that blended learning has become the established educational norm rather than merely an emergency response.

4.4.3 Phase 3: Data-Driven Optimisation and Theoretical Modelling (Median year: 2024 – 2025)

Extending the learner-centred focus of Phase 2, the most recent phase (2024 – 2025) demonstrates blended English language learning's evolution into a mature, methodologically sophisticated field characterised by data-driven optimisation and theoretical rigour.

Trend topics reveal advanced analytical approaches through "Blended Teaching Quality Evaluation" (21 occurrences), "Multi-Criteria Decision Making (MCDM)" (11 occurrences), and "K-Means Clustering" (6 occurrences). These keywords

indicate researchers' shift towards systematic quality assessment and data-informed instructional optimisation using computational modelling techniques. For educational practitioners, this trajectory suggests that blended learning is no longer viewed as an experimental approach but as the contemporary pedagogical norm requiring continuous evidence-based refinement.

Theoretical modelling emerged prominently through technology acceptance constructs. "Perceived Usefulness" (9 occurrences) and "Intention" (4 occurrences) reflect the application of established behavioural theories to understand learner adoption and sustained engagement. The "POA" (9 occurrences) represents pedagogical theory emphasising output-driven learning activities within blended contexts.

Furthermore, "Gamification" (4 occurrences) and "English Language Anxiety" (9 occurrences) demonstrate the integration of motivational theories and affective constructs into blended learning environments. These trend topics position emerging technologies, particularly AI-enhanced personalisation and gamification, as theoretically grounded enhancement mechanisms within the blended framework rather than replacement modalities. This preserves essential face-to-face interaction while leveraging technological capabilities.

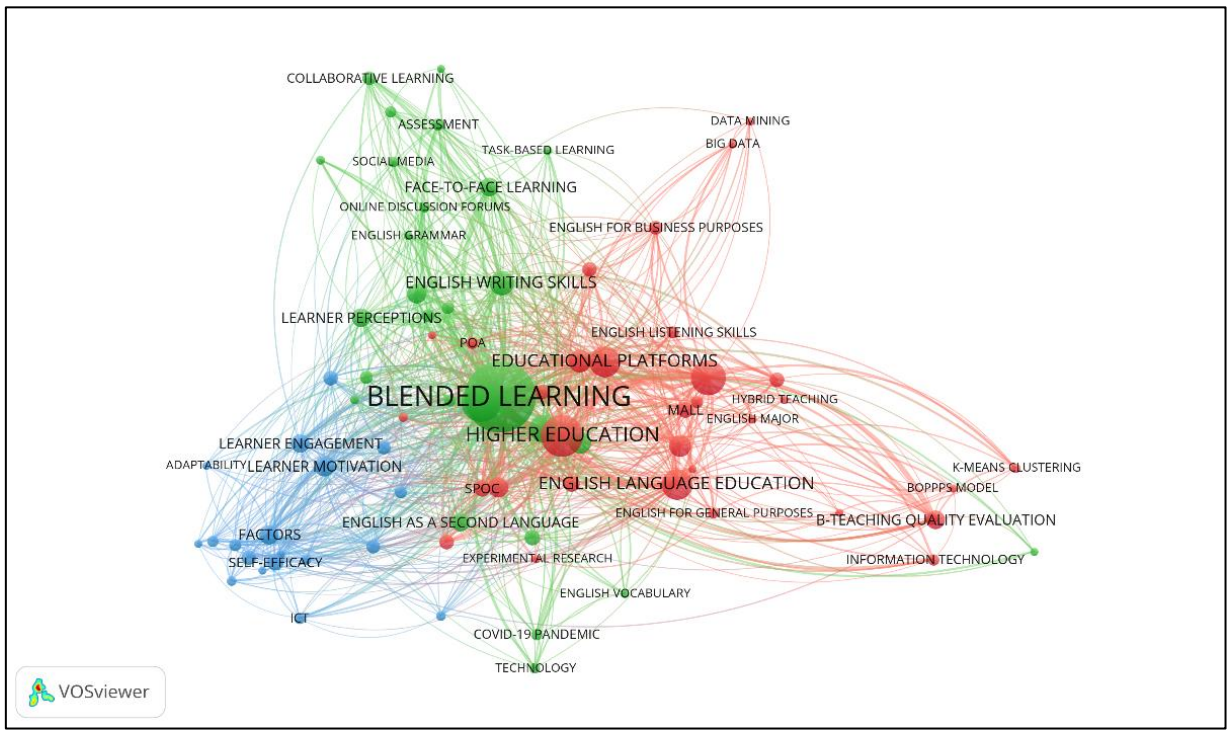
In summary, this most recent phase establishes blended learning as an enduring research domain where questions have shifted from implementation feasibility to theoretically informed optimisation strategies. The field demonstrates sustained relevance by integration rigorous analytical methodologies and explanatory models while maintaining core pedagogical strengths that combine face-to-face interaction with online learning flexibility. Despite the emergence of advanced technologies such as AI, AR, and VR, blended learning remains the pedagogical foundation. Future research is likely to focus on integrating these technologies within blended frameworks while maintaining the human interaction essential for language acquisition.

4.5 Research Themes (RO4)

While trend topics revealed the temporal evolution of research themes in blended English language learning, author keywords co-occurrence clusters generated by VOSviewer complement this analysis by revealing the structural relationships and thematic groupings among these keywords. Co-occurrence network analysis identifies conceptual structures within the research domain, where keywords that frequently appear together in publications form distinct thematic clusters representing coherent research areas (van Eck & Waltman, 2010; Waltman et al., 2010). This clustering approach provides deeper insights into how research topics interconnect and organise themselves into intellectual communities, thus extending beyond temporal trends to illuminate the underlying knowledge structure of the field.

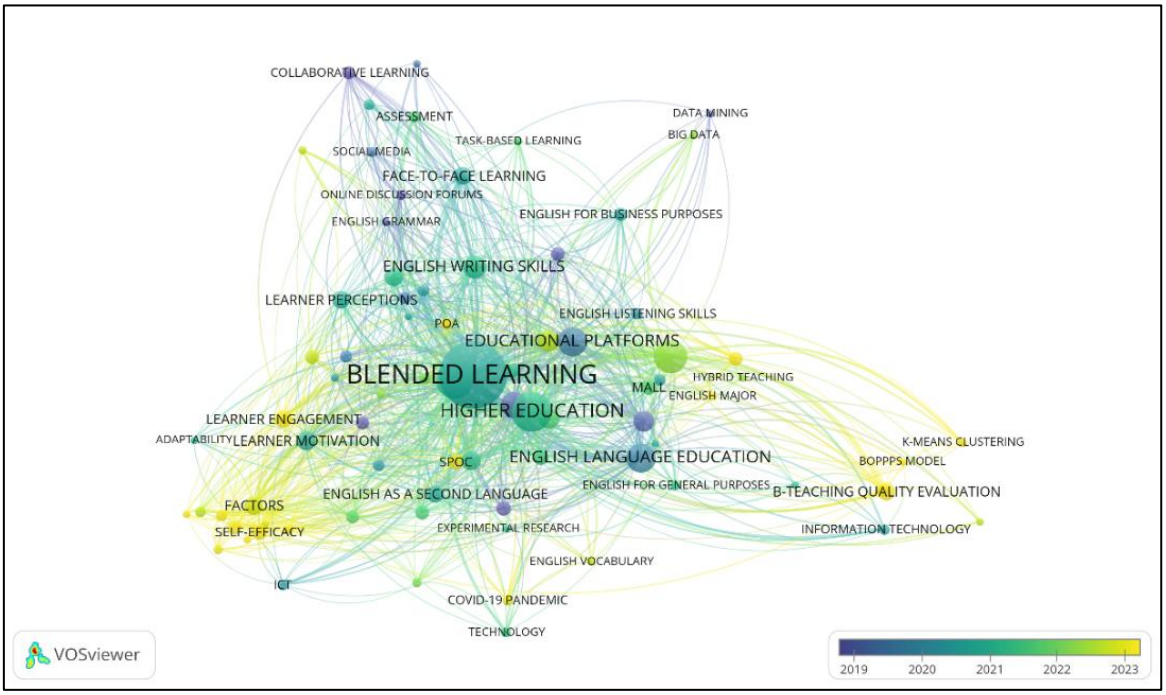
A network visualisation of author keywords co-occurrence was constructed using VOSviewer with a minimum threshold of four occurrences per keyword, a minimum cluster size of 10 items, and fractional counting method (van Eck &

Waltman, 2014) to ensure robust cluster formation. This analysis yielded three distinct research clusters, visualised in Figure 4, where Cluster 1 (red), Cluster 2 (green), and Cluster 3 (blue) each represents a research theme within blended English language learning literature. The overlay visualisation (Figure 5) shows the temporal evolution of keywords where colour gradients indicate publication years (purple representing earlier publications and yellow representing more recent ones). Figure 6 illustrates the density visualisation of the author keywords, revealing the concentration of research activity where warmer colours (red/ yellow) indicate higher keyword density and cooler colours (blue/ green) represent lower density areas. These three clusters are discussed in detail in the following subsections based on occurrences, average normalised citations (ANC), and average publication years (APY) computed by VOSviewer.



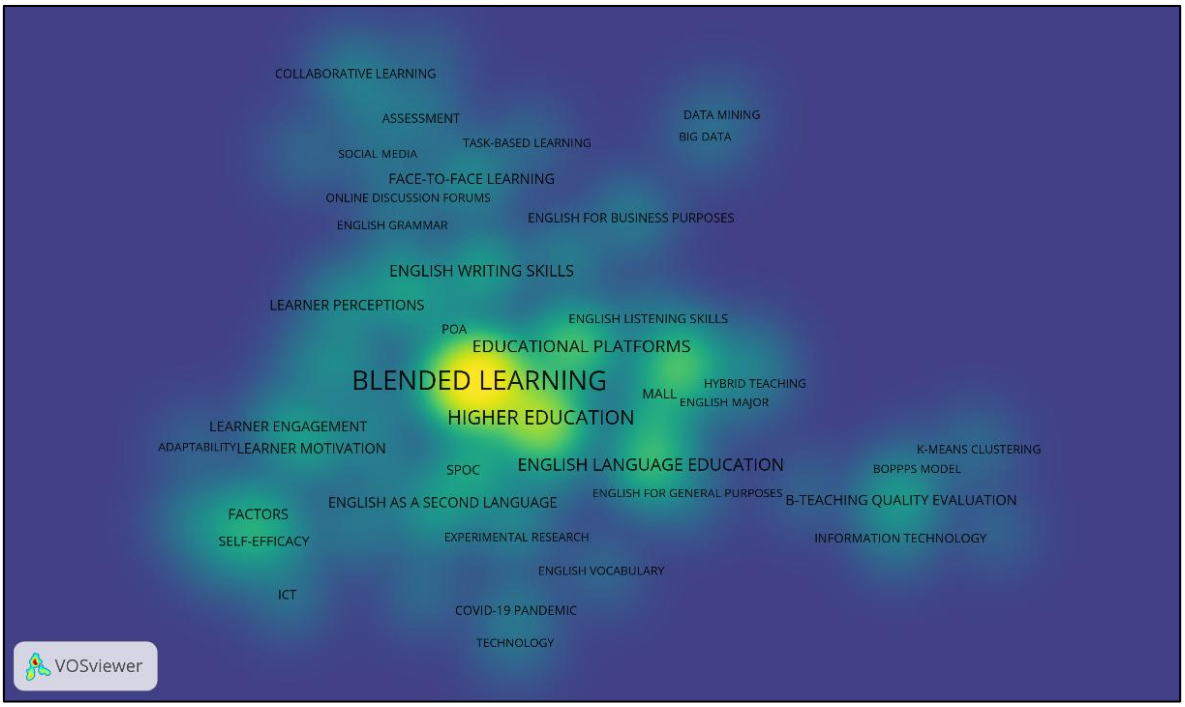
Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2010)

Figure 4: Network visualisation of author keywords co-occurrence (https://tinyurl.com/yt569wkj)



Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2010)

Figure 5: Overlay visualisation of author keywords co-occurrence



Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2010)

Figure 6: Density visualisation of author keywords co-occurrence

4.5.1 Cluster 1 (Red): Pedagogical Approaches and Quality Evaluation in Higher Education

As shown in Figure 4, the substantial presence of "Higher Education" (110 occurrences, 0.96 ANC, 2021.09 APY) establishes the dominant context for blended English language learning research, indicating extensive scholarly attention to tertiary-level implementations. Also, the integration of "Educational Platforms" (60 occurrences, 0.72 ANC, 2019.68 APY) demonstrates extensive research on learning management systems, with its earlier publication year suggesting well-established investigation of technological infrastructure.

Critically, the co-occurrence of "Learner Attitudes" (26 occurrences, 1.60 ANC, 2021.08 APY) and "Learner Autonomy" (17 occurrences, 1.35 ANC, 2021.47 APY) within this platform-focused cluster reveals that these psychological factors have been examined predominantly in relation to specific technological platforms within higher education context rather than blended learning pedagogy. The disproportion between their limited research volume and high citation impact signals that these learner psychological factors are recognised as critical yet remain underexplored. This suggests a need for future research to examine attitudes towards blended learning as a pedagogical model rather than simply attitudes towards specific platforms.

The prominence of "Blended Teaching" (76 occurrences, 0.43 ANC, 2022.18 APY) with recent publication trends reveals the field's shift toward understanding pedagogical strategies used by instructors. The inclusion of "Blended-Teaching Quality Evaluation" (21 occurrences, 1.27 ANC, 2023.38 APY) with more recent publication year and substantial citation impact highlights increasing concern with assessing instructional effectiveness and standardising quality measures. This growing emphasis on teaching quality reflects the field's maturation from understanding student outcomes to optimising teaching practices.

As blended approach becomes increasingly established in higher education, "AI" (14 occurrences, 0.73 ANC, 2023.29 APY) reflects efforts to optimise adaptive learning systems within existing blended frameworks, rather than replacing blended approaches entirely. The newest trends, "MCDM" (10 occurrences, 1.22 ANC, 2024.00 APY) and "K-Means Clustering" (6 occurrences, 0.04 ANC, 2024.17 APY), signal advancing analytical sophistication in blended learning research. While MCDM shows moderate citation impact suggesting nascent recognition for evaluating complex pedagogical decisions, K-Means Clustering's minimal citations reveal emerging directions in pattern analysis to enhance instructional design.

In short, this cluster reveals that while pedagogical approaches and teaching quality have received substantial research attention, learner psychological dimensions remain insufficiently investigated, being examined primarily as attitudes towards educational platforms and as autonomy constructs, without deeper exploration of attitudes towards blended learning as a pedagogical model, underlying mechanisms, mediating processes, or their interactions with comprehensive technology acceptance factors.

4.5.2 Cluster 2 (Green): Effectiveness Evaluation and Implementation Barriers
As shown in Figure 4, the substantial presence of "Blended Learning" (312 occurrences, 1.06 ANC, 2020.57 APY) predominantly within "EFL" contexts (97 occurrences, 1.41 ANC, 2021.26 APY) and "ESL" settings (20 occurrences, 1.09 ANC, 2020.75 APY) establishes this cluster's focus on general blended implementation across diverse English language learning contexts.

The co-occurrence with "English Reading Skills" (23 occurrences, 1.63 ANC, 2021.22 APY) and "English Writing Skills" (36 occurrences, 0.85 ANC, 2021.17 APY) reveals that blended learning research has concentrated on receptive and productive skills development, though reading skills demonstrate notably higher citation impact despite lower occurrences. The minimal attention to "English Grammar" (5 occurrences, 1.35 ANC, 2019.20 APY) with earlier publication years and "English Vocabulary" (5 occurrences, 0.55 ANC, 2022.60 APY) with limited citations suggests this fundamental language components remain underexplored in blended learning research. This imbalance suggests future studies should investigate how blended approaches can effectively support grammar and vocabulary acquisition.

The progression toward "Blended Learning Effectiveness" (29 occurrences, 1.37 ANC, 2021.62 APY) with more recent publication trends signals the field's shift from exploring blended instructions toward systematically evaluating their efficacy. Critically, "Learner Perceptions" (21 occurrences, 2.20 ANC, 2020.81 APY) exhibits exceptionally high citation impact despite moderate occurrences, indicating that understanding learner perspectives is recognised as critically important yet remains insufficiently investigated.

The co-occurrence of "Internet Accessibility" (11 occurrences, 1.23 ANC, 2019.64 APY) with "Technical Support" (5 occurrences, 2.09 ANC, 2020.40 APY) reveals critical implementation barriers with financial implications. Internet accessibility encompasses not merely network availability but also learners' economic capacity to afford data plans for stable internet connections. The disproportion between technical support's limited research volume and high citation impact signals critical yet underexplored institutional support mechanisms, such as Information Technology (IT) personnel assistance, helpdesk services, and troubleshooting resources, that enable learners to overcome technological challenges. These findings align with UTAUT2's facilitating conditions construct, which encompasses organisational and technical infrastructure supporting technology use.

"Self-Directed Learning (SDL)" (9 occurrences, 1.15 ANC, 2020.33 APY) and "Blended Teaching Readiness" (4 occurrences, 1.39 ANC, 2022.50 APY) with moderate-to-high citations reveal growing recognition that both learner self-directedness and instructor preparedness are essential. However, their limited occurrences indicate this readiness dimensions remain underexplored. The inclusion of "CoI" (8 occurrences, 0.34 ANC, 2022.00 APY) with minimal citations despite more recent publication trends suggests this established theoretical

framework has only recently gained attention in blended English language learning research yet remains underutilised.

In short, this cluster reveals that while blended learning implementation across various English skills has received extensive attention, critical effectiveness factors – particularly learner perceptions, economic and institutional support mechanisms, and readiness dimensions – remain insufficiently investigated despite their recognised importance, highlighting substantial gaps in understanding how these elements influence learner acceptance and implementation success.

4.5.3 Cluster 3 (Blue): Learner Psychological Factors and Technology Acceptance

As shown in Figure 4, the prominence of "Learner Motivation" (25 occurrences, 1.65 ANC, 2020.72 APY) establishes learner psychological factors as central concerns in blended English language learning research. Also, the substantial presence and high citation impact of "Learner Engagement" (22 occurrences, 2.18 ANC, 2023.09 APY) alongside its recent publication trend indicates growing recognition of its critical role. The co-occurrences of "Self-Efficacy" (17 occurrences, 1.35 ANC, 2023.29 APY) with these two learner psychological factors further reinforces the field's increasing focus on learners' psychological constructs. This trajectory reflects a broader shift in educational technology research from technology-centred to learner-centred investigations, recognising that successful blended learning depends more on psychological readiness than technological sophistication.

Critically, the integration of "Perceived Usefulness" (9 occurrences, 0.75 ANC, 2023.11 APY) and "Perceived Ease of Use" (6 occurrences, 0.58 ANC, 2022.83 APY) alongside "Technology Acceptance Model (TAM)" (6 occurrences, 0.12 ANC, 2023.00 APY) demonstrates that technology acceptance frameworks have been employed to examine blended learning adoption in English language education. However, the limited occurrences and minimal citation impact of TAM-related constructs, particularly when contrasted with the high impact of psychological factors, signal that while technology acceptance theory has been applied, its integration remains underdeveloped and warrants deeper theoretical exploration. The low citation impact of TAM (0.12 ANC) compared to constructs like "Learner Engagement" (2.18 ANC) and "Learner Motivation" (1.65 ANC) reveals a critical gap. Researchers recognise that psychological factors matter but have not systematically applied comprehensive acceptance frameworks to explain how these factors influence technology adoption.

The emphasis on "Factors" (24 occurrences, 1.21 ANC, 2022.71 APY) reflects broad investigative efforts to identify multiple determinants influencing blended learning success. The presence of "Structural Equation Modelling (SEM)" (13 occurrences, 1.54 ANC, 2023.23 APY) with recent publication trends demonstrates methodological advancement towards examining complex relationships among variables, signalling the field's progression towards more sophisticated analytical approaches that can accommodate multiple predictors and outcomes simultaneously. This methodological readiness supports the application of

comprehensive acceptance frameworks such as UTAUT2, which requires examination of multiple constructs and their interrelationships.

The outcomes-focused keywords reveal dual emphases on affective and cognitive dimensions. "Learning Outcomes" (10 occurrences, 2.79 ANC, 2020.20 APY) demonstrates exceptionally high citation impact despite moderate occurrence frequency, indicating its critical importance in validating blended learning effectiveness. The earlier APY of "Learner Satisfaction" (12 occurrences, 1.39 ANC, 2018.75 APY) suggests well-established investigation of affective responses, while "Academic Achievement" (12 occurrences, 0.79 ANC, 2021.75 APY) reflects sustained attention to measurable learning outcomes.

The newest emerging trends appear in "Intention" (4 occurrences, 2.14 ANC, 2024.50 APY) and "Perceived Teacher Support" (4 occurrences, 2.29 ANC, 2024.00 APY), both demonstrating substantial citation impact despite minimal research volume. The high impact of these nascent topics signals critical gaps in understanding behavioural intentions towards blended learning adoption and the facilitative role of instructor support. Similarly, "Blended Learning Acceptance" (4 occurrences, 0.95 ANC, 2022.75 APY) with limited exploration indicates that while acceptance has been acknowledged, comprehensive examination of acceptance mechanisms remains insufficient.

In short, this cluster reveals that while psychological factors and learning outcomes have garnered considerable attention, the theoretical integration of technology acceptance frameworks with learner psychology remains inadequately investigated. The limited application of TAM constructs, coupled with emerging attention to intention and acceptance, highlights significant gaps in understanding the mechanisms through which psychological factors influence technology acceptance and subsequent blended learning adoption in English language education contexts.

4.6 Research Gaps & Future Research Directions (RO5)

Integrating trend topics analysis (RO3) and research themes clustering (RO4) reveals the field's evolution from technological foundations (Phase 1: 2016 – 2020) through learner-centred perspectives (Phase 2: 2021 – 2023) to data-driven optimisation (Phase 3: 2024 – 2025). This evolution reflects the field's maturation from establishing technological infrastructure to understanding learner psychology, and finally to optimising learning through evidence-based approaches. Despite methodological advancement through "SEM" (13 occurrences, 1.54 ANC, 2023.23 APY), critical gaps persist in comprehensive technology acceptance frameworks, psychological mechanisms, and theoretical framework integration. Four research directions are proposed to address these gaps.

4.6.1 Future Research Direction 1: Comprehensive Technology Acceptance Framework Integration

"TAM" (6 occurrences, 0.12 ANC, 2023.00 APY) shows limited application with minimal citation impact, while "Intention" (4 occurrences, 2.14 ANC, 2024.50 APY) exhibits exceptionally high citation impact despite minimal research

volume. This disparity suggests that researchers recognise the importance of understanding adoption intentions, but comprehensive examination of multiple determinants influencing intention remains absent, revealing theoretically shallow integration.

a) Expected Benefits and Ease of Learning

"Perceived Usefulness" (9 occurrences, 0.75 ANC, 2023.11 APY) and "Perceived Ease of Use" (6 occurrences, 0.58 ANC, 2022.83 APY) remain insufficiently explored. These constructs correspond directly to UTAUT2's performance expectancy and effort expectancy, suggesting the framework's relevance to blended English language learning contexts. While Chu et al. (2025) found performance expectancy strongly influenced students' acceptance of blended learning for English writing on behavioural intention, Yang and Tan (2025) found perceived ease of use did not significantly predict active engagement. These contradictory findings highlight the need for systematic investigation across diverse ESL/ EFL contexts. Future research should examine how expected benefits and ease of learning influence adoption decisions through SEM approaches targeting ESL/ EFL contexts.

b) Instructor and Peer Influences on Acceptance

"Perceived Teacher Support" (4 occurrences, 2.29 ANC, 2024.00 APY) exhibits extremely high citation impact with minimal research volume. This pattern indicates the research community recognises instructor support as critical, but systematic investigation remains limited. Phase 2 emphasised learner-centred factors without examining social and interpersonal influences, and no peer-related keywords gained prominence despite language learning's collaborative nature. Cai (2025) found teacher support positively impacted social presence and enjoyment in blended EFL learning, while Gao et al. (2024) found teacher support significantly influenced ESL student engagement. These findings align with UTAUT2's social influence construct, demonstrating its applicability to blended English language learning. Future research should investigate these social influences through SEM frameworks in tertiary contexts.

c) Institutional Support and Resource Provision

"Technical Support" (5 occurrences, 2.09 ANC, 2020.40 APY) exhibits high citation impact but lacks continued investigation in Phases 2 and 3. No keywords related to organisational support or institutional readiness gained prominence. Although Ye et al. (2022) found that perceived organisational support influenced university English teachers' use of blended learning, this focused on educators rather than learners. This gap is significant because UTAUT2's facilitating conditions construct specifically addresses organisational and technical infrastructure supporting technology use. Future research should investigate how facilitating conditions, including technical assistance and institutional support, affect learner acceptance across diverse institutional contexts.

d) Motivational and Affective Determinants

"Learner Motivation" (25 occurrences, 1.65 ANC, 2020.72 APY) co-occurs with "Learning Outcomes" (10 occurrences, 2.79 ANC, 2020.20 APY), indicating motivation was investigated as an outcome predictor rather than an acceptance

determinant. This indicates that while researchers acknowledge motivation's role in learning success, its function as a driver of technology adoption decisions remains underexplored. Critically, affective dimensions including enjoyment and hedonic motivation lacked sufficient prominence to appear as trend topics or cluster keywords.

Cai (2025) found perceived enjoyment positively predicted engagement in blended EFL learning, while Tamilmani et al.'s (2019) UTAUT2 meta-analysis revealed enjoyment-based motivations significantly influence technology adoption. These findings demonstrate that hedonic motivation, a core UTAUT2 construct, has not been adequately translated into blended English language learning research. Future research should investigate hedonic motivations as acceptance determinants through SEM frameworks.

e) Economic Barriers to Technology Access

Phase 1 established "Internet Accessibility" (11 occurrences, 1.23 ANC, 2019.64 APY) as a technological foundation, but Phases 2 and 3 lack continued investigation. Students' economic capacity to afford internet and devices remains underexplored. This gap is concerning because UTAUT2's price value construct directly addresses how cost-benefit perceptions influence adoption decisions. Studies in other blended learning contexts reveal inconsistent findings: Azizi et al. (2020) and Attuquayefio (2022) found price value significantly affected students' acceptance, whereas Ashraf et al. (2023) and Rudhumbu (2022) found no significant effect. However, these studies examined medical students and general higher education contexts rather than English language learning contexts. Future research should examine how financial constraints affect ESL/ EFL learner acceptance, particularly in developing economies, addressing equity and access concerns.

f) Habitual Use Patterns

No keywords related to habit, routine, or automatic behaviour patterns gained prominence, which is surprising given blended learning's increasing prevalence. This absence suggests that as blended learning becomes normalised in educational settings, researchers have not examined how habitual patterns influence continued adoption. Research in other contexts demonstrates habit's importance. Chávez Herting et al. (2020) found that habit significantly influenced technology use among Spanish university professors, while Jung and Lee (2019) reported habit was the strongest determinant of adoption intention among university educators across Korean, Japanese, and American cultures. However, these studies exclusively examined educators rather than learners, revealing a critical gap in understanding student populations. Future research should investigate habit's influence on students' acceptance of blended English language learning.

g) Summary of Future Research Direction 1

These six areas reveal current technology acceptance research focuses narrowly on basic TAM constructs without examining broader adoption determinants. The bibliometric evidence demonstrates that while keywords corresponding to UTAUT2 constructs (performance expectancy, effort expectancy, facilitating

conditions, social influence, hedonic motivation, price value, and habit) appear in the literature, they have not been systematically integrated within a comprehensive framework. This gap is concerning as institutions lack definite blended learning models to guide implementation, resulting in unclear understanding of appropriate modes and pedagogies (Addam, 2025). Research should apply extended acceptance frameworks, particularly Venkatesh et al.'s (2012) UTAUT2, examining all seven factors within tertiary ESL/ EFL contexts (Amiruddin et al., 2022; Apandi & Raman, 2020). Employing SEM methodology would address theoretical gaps, provide evidence-based insights for enhancing learner acceptance.

4.6.2 Future Research Direction 2: Mediating Mechanisms in Technology Acceptance Processes

Phase 2 (2021 – 2023) marked a paradigm shift towards learner-centred research, evidenced by "Learner Perceptions" (21 occurrences), "Learner Attitudes" (26 occurrences), and "Learner Engagement" (22 occurrences). However, "Learner Attitudes" remains predominantly examined towards "Educational Platforms" within "Higher Education" contexts rather than as mediating mechanisms. The bibliometric evidence shows "Intention" and "Blended Learning Acceptance" appearing in Cluster 3 separately from "Learner Attitudes" in Cluster 1. This structural separation indicates these constructs have not been examined as interconnected through mediating pathways.

The disproportion between high citation impact ("Learner Attitudes": 1.60 ANC) and limited investigation of mediating roles has important theoretical implications. It suggests that attitudes are recognised as critical but insufficiently explored as intervening variables linking acceptance determinants to behavioural intentions. Theoretical support exists, as Dwivedi et al.'s (2019) UTAUT meta-analysis found attitude partially mediates the effect of social influence and facilitating conditions on users' behavioural intention. Within English language education, Abd Rahman (2020) found that attitudes mediate factors affecting Malaysian ESL lecturers' intention to use flipped learning, while Hashim (2016) found attitudes mediate factors affecting ESL learners' intention to use mobile learning, both employing UTAUT frameworks.

However, comprehensive examination of attitude as a mediator remains limited in blended English language learning. This represents a concrete opportunity for future research to investigate how learner attitudes mediate the relationships between UTAUT2 determinants (such as effort expectancy and habit) and behavioural intentions. Future research should employ path analysis or mediation analysis within SEM frameworks in tertiary populations. This would clarify psychological pathways through which acceptance factors influence adoption decisions and inform intervention strategies targeting attitude formation.

4.6.3 Future Research Direction 3: Moderating Effects of Self-Directed Learning Readiness

Phase 2 demonstrated "Learner Autonomy" (19 occurrences) and "Self-Efficacy" (18 occurrences) co-occurring with "Blended Learning Effectiveness" (29 occurrences), but effectiveness was investigated without examining readiness as

a moderating condition. The bibliometric evidence reveals that while "SDL" (9 occurrences, 1.15 ANC, 2020.33 APY) appears in the literature, it has been treated primarily as an educational outcome rather than as a boundary condition influencing technology acceptance processes.

This represents a significant theoretical oversight. SDL readiness may strengthen or weaken the relationships between acceptance determinants and behavioural intentions. For instance, learners with high SDL readiness may require less perceived teacher support to develop positive adoption intentions, while those with low readiness may depend more heavily on facilitating conditions. Existing studies highlight SDL's importance, but not in moderating roles. Hamzah et al. (2020) explored students' SDL readiness, while Adinda et al. (2019) examined undergraduate students' SDL readiness as an effect of EFL blended learning implementation rather than as a moderator.

Evidence from related contexts suggests moderation effects exist. Lai et al. (2022) found university students' self-regulation skills significantly moderated the relationship between behavioural intention and actual use in mobile English learning. However, despite foundational frameworks emphasising SDL's critical role in adult learning (Garrison, 1997; Hiemstra & Brockett, 2012), comprehensive examination of SDL readiness as a moderator in blended English language learning remains absent.

Future research should examine specific moderating effects, such as whether SDL readiness strengthens the relationships between effort expectancy and behavioural intentions, or whether it compensates for weak habit formation in blended English language learning. Multigroup analysis comparing high versus low SDL readiness groups or interaction effects testing within SEM frameworks would address this gap, targeting ESL/ EFL students across diverse proficiency levels. This would identify learner characteristics conditioning technology acceptance processes and enable development of differentiated support strategies.

4.6.4 Future Research Direction 4: Established Theoretical Framework Integration

"CoI" (8 occurrences, 0.34 ANC, 2022.00 APY) emerges as the only established theoretical framework with sufficient occurrences, appearing in Cluster 2 with minimal citations. CoI did not appear as a trend topic in any phases, indicating insufficient prominence across the field's evolution. The minimal citation impact signals a critical gap: Blended English language learning research lacks strong theoretical grounding despite two decades of accumulated scholarship.

This gap is particularly significant for educational practice. CoI provides a robust foundation for examining teaching presence, social presence, and cognitive presence (Garrison, 2017; Garrison et al., 1999). These three presences offer practical guidance for instructors designing blended learning experiences that promote meaningful language acquisition. D. Li et al. (2025) demonstrated that integration of these presences significantly enhanced language acquisition in blended language learning contexts. Studies successfully applied CoI in blended

English language learning to examine online discussion engagement (X. Liu & Deris, 2022), intercultural communication (Wei, 2024), and reading comprehension (Espiritu Bersomin et al., 2024). However, CoI's limited occurrence indicates the framework remains underutilised.

Future research should systematically apply CoI examining how its three presences influence language learning outcomes and learner intention to use blended learning. Notably, the bibliometric evidence shows "Intention" appearing in Cluster 3 while CoI appears in Cluster 2, suggesting these areas have developed independently. This structural separation presents an opportunity to explore integration between CoI and technology acceptance frameworks, potentially examining how social presence influences acceptance intentions or how cognitive presence relates to perceived usefulness. Additionally, researchers should investigate other established theoretical frameworks from online learning and second language acquisition literature to enrich the field's theoretical foundations.

5. Conclusion

This bibliometric analysis examined 499 publications on blended English language learning from inception (2005) to 2025, revealing sustained growth in scholarly attention, particularly since 2019. The analysis identified three developmental phases and three major research themes: pedagogical approaches and quality evaluation in higher education, effectiveness evaluation and implementation barriers, and learner psychological factors with technology acceptance. Despite advanced technologies such as AI and VR emerging in English language education, blended learning remains foundational, as language acquisition inherently requires both independent learning and social interaction. The sustained post-pandemic publication growth confirms that blended learning has become the educational norm in English language teaching.

This study provides the first comprehensive global bibliometric analysis of blended English language learning, addressing gaps in previous studies that examined either higher education generally or were limited to specific national contexts and regional databases. By encompassing diverse ESL and EFL settings worldwide using Scopus, this analysis offers a broader perspective on the field's intellectual structure.

The integrated temporal and network analysis revealed critical research gaps in technology acceptance mechanisms. Current research focuses narrowly on basic TAM constructs without examining comprehensive acceptance frameworks. Future research should apply extended frameworks, such as UTAUT2, examining factors including performance expectancy, effort expectancy, facilitating conditions, social influence, hedonic motivation, price value, and habit within tertiary ESL and EFL contexts using SEM. Additionally, learner attitudes' mediating role between acceptance determinants and behavioural intentions, and SDL readiness as a moderating factor, require investigation. Systematic application of the CoI framework would further strengthen the field's theoretical foundations. These theory-driven investigations would provide evidence-based

insights that advance both scholarly understanding and practical implementation of blended English language learning.

5.1 Limitations and Recommendations

Despite methodological strengths including temporal trend analysis and network visualisation that enabled interpretation beyond quantitative metrics, this study has three main limitations. First, the analysis relied exclusively on the Scopus database, which may have missed relevant literature published in other databases or regional journals. Second, the analytical scope focused on publication trends, trend topics, and thematic networks, without examining geographical distribution based on authors' affiliations or most productive authors. Third, citation-based analysis may underrepresent emerging research that has not yet accumulated sufficient citations.

Future bibliometric studies should consider including multiple databases such as Web of Science to ensure comprehensive coverage of the literature. Furthermore, complementing bibliometric analysis with qualitative systematic reviews would provide deeper understanding of the research landscape and capture nuanced insights that quantitative metrics alone cannot reveal.

6. Acknowledgement

This research was supported by Universiti Kebangsaan Malaysia under the CG-2024-014 research grant. The authors wish to acknowledge the use of Grammarly to help improve the language and grammar of this paper, followed by professional proofreading by a language editor. The paper remains an accurate representation of the authors' work and intellectual contributions.

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