# KNOWLEDGE MAPPING AND EVOLUTIONARY TRENDS OF CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL) RESEARCH IN CHINA

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**Abstract**

**Purpose:** This study addresses the challenges of foreign language education in China's monolingual context through Content and Language Integrated Learning (CLIL). Despite growing interest, current research lacks systematic bibliometric analysis, long-term developmental perspectives, insights into policy-driven thematic changes, and visual knowledge mapping. Using bibliometric methods, this research systematically traces the evolution of CLIL studies in China, providing a foundation for theoretical advances and practical improvements.

**Study Design/Methodology/Approach:** This study uses bibliometric methods and knowledge-mapping visualization to analyze 609 CLIL-related publications from the China National Knowledge Infrastructure (CNKI, 2004-2025) identified via PRISMA 2020 screening. Using CiteSpace and NoteExpress, the study examines publication trends, author/institutional networks, and keyword clustering.

**Findings:** The findings indicate a three-phase development in China's CLIL research: Idea Introduction (2004-2010), Fluctuating Growth (2011-2022), and Rapid Expansion (2023-2025), driven by policy initiatives and practical demands. The research landscape is described as "locally aggregated but generally dispersed", with foreign language universities occupying a pivotal position; however, cross-regional and multidisciplinary collaboration remains constrained. Research hotspots are situated within the "Theory-Model-Practice" framework, emphasizing "content and language integration". The thematic emphasis has progressively shifted toward enhanced localization and multidimensional integration, encompassing elements such as "curriculum-based ideological and political education" and "Chinese culture".

**Originality/Value:** This study makes unique contributions: 1) identifying the three-stage policy-practice-driven trajectory of CLIL development through systematic knowledge mapping; 2) uncovering collaboration patterns and highlighting regional resource disparities; and 3) extracting a localization logic that emphasizes subject content supported by language instruction while integrating ideological education and Chinese cultural elements. These findings offer valuable insights into CLIL localization in non-English-speaking countries and suggest directions for future research.

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**Keywords:** Content and Language Integrated Learning (CLIL), Bibliometrics, Knowledge Mapping, Evolutionary Trend

## Introduction

With the advancement of globalization and educational internationalization, Content and Language Integrated Learning (CLIL) has become an important approach to addressing the inefficiency of foreign language education and the disconnection between subjects and language in China. As an educational model originating from European multilingual education reform, CLIL's localization practice in China is deeply intertwined with the "bilingual teaching" reform, gradually shifting from "ethnic language + Chinese" to "Chinese + English" since the 21st century.

The CLIL model, originally developed within Europe's multilingual context, encounters distinctive challenges in China's predominantly monolingual mainstream education system. Practical implementation reveals persistent structural challenges: many schools lack teachers proficient in both subject content and foreign languages, textbooks are frequently mismatched with learners' needs—either as direct translations of foreign materials or excessively simplified versions—and students' uneven levels of English proficiency further compound instructional difficulties (Wang et al., 2024). Meanwhile, domestic CLIL research has grown substantially, with scholars contributing from multiple perspectives. Previous studies can be categorized into three main streams. First, several scholars have conducted narrative reviews of CLIL implementation, summarizing teaching models and practical challenges (Wang & Xing, 2021). Second, empirical studies have examined CLIL practices in specific educational contexts, such as higher education (Hu & Lei, 2014) or particular subject disciplines, investigating how content-language integration operates across diverse curricular domains (Wang et al., 2024). Third, some researchers have explored curriculum design and materials development for CLIL localization.

Despite the existing rich literature, prominent research gaps remain, which correspond to the four research objectives of this study. First of all, few studies have systematically visualized author and institutional collaboration networks, as well as the regional distribution of research resources in this field. Secondly, most existing works only focus on partial time periods, lacking a complete longitudinal analysis of CLIL research development over the past two decades. Third, traditional review methods cannot fully extract core thematic clusters and overall research hotspots. Finally, although the impact of educational policies on CLIL practice has been acknowledged in existing literature, the interaction between national educational policies and research themes, especially the integration of curriculum-based ideological and political education and Chinese culture, has not been systematically explored. There are important ramifications for these gaps. It is difficult for researchers and practitioners to find frontier topics, research hotspots, or possible collaboration partners without systematic knowledge mapping. Educational reforms might not have evidence-based recommendations if policy-research dynamics are not understood. The field runs the risk of making the same mistakes it has in the past or failing to recognize effective localization techniques if longitudinal analysis is not conducted.

**Objectives**

To systematically map the knowledge structure and evolutionary trajectory of CLIL research in China, this study addresses the following four objectives:

1. Mapping Research Forces and Collaborative Networks. To identify the most influential authors and institutions in the field, and to visualize the inter-institutional collaboration patterns and regional distribution of research resources within the Chinese CLIL academic community.

2. Tracing the Longitudinal Evolutionary Path (2004-2025). To delineate the developmental stages of CLIL in China over the past two decades.

3. Identifying Thematic Clusters and Knowledge Hotspots. To extract core research themes through keyword co-occurrence and clustering analysis, thereby uncovering the macro-level patterns and conceptual shifts that define the Chinese CLIL landscape.

4. Detecting Emerging Frontiers and Policy-Driven Dynamics. To predict research trends for the post-2025 era and investigate how national educational policies—particularly the integration of "curriculum-based ideological and political education"—are shaping the latest localization of CLIL frameworks.

**Literature Review**

**International Theoretical Foundation and Practice of CLIL**

CLIL originated from the European multilingual education reform in the 1990s. Its essence is to organically integrate non-language subject content with foreign language learning, using the target language as the teaching medium to achieve the dual goals of "subject knowledge acquisition" and "language ability development" (Marsh, 2002; Zou et al., 2018). The "4C framework" (Content, Communication, Cognition, and Culture) proposed by Coyle et al. (2010) further consolidates CLIL's theoretical foundation, emphasizing the cultivation of higher-order thinking skills and cross-cultural awareness alongside knowledge and language acquisition.

The theoretical logic of CLIL is highly consistent with three key theories in second language acquisition: Krashen's (1985) "input hypothesis" emphasizes comprehensible language input, which CLIL provides through real subject tasks; Swain's (1985) "output hypothesis" highlights the role of language output in internalization, and CLIL creates natural output scenarios via group collaboration and achievement display; Vygotsky's (1978) "sociocultural theory" regards language as a tool for cognitive development, and CLIL's "content-language integration" essentially improves cognitive abilities through language media.

Internationally, CLIL has become a mainstream multilingual education model. Twenty-seven European countries have incorporated it into their formal education systems, covering over 1 million learners. Empirical studies by Pérez-Cañado (2012) and Dalton-Puffer (2011) have confirmed that CLIL significantly improves learners' subject academic performance and language proficiency. Unlike European

CLIL models that operate within multilingual educational environments, domestic practice in China is shaped by a monolingual context, leading to distinct adaptations in curriculum design, teacher training, and instructional goals. In addition, most existing overseas empirical research focuses on teaching effects, while few studies adopt bibliometric and knowledge mapping methods to review the field as a whole, leaving room for further exploration.

**Development and Research Status of CLIL in China**

China's CLIL practice is closely linked to the "bilingual teaching" reform. In the early stage, bilingual teaching referred to the "ethnic language + Chinese" dual-track model in minority areas (Zhou, 2001); since the 21st century, it has gradually shifted to "Chinese + English", aligning with CLIL's core concept (Feng, 2007). Hu and Lei (2014) pointed out that CLIL has become an important way to solve the problems of "time-consuming and inefficient" foreign language education and "disconnection between subjects and language" in China.

However, European CLIL faces localization challenges in China's monolingual context, including insufficient contextualized language input, low adaptability of teachers' abilities, and inadequate curriculum localization (Hu, 2019). Domestic scholars have conducted relevant research from multiple perspectives: Hu (2005) explored CLIL's adaptability in China; Hu (2008) critically examined the academic discourse surrounding Chinese-English bilingual education. Jiang et al. (2019) analyzed teaching models and policy dilemmas; a 2023 systematic review in sustainability integrated existing research but lacked knowledge mapping analysis of the domain knowledge structure (Hu et al., 2023). Pu and Wu (2020) noted that CLIL teaching material development and curriculum design research are fragmented, focusing mostly on single-subject cases (e.g., college English, business English) and lacking in-depth integration with the domestic 12-year basic education framework. Hu (2019) further emphasized that key localization challenges have not been fully addressed. Although bibliometric methods have been applied to review research in foreign language education, relevant existing studies have several deficiencies. Most of them fail to carry out long-term longitudinal analysis, and rarely combine bibliometric results with policy evolution and practical localization. Additionally, a few studies adopt knowledge mapping visualization to reveal institutional collaboration patterns and thematic changes in CLIL research. These shortcomings leave the overall development of domestic CLIL research insufficiently interpreted. Therefore, this study takes a full-scale longitudinal perspective and uses visual mapping technology to present the whole picture of CLIL research in China, which makes the present work necessary and valuable.

**Policy and Academic Interaction in CLIL Research**

China's CLIL-related policies have experienced three stages of development: The initial proposal of bilingual teaching in 1998, the clarification of quantitative goals for foreign language teaching in 2001, and the emphasis on international talent cultivation through the "Double First-Class" construction since 2015. The integration of China's bilingual education policies and CLIL models can be understood as a two-way adaptation process, wherein policy directives are iteratively refined through local practice feedback (Liao et al., 2026), which directly promotes the phased development of CLIL research. Liao

et al. (2026) confirmed through empirical studies on English-Medium Instruction (EMI) programs that policy orientation directly affects the scale and direction of CLIL practice and research. However, existing research has not systematically explored how policy evolution drives the thematic changes and developmental trends of CLIL research, leaving a gap in understanding the interaction between policy, practice, and research.

## Methodology

### Research Design

This study employs a quantitative research methodology focused on bibliometrics, enhanced by knowledge mapping visualization technology, to systematically analyze CLIL-related literature in China. Bibliometrics provides an objective view of the field's developmental patterns by processing literature metadata using mathematical and statistical techniques. Meanwhile, knowledge mapping visualization offers an intuitive representation of the relationships between knowledge units, facilitating the identification of research hotspots and evolutionary trajectories. The research follows a standardized procedure of "data retrieval → screening and cleaning → format conversion → visual analysis → result interpretation", ensuring a systematic and reproducible approach.

### Data Source

The research data for this study are sourced from the China National Knowledge Infrastructure (CNKI) database, the largest and most comprehensive repository of Chinese academic literature. CNKI encompasses nearly all core domestic journals, master's and doctoral theses, conference papers, and other scholarly outputs, providing a thorough representation of CLIL research in China. The selection of CNKI is particularly suited to this study's focus on the localization and evolutionary trends of CLIL within the Chinese educational context. While international databases like Scopus and Web of Science offer broader global coverage, CNKI uniquely captures the pedagogical practices, policy-driven research, and grassroots instructional insights specific to China's monolingual environment.

### Research Instrument

CiteSpace 6.1.R6: For knowledge mapping (author/institution, co-occurrence, keyword clustering, emergent word analysis).

NoteExpress: For literature deduplication and management.

The time span is set from 2004 to 2025, with each time slice covering one year. The top N threshold is set as Top 50, meaning the system extracts the top 50 high-frequency items in each time slice. For network pruning, the Pathfinder pruning method is applied to simplify network lines and retain key connections, which optimizes the readability of visual maps.

In terms of keyword processing, High-frequency and high-relevance keywords are selected after removing general stop words. For cluster analysis, the Silhouette coefficient is adopted as the cluster validity indicator; clusters with a Silhouette value above 0.7 are regarded as valid and reliable research clusters. Burst detection is used to identify emergent keywords and capture the latest research frontiers.

**Search Strategy**

The search was limited to the period from January 1, 2004, to December 31, 2025. The study employs a subject search method using the following search formula: Topic = "CLIL" OR "Content and Language Integrated Learning" OR "Content Language Integration" OR "Subject Content and Language Integration" OR (("Bilingual Teaching" OR "EMI" OR "All English Teaching" OR "Subject English") AND ("Content" OR "Language Integration" OR "Integration")). The design rationale for this search formula is threefold: first, it covers the English abbreviation, the full Chinese name, and synonymous expressions of CLIL; second, it expands the search scope by including related domestic CLIL practices and intersecting concepts such as "bilingual teaching" and "EMI" using Boolean logical operators; third, it excludes "bilingual teaching for ethnic minorities", which is unrelated to the core concept of CLIL, to ensure search accuracy.

**Inclusion and Exclusion Criteria**

Inclusion criteria:

1. The research topic clearly involves the core concept of CLIL or content and language integrated learning;
2. The research context is educational institutions in mainland China (including primary and secondary schools, universities, vocational schools, etc.);
3. Publicly published academic documents with complete metadata (author, institution, keywords, abstract, etc.);
4. Published in Chinese and peer-reviewed (including journal papers, master's and doctoral theses, and core conference papers);
5. Published within the January 1, 2004, to December 31, 2025 time frame.

Exclusion criteria:

1. Literature with irrelevant topics (such as dual-track teaching of minority languages, research on pure foreign language teaching methods, research on English teaching without content-language integrated design);
2. Non-academic literature (newspaper articles, book reviews, conference notices, and policy interpretation drafts);
3. Literature with repeated publications or incomplete data;
4. Literature with obvious academic standard issues.

This study strictly adhered to the screening specifications outlined in the PRISMA 2020 statement (Page et al., 2021), the latest guideline for reporting systematic reviews and meta-analyses, to ensure transparency and reproducibility in literature screening. The detailed process is illustrated in Figure 1. Additionally, the adoption of CNKI as the primary data source is validated by existing bibliometric research in education. Yu and Liu (2020) confirmed that CNKI archives nearly all core Chinese academic publications within educational research domains. The database provides comprehensive metadata

covering authors, institutional affiliations, and keywords, which fully satisfies the quantitative bibliometric analysis requirements of the current study.

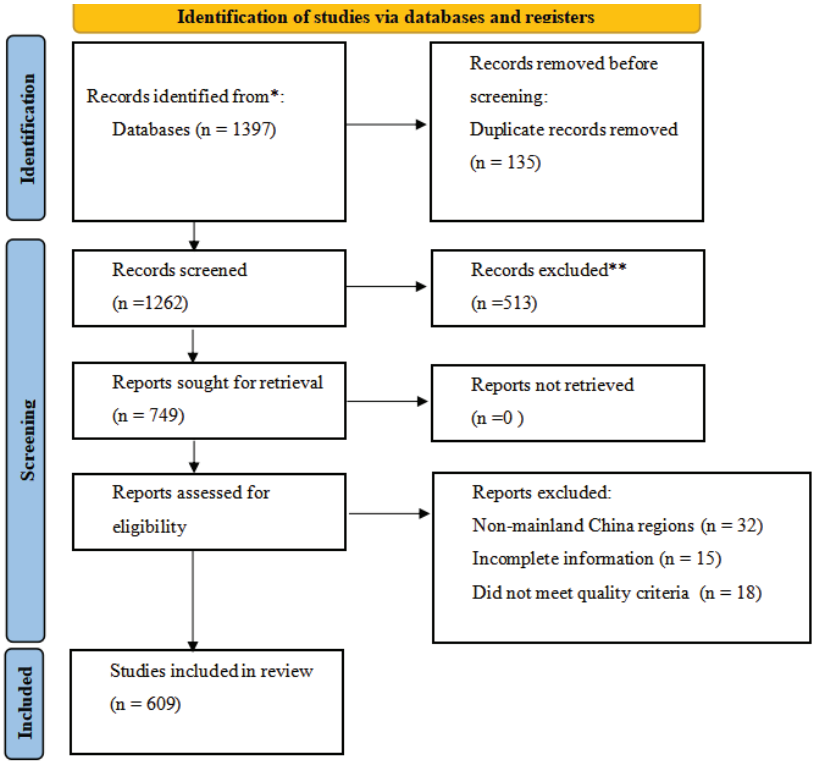



**Figure 1** PRISMA Flowchart

Referring to the PRISMA statement specifications, the literature screening followed these steps:

a) Deduplication: Using literature management software such as NoteExpress, 135 duplicate documents were removed, leaving 1,262 documents for preliminary screening.

b) Initial topic screening: Two researchers independently assessed topic relevance based on titles and abstracts, excluding documents unrelated to the research focus—such as studies on foreign CLIL practices or those exploring bilingual teaching theory without addressing CLIL's core concept. After cross-checking and resolving disagreements, 749 documents proceeded to full-text evaluation (all full texts were successfully obtained).

c) Final eligibility screening: Applying preset inclusion criteria (published in mainland China, complete information, and compliance with academic quality standards), the 749 full texts were systematically reviewed. This process excluded 32 documents from outside mainland China, 15 with incomplete information (e.g., missing abstracts or research methods), and 18 that did not meet research quality standards (e.g., conference abstracts, newspaper comments, or other non-academic materials), totaling 65 exclusions. Ultimately, 609 valid documents were included in the analysis for this study.

**Data Processing and Format Conversion**

Since CiteSpace software natively supports the Web of Science (WOS) data format and includes

a format conversion function, this study utilized its built-in module to convert the 609 CNKI literature records. By selecting the "CNKI" data source type, the software automatically transformed the general text format exported from CNKI into a WOS-compatible format while calibrating and optimizing key fields such as author names, institution names, and keywords. To ensure accuracy, 10% of the converted documents were randomly selected for integrity checks, verifying that the data effectively met CiteSpace's analysis requirements.

**Data Analysis**

Bibliometric analysis: Statistical analysis of annual publication volume, author/institution output. Knowledge mapping: Keyword co-occurrence, cluster analysis, emergent word analysis, time zone analysis via CiteSpace.

## Results

### Annual Publication Volume and Development Trend of CLIL Research in China

The annual publication volume of China's CLIL research from 2004 to 2025 showed a "three-stage progressive" growth characteristic. The specific trend is shown in Figure 2.

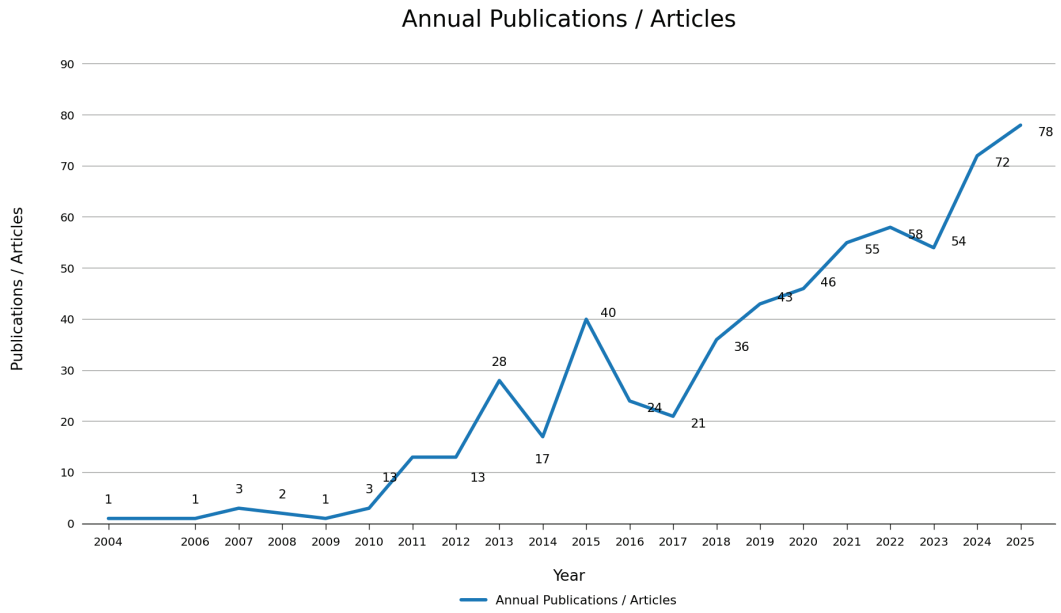



**Figure 2** Trend Chart of Annual Publication Volume for CLIL Research in China from 2004 to 2025

Analyzing the overall trend, CLIL research development from 2004 to 2025 can be divided into three stages:

Initial Exploration Stage (2004-2010): During this period, the annual number of published articles remained in single digits (1-3 articles per year), with an average of only 1.8 articles annually. The CLIL concept had just been introduced into China, policy implementation was not yet widespread, and research attention was limited. Consequently, the field was in its nascent exploratory phase, with no significant large-scale research output.

Period of Rising Volatility (2011-2022). In 2011, the number of published papers surpassed ten for the first time (13 articles), signifying the field's onset of a growth phase. Since then, the quantity of published papers has exhibited a pattern of "continuous increase with fluctuations", marked by periodic peaks in 2013 (28 articles) and 2015 (40 articles). Nonetheless, due to influences such as changes in research emphasis and the rate of policy development, a modest decline was noted, shown by a reduction to 17 articles in 2014 and 21 articles in 2017. Post-2018, the growth rate intensified, culminating in 55 published publications by 2022. The average annual compound growth rate at this stage is roughly 18.2%, indicating a steady increase in the influence of CLIL research and the augmentation of research output; however, a stable growth trend has yet to be established.

Rapid Expansion Stage (2023-2025), The period from 2023 to 2025 witnessed leapfrog growth in research output: 54 papers were published in 2023 (slightly fewer than in 2022), the number surged to 72 in 2024, and further increased to 78 in 2025, representing a 44.4% growth in publication volume over the three years. At this period, CLIL became thoroughly embedded in national educational strategies, including the "Double First-Class" initiative and the development of foreign talents. The considerable rise in practical requirements from universities and investment in research resources has propelled the subject into a phase of swift advancement, with both research scale and output efficiency experiencing notable expansion.

**Core Authors and Collaborative Network of CLIL Research in China**

Figure 3 illustrates the author co-occurrence knowledge map pertaining to China's CLIL research from 2004 to 2025. The map indicated the formation of a research cluster centered around Ying Liu, Xiaoxia Cui, Junyue Chang, and other researchers in the subject. This category of author node is highly interconnected and constitutes a prolific and engaged cohort in CLIL research. Their findings provide the fundamental knowledge base of the discipline. The author's collaboration exhibited traits of being "partially tight yet predominantly loose". Authors often engage within the core cluster; nevertheless, inter-cluster links are limited, and cross-team collaboration remains underdeveloped. At the same time, international scholar nodes such as Green-Entex and DeCosta appear in the map, indicating that China's CLIL research has begun to connect with the international field, but the number and strength of such international cooperation still need to be improved.

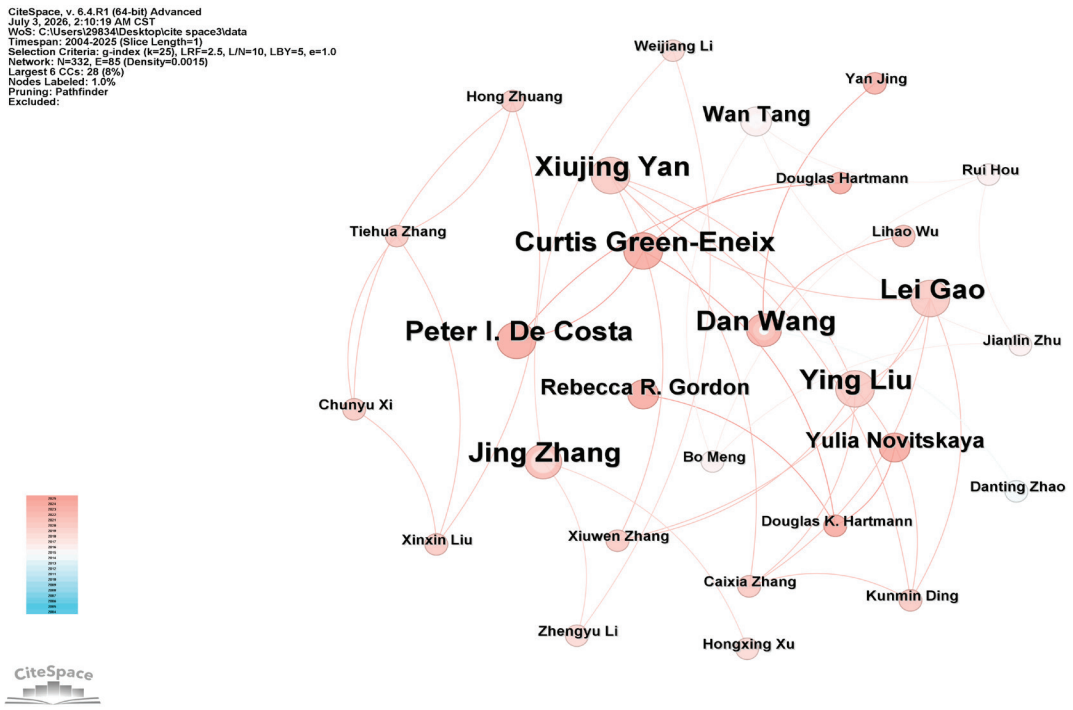



**Figure 3** Author Co-occurrence Knowledge Map of CLIL Research in China from 2004 to 2025

### Core Institutions and Cooperation Characteristics of CLIL Research in China

Figure 4 illustrates the institutional co-occurrence knowledge map of China's CLIL research from 2004 to 2025, effectively depicting the distribution and collaborative linkages across research institutes in the area.

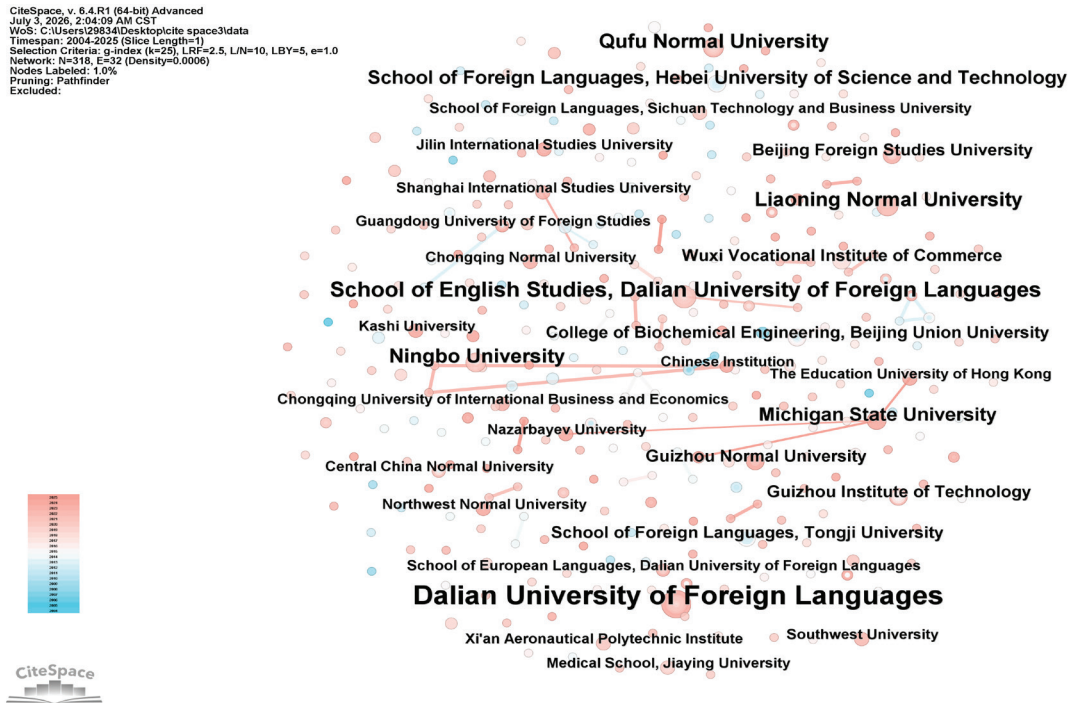



**Figure 4** Co-occurrence Knowledge Map of CLIL Research Institutions in China from 2004 to 2025

The research institutions primarily consist of foreign language universities. The research output from the School of English at Dalian International Studies University, Shanghai International Studies University, Guangdong University of Foreign Studies, and other institutions is notably focused, establishing them as core research entities in the domain of CLIL. Furthermore, the participants encompass comprehensive universities (e.g., Nanchang University), educational institutions (e.g., the Education University of Hong Kong), and a limited number of international institutions (e.g., Michigan State University), indicating a relative diversity in the types of research participants.

Inter-institutional collaboration demonstrates "strong intra-university ties and inadequate inter-university connections". Although there is some collaboration among various departments within a single university (e.g., the School of Educational Science at South China Normal University and the Modern Education Research and Development Centre), there are few connections between different universities and institutions across regions, and a cross-institutional and cross-regional collaborative research framework has not yet been developed.

Core research institutions are predominantly located in the eastern coastal regions and areas abundant in educational resources, such as Beijing, Guangdong, and Shanghai. Institutional involvement in the central and western regions is notably constrained, particularly within primary and secondary schools, where CLIL practice and research remain minimal—A pattern consistent with broader regional resource disparities documented in China's educational landscape.

**Hot Topics, Clustering Characteristics, and Frontier Evolution of CLIL Research in China**

Through the visual examination of the keyword co-occurrence map, cluster map, burst-term map, and time-zone map, the principal research themes, prominent topics, fundamental clustering characteristics, and dynamic evolutionary trends of CLIL research in China can be comprehensively delineated, as detailed below.

Figures 5 (keyword co-occurrence map) and 6 (keyword cluster map) indicate that China's CLIL research has established nine core clusters, with prominent subjects centered on the three aspects of "theoretical foundation—instructional model—practical application", exhibiting clear practice-oriented characteristics.

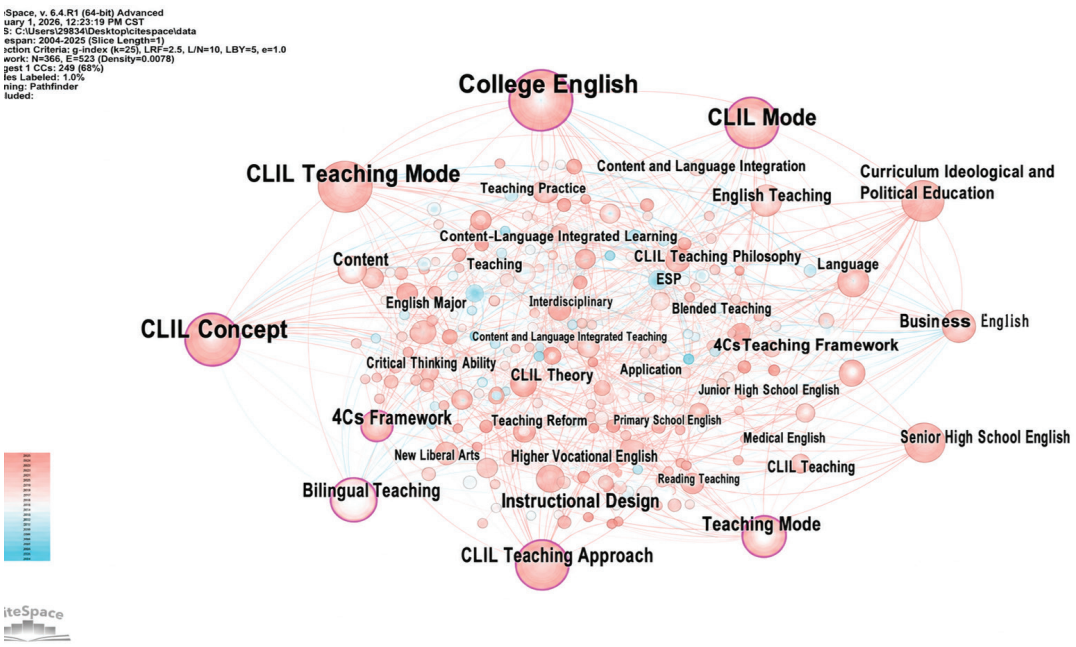



**Figure 5** Keyword Co-occurrence Map of CLIL Research in China from 2004 to 2025

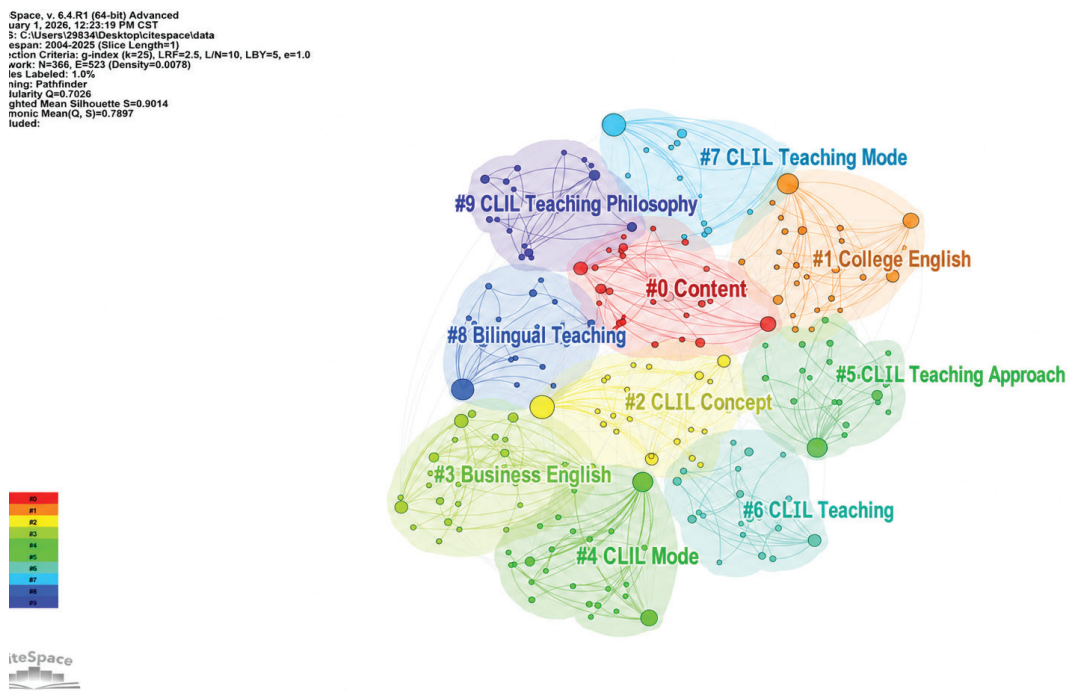



**Figure 6** Keyword Clustering Map of CLIL Research in China from 2004 to 2025

The analysis of high-frequency keywords indicated that "CLIL", "CLIL teaching model", "bilingual teaching", "4Cs framework", "college English", "content and language integration", and "business English" represent the primary research focal points in the discipline. "Content and language integration" functions as the central hub, linking several clusters and representing the "dual-goal synergy of content and language", which constitutes the fundamental rationale of CLIL research, permeating the full continuum of theoretical inquiry and practical implementation.

The nine fundamental clusters encompass diverse themes: certain clusters concentrate on the construction and operational pathways of CLIL within specific educational contexts, others emphasize the theoretical foundations and interpretations of CLIL's core principles, while additional clusters illustrate the integration of CLIL with domestic bilingual education and international pedagogical practices, alongside exploratory applications across various disciplines in higher education, thereby establishing a multi-dimensional research framework of "theory-model-subject-ability-policy".

**Dynamic Analysis of Cutting-edge Trends and Emerging Words**

Figure 7 (emergent word map) clearly presents the frontier evolution trajectory of CLIL research in China. The time distribution of emergent words is highly consistent with changes in policy orientation and educational practice needs.

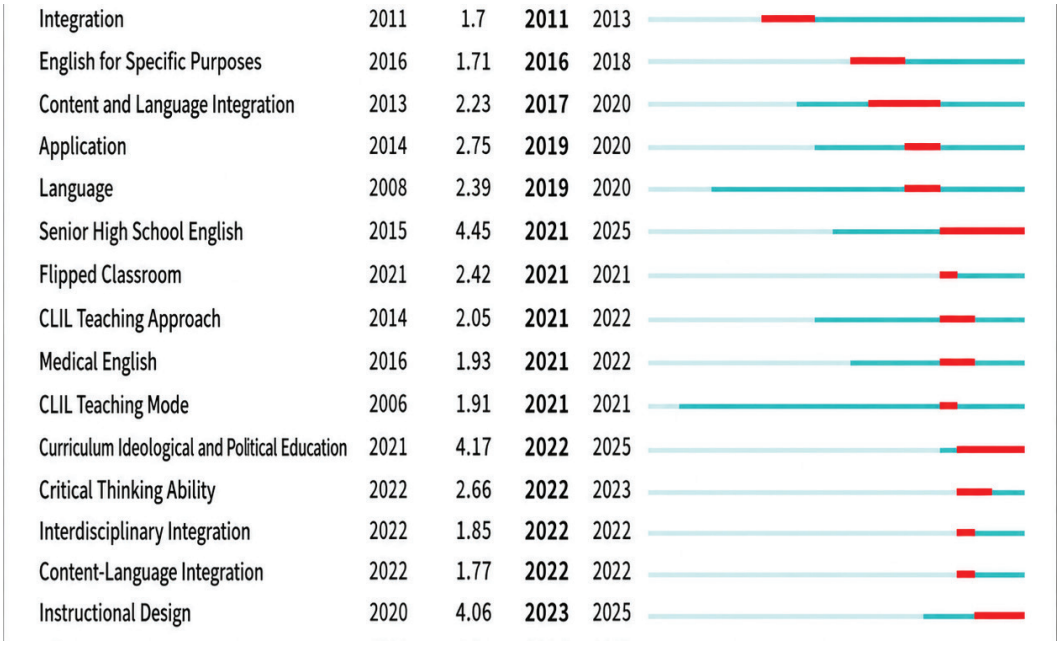



**Figure 7** Emerging Word Map of CLIL Research in China from 2004 to 2025

During the initial phase (2007-2018), the predominant terms were "model", "integration", "English for Special Purposes", and "teaching reform". At this time, the CLIL idea was newly introduced in the country, with research primarily concentrating on conceptual interpretation, foundational model development, and its integration with English for Special Purposes instruction. This phase might thus be defined as the "concept introduction and fundamental exploration" stage.

During the mid-term phase (2019-2022), the prominent terms include "high school English", "curriculum ideological and political education", "thinking ability", and "core literacy". The innovative theme exhibited two primary attributes: firstly, the research timeframe encompasses both higher and basic education; secondly, it intricately links domestic educational policies and objectives, incorporates local educational paradigms into CLIL research, and embodies the principle of "local adaptation and goal enhancement".

In the current phase (2023-2025), notable terms include “instructional design”, “4Cs framework”, “interdisciplinary”, and “Chinese culture”. The research frontier emphasizes practical specifics and theoretical enhancement: transitioning from ‘model construction’ to ‘classroom implementation’, with increasing scholarly attention to specific operational processes and pedagogical refinement (Tong et al., 2020); concentrating on the localization of theoretical frameworks; and extending to subject integration and cultural transmission. For instance, CLIL applications in junior high school English instruction have begun to explore integration with other subject disciplines such as history and geography (Wang et al., 2024), reflecting a broader trend of “practical refinement, theoretical localization, and field expansion”.

**Theme Evolution Path and Time Context**

Figure 8 (keyword time zone chart) delineates the comprehensive developmental trajectory of China’s CLIL research, progressing from “idea introduction” to “multi-dimensional integration” in chronological sequence.

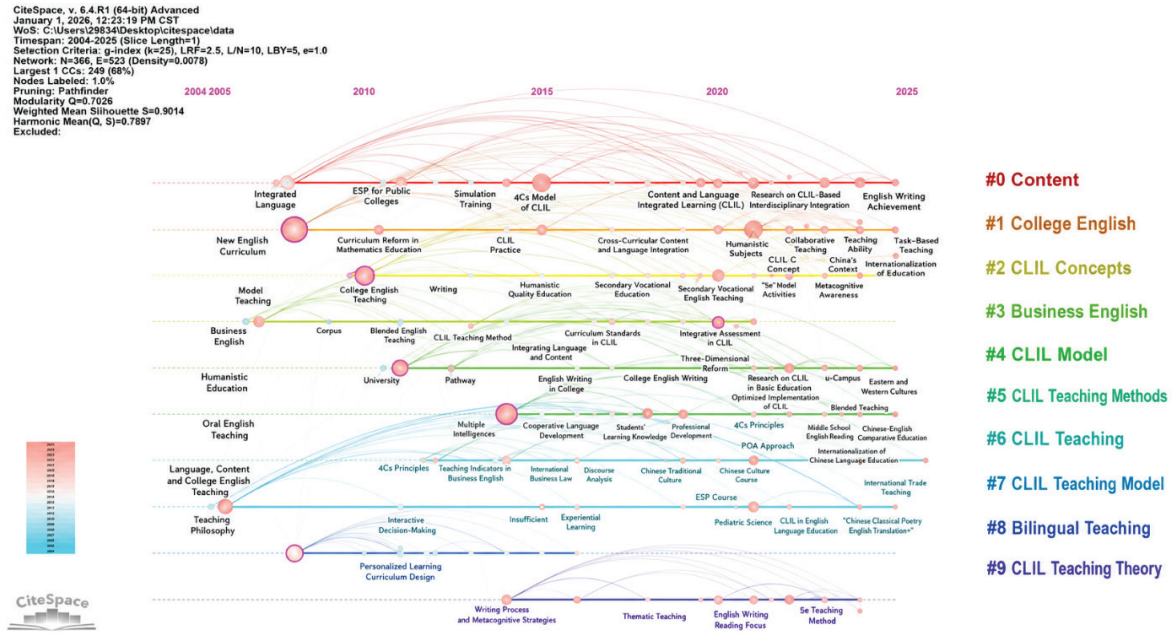



**Figure 8** Time Zone Chart of China CLIL Research Keywords from 2004 to 2025

The period from 2004 to 2010 was designated as the “concept introduction and preliminary exploration period”, emphasizing essential issues such as “language and content”, “college English instruction”, and “bilingual education”. The study focused on the fundamental implications of the CLIL idea and examined its incorporation into the domestic college English teaching reform, primarily through a theoretical introduction and initial reflections.

The period from 2011 to 2018 was characterized as the “Phase of Model Development and Practice Augmentation”. In this phase, the breadth of research themes broadened considerably, encompassing topics such as “CLIL teaching methods”, “English for specific purposes”, “teacher training”, and “curriculum design”. The research emphasis transitioned from theoretical analysis to the development

of instructional models and practical implementations, with increased focus on specific applications and practical challenges across several domains. This method established the groundwork for the preliminary research framework of "Theory-Model-Practice".

The years 2019-2025 represent a "period of intensified localization and multidimensional integration", characterized by prominent topics including "curriculum ideological and political education", "interdisciplinary approaches", and "Chinese culture". The research has successfully broadened academic stages and disciplines, becoming more intricately woven into domestic education policies and cultural heritage objectives. This has established a research paradigm characterized by "theory localization, practice refinement, and goal diversification", signifying that China's CLIL research has reached a mature developmental phase.

**Discussion**

Compared with previous studies that predominantly employ narrative reviews or focus on specific institutional contexts, this study makes three distinctive contributions. First, it is the first to apply systematic bibliometric analysis with knowledge mapping visualization to CLIL research in China, analyzing 609 publications across 21 years to objectively revealed macro-level patterns, collaboration networks, and thematic evolution that narrative reviews cannot capture. Second, it empirically identifies and documents the policy-practice-driven three-stage developmental trajectory, demonstrating how specific educational policies catalyze shifts in research themes, evidence that previous studies only discussed conceptually without systematic verification. Third, it extracts an empirically grounded localization logic characterized by "subject-oriented design with language support" and integration of curriculum-based ideological education and Chinese cultural elements, offering a transferable adaptation model for other non-English-speaking countries that extends beyond the localization challenges identified by Hu (2019) and Hu and Mi (2024).

This study showed that China's CLIL research is characterized by a "three-stage progression", which closely aligns with the evolution of domestic education policies. The "concept introduction period" (2004-2010) corresponds to the initial promotion of bilingual education policies, during which research focused primarily on conceptual applicability and adaptation. The "fluctuating growth period" (2011-2022), coinciding with policy initiatives such as the "Double First-Class" program, saw research expand towards practical exploration and implementation. This was followed by the "rapid expansion period" (2023-2025). This trend is directly related to the strengthening of the demand for international talent training. It is consistent with the conclusion put forward by Hu and Lei (2014) that "CLIL research in China advances with the pace of policy", and empirical studies on EMI programs in Chinese universities have further confirmed that policy orientation directly affects the scale and direction of CLIL practice and research (Liao et al., 2026), which also reflects the guiding role of education policy in research hotspots. The periodic drops in publishing production between 2014 and 2017 can be ascribed to practical

constraints, including "insufficient language input" and the "lack of teachers with dual competencies" at the implementation level (Feng, 2007). This trend indicated that research vigor is limited by practical feasibility: when conceptual exploration faces implementation obstacles, research output typically experiences short-term modifications. This, in turn, indicates that subsequent studies need to place greater emphasis on addressing practical bottlenecks.

The "regional concentration and uneven distribution, overall looseness" characteristics of cooperation between authors and institutions in this study are inconsistent with the "interdisciplinary nature" of domestic CLIL research: CLIL encompasses various disciplines, including education and linguistics; yet, the existing collaboration network is limited to a singular disciplinary team, resulting in inadequate interdisciplinary connections. This issue may arise from the tangible presence of "departmental barriers" within universities and is also associated with the immaturity of CLIL as an academic discipline. The preeminent status of schools on the eastern coast fundamentally mirrors the disparate allocation of educational resources; eastern universities possess greater access to foreign resources and faculty reserves, hence enhancing their capacity for CLIL practice and research. This reinforces the assertion made by Jiang et al. (2019) that "regional disparities exist in China's CLIL practice". In the future, cross-regional collaborative initiatives will be essential to bridge the research disparity between the central and western areas and the eastern region.

The core logic of "integration of content and language" in this study is not only in line with the international theoretical core of CLIL (Coyle et al., 2010), but also reflects the uniqueness of the Chinese context: Domestic research places more emphasis on "subject content first, language ability assists", which is different from the European multilingual environment's "equal emphasis on language and content" model, reflecting the constraints of a monolingual environment on CLIL practice–the goals of "content acquisition" and "language development" need to be optimized through curriculum design. The rise of frontier topics such as Curriculum Ideology and Politics and Chinese Culture fully shows how CLIL has adapted to local contexts. It transcends the cultural diversity framework of European CLIL and brings local cultural heritage and ideological and political education into CLIL research. As such, it constitutes localized innovation of international theory and responds to the domestic educational goal of "cultivating people with moral integrity". This direction can provide a reference for CLIL research in other non-English-speaking countries.

This survey exclusively encompassed Chinese literature, perhaps overlooking findings disseminated by Chinese scientists in international journals. In the future, Chinese and English databases may be amalgamated to facilitate cross-linguistic comparisons. Simultaneously, bibliometric approaches struggle to encapsulate the intricacies of educational practices. In the future, qualitative methodologies like classroom observation and action research may be used to enhance the dynamic assessment of CLIL teaching outcomes. Furthermore, contemporary research insufficiently addresses the fundamental education phase. The progression of the "core literacy" policy has led to a gradual growth in the need

for CLIL implementation in elementary and secondary education. In the future, we can concentrate on the K-12 educational phase and conduct research on CLIL models tailored to the obligatory schooling level to address the deficiency in current research regarding this stage.

**Conclusions**

This study systematically explores the knowledge structure and evolutionary trends of CLIL research in China based on a bibliometric analysis of 609 publications from the CNKI database published from 2004 to 2025. It should be acknowledged, however, that the exclusive reliance on CNKI as the data source represents a scope limitation, as scholarly contributions by Chinese researchers published in international databases such as Web of Science and Scopus fall outside the boundary of this review; findings should therefore be interpreted with this constraint in mind. The major findings corresponding to the four research objectives are summarized as follows.

First, in terms of research forces and collaborative networks, CLIL research in China presents a pattern of local aggregation and overall dispersion. Foreign language universities act as the core research institutions, while research resources are unevenly distributed across eastern, central, and western regions. Cross-regional and interdisciplinary cooperation among researchers and organizations remains inadequate. Second, regarding the longitudinal evolutionary path, domestic CLIL research has experienced three distinct developmental stages driven by educational policies and practical demands: the initial introduction stage from 2004 to 2010, the fluctuating growth stage from 2011 to 2022, and the rapid expansion stage from 2023 to 2025. Third, for thematic clusters and research hotspots, existing studies have formed a stable "Theory-Model-Practice" research framework. Content-language integration is always the core focus of the field, and research themes have gradually moved toward multi-dimensional localization, forming a relatively complete academic system. Fourth, in terms of emerging frontiers and policy impacts, national educational policies play a leading role in the thematic evolution of CLIL research. In recent years, curriculum-based ideological and political education and Chinese cultural inheritance have become prominent frontiers of localized CLIL research.

**Recommendations**

To promote the sound development of CLIL research and practice, targeted and operable measures are proposed. First, a national CLIL research consortium can be established to break regional barriers and promote joint research across institutions. A practical pathway to initiate this would be to leverage the existing inter-university collaboration frameworks among leading foreign language universities—such as Dalian International Studies University, Shanghai International Studies University, and Guangdong University of Foreign Studies, which are already identified as core research institutions in this study. While seeking alignment with policy-driven funding mechanisms such as the National Social Science Fund of China (NSSFC), so as to establish both an institutional foundation and sustainable financial

support for such a consortium. Second, professional certification and systematic training systems should be developed for teachers with dual subject and language competencies. Third, researchers and educators need to co-design textbooks and teaching resources tailored to China's monolingual educational context. For future research, scholars are suggested to adopt multi-source databases to expand research samples and combine qualitative methods to explore practical teaching effects. More attention should also be paid to CLIL application in basic education and vocational education, so as to further enrich the research system in this field.

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