

# Analyzing CLIL Studies in Primary Education: Bibliometric analysis

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**ABSTRACT:** Content and Language Integrated Learning (CLIL) holds a pivotal role in fostering English vocabulary acquisition among primary school students across various subjects. This study aims to undertake a comprehensive bibliometric analysis of English research articles spanning the past 16 years (2007-2023), focusing on CLIL implementation within primary education. Employing Boolean operators and wildcard symbols, we amalgamated pertinent keywords for querying the Scopus database. To facilitate bibliometric assessments, the Bibliometrix package within RStudio, in conjunction with Biblioshiny web applications, was harnessed. Our analysis encompassed tracking publication and citation patterns, identification of highly cited documents, assessment of prolific authors, nations, and universities, and recognition of influential journals. A dataset comprising 138 research articles was curated. Our investigation unveiled a consistent upward trajectory in both publication frequency and citation counts over the study's 16-year timeframe. Notably, the work by Fernandez-Sanjurjo in 2019 emerged as the most cited paper. Foremost authors included Madrid D and Martinez Agudo JD, while the 'International Journal of Bilingual Education and Bilingualism' emerged as a leading publication venue. Among contributing institutions, the University of Cordoba and University of Granada featured prominently. The most prolific countries were Spain, China, and Australia, with notable collaboration occurring between Spain, China, and the United Kingdom. This study underscores the significant contributions of Spain in terms of authors, institutions, and citations, solidifying its role as a key contributor to the realm of CLIL research within primary education.

**Keywords:** CLIL approach 1; primary education 2; bibliometrics 3; multilingualism 4; teaching 5.

## I. INTRODUCTION

In Kazakhstan, a diverse range of state and private educational institutions operate, each employing similar educational programs aimed at cultivating proficient human resources. These institutions offer distinctive approaches to the teaching and learning process. Notably, the Republic of Kazakhstan has embarked on an extensive modernization of its education system, actively integrating a policy of multilingualism into the educational landscape [1]. The implementation of multilingual education in this country aims at integrating and internationalization of Kazakhstan to the world's educational and scientific societies [2]. Multilingualism, a term encompassing communication in two or more languages, is a concept that has garnered attention [3]. Within this context, the use of multilingual teaching methods has emerged as a strategy to enhance language competencies through the use of more than two languages for conveying curriculum materials [4].

One widely adopted approach to multilingual education is Content and Language Integrated Learning (CLIL), which entails imparting subject content through a foreign language. This approach seeks to foster understanding of formal content by employing an instructional language other than the students' native tongue [5]. Certain studies suggest that CLIL programs result in heightened exposure to foreign languages and the development of oral proficiency, reinforcing the efficacy of this strategy, particularly within primary education

[6]. The successful implementation of CLIL at the primary level necessitates several considerations, including a focus on communication, active listening, prioritizing fluency over linguistic accuracy, fostering creativity, integrating physical movement or motoric activities, accommodating diverse learning styles, and linking the teaching process with real-world applications [7]. Across Europe, the CLIL approach has been practiced for over two decades, yielding positive outcomes in terms of target language acquisition and knowledge enhancement across various subjects [8,9].

In Kazakhstan's primary schools, a variant of CLIL known as Soft CLIL is prevalent. This approach involves presenting terminology or vocabulary in three languages (Kazakh, Russian, and English) within primary subjects, nurturing vocabulary development and preparing students for subsequent secondary-level CLIL education. Additionally, CLIL is predominantly employed within primary and secondary education levels, while English Medium Instruction (EMI) finds greater application in universities and bilingual secondary schools, largely due to the higher levels of English proficiency observed in these contexts [10]. However, the introduction of CLIL in Kazakhstan's primary schools remains an underexplored area. Previous research has primarily focused on CLIL in secondary [11-15] and higher education [16-21], as well as on CLIL teachers [22-27]. Conversely, in other countries, CLIL in primary education has received more comprehensive attention. Therefore, our aim was to perform a bibliometric analysis, spanning 16 years from 2007 to 2023. This analysis seeks to provide insights into the productivity, trends, and global impact of CLIL in primary education research during this period.

Bibliometric analysis, a rigorous and widely utilized methodology, serves as a powerful tool for the exploration and examination of substantial scientific datasets. It offers the capacity to elucidate the evolutionary dynamics within a particular field, unveiling emerging thematic areas [28]. Scholars frequently employ bibliometric analysis to uncover evolving trends in article and journal performance, patterns of collaboration, constituent contributors, and the intellectual architecture of a specific research domain [29-31]. This study offers a unique contribution by exploring the extensive integration of multilingual education in Kazakhstan, a country undergoing a significant educational transformation, and highlights the strategic adoption of Content and Language Integrated Learning (CLIL) as a key approach to enhancing both language proficiency and subject knowledge. By examining how Kazakhstan's educational reforms align with global trends in multilingualism and internationalization, this research provides valuable insights into the broader implications of CLIL in non-European contexts, showcasing its potential to foster global educational integration and enrich student learning experiences.

## II. MATERIALS AND METHOD

### 1. ELIGIBILITY CRITERIA AND DATA SOURCE

This bibliometric investigation centered on the exploration of studies concerning CLIL in primary education that were disseminated from 2007 to 2023. Specifically, original research articles published in the English language were deemed as eligible inclusions for this analysis. Excluded from this analysis are book chapters, reviews, conference papers, book conference reviews, and articles not published in English. To facilitate our examination, the Scopus database served as the primary data source, and all relevant metadata were systematically retrieved and organized in the BibTeX format.

### 2. SEARCH STRATEGY

Leveraging the advanced search functionalities within the Scopus database, a strategically tailored amalgamation of Boolean and wildcard search operators was employed. This meticulous approach encompassed the utilization of the keywords "CLIL" and "Primary education." Executed on the 13th of August 2023, the search strategy's comprehensive outline is meticulously detailed.

### 3. BIBLIOMETRIC ANALYSES

Utilizing the Bibliometrix package (version 3.1.4) and Biblioshiny web apps within the R language (version 4.0.4) embedded in the RStudio integrated development environment (version 1.4.1106) [36,37], meticulous data management and bibliometric analyses were undertaken. The comprehensive attributes and essential characteristics of the studies encompassed within this research were diligently extracted. To chart the trajectory of publication and citation trends over a span of 16 years, we systematically constructed analytical timelines.

The identification of institutions that demonstrated heightened productivity within the domain was grounded in the quantification of paper contributions over the interval from 2007 to 2023. Subsequently, a collaboration network was engineered among the top five institutions, employing the leading eigenvalues clustering algorithm. This network was underpinned by data normalization based on the association parameter, ensuring a robust foundation for analysis.

To recognize the most influential authors, a dual-pronged approach was employed: (i) the highest number of paper contributions and (ii) co-citation networks of impactful authors. This assessment was conducted through the application of the leading eigenvalues clustering algorithm, with a repulsion force of 0.1, imbuing the analysis with precision.

Our endeavor extended to the identification of the ten most frequently cited documents and the most prolific journals. Various facets of these journals, including origin country, paper count, h-index, total citations, Journal Citation Report (JCR®), 2020 Web of Science (WoS) Impact Factor, journal category, and enlisted quartile, were meticulously documented.

The intricate relationships within the top ten journals, affiliations, and countries contributing to the landscape of CLIL research in primary education over the past 16 years were unveiled through a strategically crafted three-field plot.

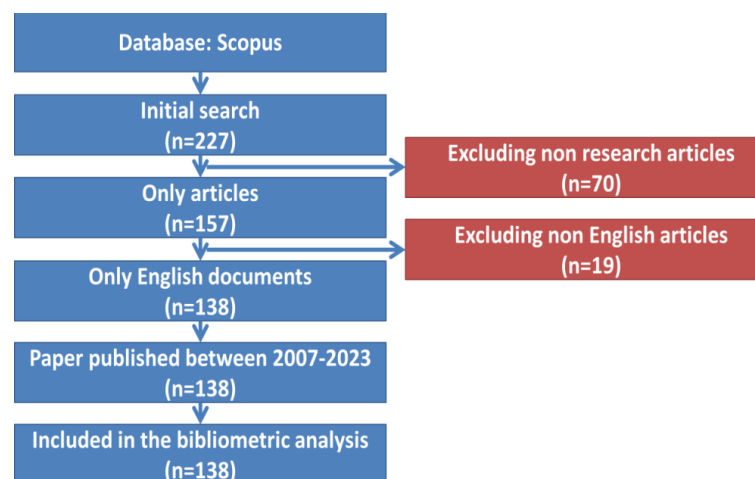
Global research collaborations were encapsulated in the Collaboration Worldmap, with a minimum of ten edges set to convey meaningful insights. Through a Treemap visualization, the paramount author-assigned keywords, prevalent within the published papers on the topic from 2007 to 2023, were distinctly presented.

Finally, a 'Thematic Map' was meticulously fashioned to encapsulate four thematic realms: (i) motor themes, (ii) niche themes, (iii) emerging or declining themes, and (iv) transversal and basic themes. This map was curated using the most frequently employed 1000 Keywords Plus, with a minimum of 10 cluster frequencies per thousand documents serving as a reliable guidepost.

### III. RESULTS

#### 1. SEARCH RESULTS

Upon conducting a search within the Scopus database, an initial corpus of 227 papers was retrieved. Following the application of predetermined eligibility criteria and the subsequent exclusion of 89 studies that did not meet the established criteria, a total of 138 papers were deemed suitable for inclusion in the ensuing bibliometric analysis (Figure 1).



**FIGURE 1.** Flow diagram of study selection for the bibliometric analysis for examination of the studies on CLIL in primary education.

## 2. MAJOR CHARACTERISTICS OF THE INCLUDED STUDIES

Within the scope of the encompassed articles, a substantial majority were identified as original research contributions (comprising 61% of the total), followed by a blend of excluded non-English articles (constituting 8%), review articles (making up 4%), conference papers (accounting for 5%), book chapters (comprising 18%), books (constituting 3%), and conference reviews (forming 1%). The calculated averages revealed that each document garnered approximately 9.8 citations, and when assessed in terms of yearly citation rates, the figure stood at 8.1. It is noteworthy that, intriguingly, the time frame for an article to amass citations on these subject averaged 7.9 years.

Spain emerged as the most frequently cited country, commanding a share of 33%, trailed by Finland at 6% and the United Kingdom at 6% as well. Conversely, research authored by Spanish scholars exhibited the highest average citation score per paper, an impressive 594. Notably, the compilation of the top 10 most cited documents within this domain is meticulously presented in Table 1, showcasing that all entries hailed from original research endeavors.

Comprising our dataset of 138 studies, a collective of 244 authors spanning 21 nations contributed to this body of research, translating to an average of 1.7 documents per author and 0.5 authors per document. Of these authors, a subset of 33 individuals, equating to 24%, produced single-authored works. Among the diverse fields of research, the articles primarily populated the domains of (i) CLIL (accounting for 62% of the corpus), succeeded by (ii) Primary education (at 22%), (iii) Bilingual Education (comprising 19%), and (iv) Secondary education (constituting 5%).

**Table 1.** The top 10 most cited documents on CLIL in primary education (2007-2023).

Study	Title	Journal	TC
Fernandez-Sanjurjo 2019 [68]	Analysing students' content-learning in science in CLIL vs. non-CLIL programmes: empirical evidence from Spain	International Journal of Bilingual Education and Bilingualism	88
Audrey De Smet 2018 [57]	Classroom anxiety and enjoyment in CLIL and non-CLIL: Does the target language matter?	Studies in Second Language Learning and Teaching	59
Perez Canado ML 2018 [31]	CLIL and Educational Level: A Longitudinal Study on the Impact of CLIL on Language Outcomes	Porta Linguarum	44
Anssi Roiha 2012 [61]	Teachers' views on differentiation in content and language integrated learning (CLIL): Perceptions, practices and challenges	Language and Education	41
Víctor Pavón Vázquez 2014 [80]	Strategic and organisational considerations in planning content and language integrated learning: a study on the coordination between content and language teachers	International Journal of Bilingual Education and Bilingualism	38
David Lasagabaster 2015 [31]	The Impact of Type of Approach (CLIL Versus EFL) and Methodology (Book-Based Versus Project Work) on Motivation	Porta Linguarum	37
Perez Canado ML 2018 [44]	The effects of CLIL on L1 and content learning: Updated empirical evidence from monolingual contexts	Learning and Instruction	35
Dourda 2014 [34]	Content and Language Integrated Learning through an online Game in Primary School: A case study	The Electronic Journal of e-Learning	31
Madrid 2018 [27]	A Comparison of Students' Educational Achievement across Programmes and School Types with and without CLIL Provision	Porta Linguarum	31
Pappa2017 [42]	Teacher agency within the Finnish CLIL context: tensions and resources	International Journal of Bilingual Education and Bilingualism	30

## 3. TREND OF PUBLICATION AND CITATION

Over the past 16 years, spanning from 2007 to 2023, a discernible and consistent pattern of escalating publication activity concerning CLIL in primary education has come to light. Notably, the publication frequency was at its lowest point in 2007, yielding a mere singular entry ( $n = 1$ ). Conversely, the zenith of this trend was

observed in the year 2019, each harboring a substantial volume of publications, with counts reaching 30 articles (Figure 2A). Conversely, the trajectory of annual mean citations has exhibited a gradual increase over the specified period, albeit marked by fluctuations. The peak of this fluctuating pattern emerged in 2019, demonstrating the highest mean citation count of 3.38 (Figure 2B).

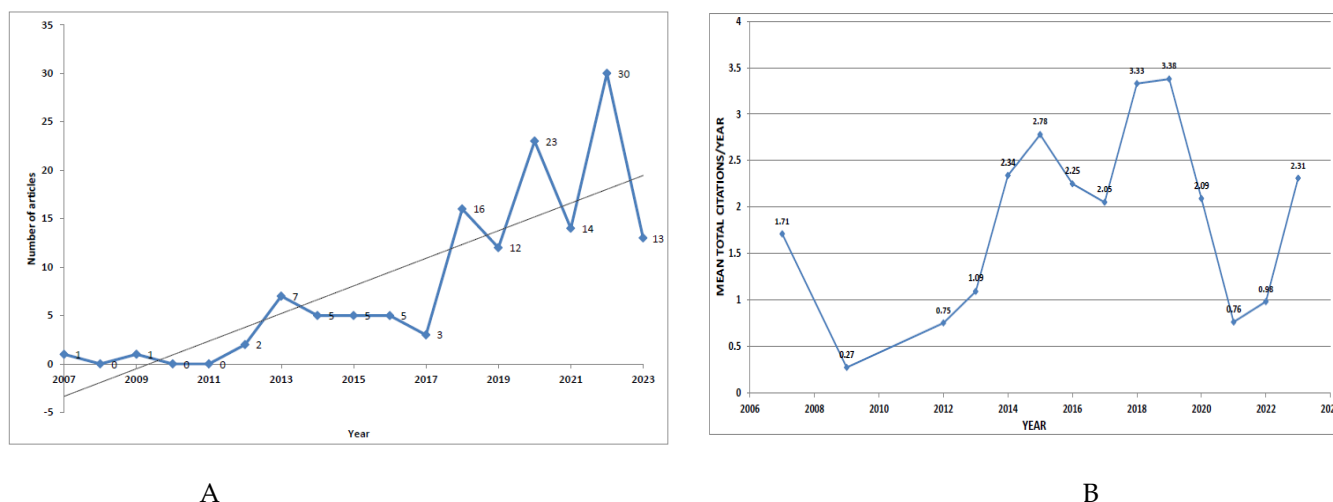


FIGURE 2. A) Global annual trend of publication and B) citation of research related to CLIL within primary education.

#### 4. MOST PRODUCTIVE UNIVERSITIES AND THEIR COLLABORATION NETWORK

The University of Cordoba and the University of Granada emerged as the most prolific academic institutions, contributing to 15% of the papers in the field of CLIL within primary education on a global scale. Following closely were the University of Extremadura and the University of Jyväskylä, each contributing to 12% of the papers. This portrayal of productivity underscores the significance of these institutions within the domain (Figure 3).

Employing the leading eigenvalues clustering algorithm to gauge betweenness centrality, a robust assessment of collaborative networks among universities was carried out. From this analysis, a prominent cluster of collaborative networks was delineated, featuring the following universities: (i) University of Granada, (ii) University of Malaga, (iii) Universidad De Cordoba, (iv) University of Cordoba, (v) University of Extremadura, (vi) University of Jyväskylä, (vii) Universidad Autónoma De Madrid, (viii) University of the Basque country, (ix) Universidad De Jaen, and (x) Monash University (Figure 3). These collaborative networks underscore the interconnectedness of these institutions and their joint contributions to the research landscape.



FIGURE 3. A) Ten most contributing universities for examination of the studies on CLIL in primary education. B) Top ten collaborative networks among universities.



## 5. MOST CONTRIBUTING AUTHORS AND THEIR COLLABORATION NETWORKS

In the realm of CLIL within primary education over the course of the past 16 years, a comprehensive examination revealed notable author contributions. Specifically, in terms of document count, the authors (i) Madrid D (n = 5) and Martinez Agudo JD (n = 5), (ii) Gallardo-Del-Puerto F (n = 4), and (iii) Banegas DL (n = 3) and Barrios E (n = 3) emerged as prominent contributors (Figure 4A). Subsequent analysis of the co-citation network (Figure 4B), leveraging the "Leading Eigenvalues" clustering technique and assessing "Betweenness" as a measure, highlighted authors who were frequently co-cited. Notably, this analysis unveiled that the authors (i) Madrid D, (ii) Martinez Agudo JD, (iii) Gallardo-Del-Puerto F, and (iv) Banegas DL garnered significant co-citation prominence, underscoring their interconnected influence within the research discourse.

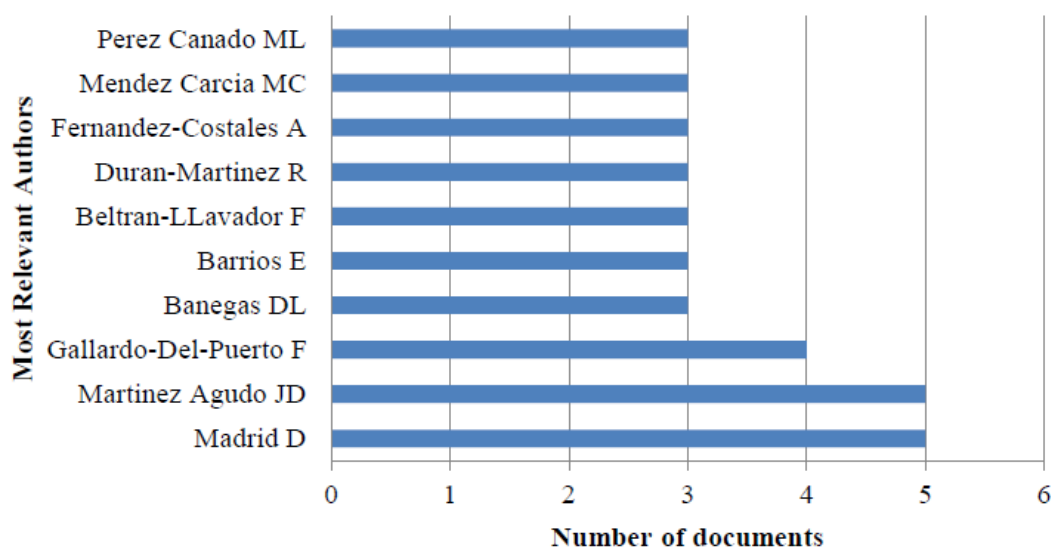


FIGURE 4. A) Most contributing 10 authors and B) co-citation network of authors working on CLIL in primary education in the past 16 years (2007-2023).

## 6. MOST PRODUCTIVE JOURNALS

Approximately 11.6% of the overall corpus of published papers concerning our targeted subject matter found their home in the 'International Journal of Bilingual Education and Bilingualism' and 'Porta Linguarum'. Following closely were the 'Language Learning Journal' (6.5%) and the 'Journal of Immersion and Content-Based Language Education' (3.6%) (Table 2). It is intriguing to note that among the top ten journals that disseminated articles on CLIL within primary education, none exhibited a high impact factor nor were classified as Q1/Q2/Q3 journals as per the 2022 JCR®, WoS rankings. Instead, a substantial 70% of these journals fell within the Q1/Q2

category, with the remaining 30% positioned in the Q3 category. This distinct pattern delineates the unique landscape of influential outlets within this domain.

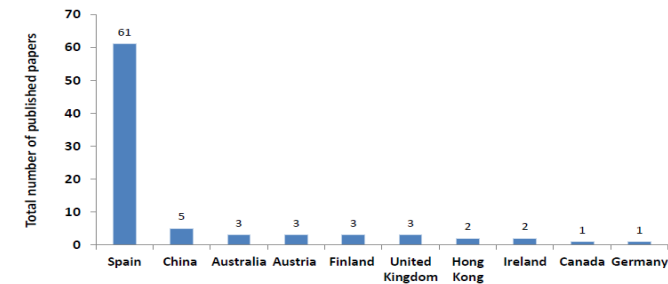
**Table 1.** This is a table.

Rank	Journal name	Country	Number of papers published on the topic (%), n = 138	h-Index	TC	JCR® 2022 Impact Factor	JCR® 2022 Category (Quartile)
1	International Journal of Bilingual Education and Bilingualism	United Kingdom	16 (11.6%)	10	286	2.8	Linguistics Q1 Education Q2
2	Porta Linguarum	Spain	16 (11.6%)	8	225	1.2	Education & Educational Research Q3 Language and Linguistics Q2
3	Language Learning Journal	United Kingdom	9 (6.5%)	7	149	2.0	Education & Educational Research Q1
4	Journal of Immersion and Content-Based Language Education	Netherlands	5 (3.6%)	2	9	0.7	Linguistics Q3
5	Language and Education	United Kingdom	4 (2.8%)	2	72	1.9	Education & Educational Research Q3 Linguistics Q2
6	System	England	3 (2.2%)	3	45	6.0	Education & Educational Research Q1 Linguistics Q1
7	Studies in Second Language Learning and Teaching	Poland	2 (1.4%)	2	72	3.4	Linguistics Q1
8	International Journal of English Studies	Spain	2 (1.4%)	2	54	0.6	Language & Linguistics Q2
9	Electronic Journal of E-learning	England	1 (0.7%)	1	31	2.2	Education & Educational Research Q2
10	Teaching and Teacher Education	England	1 (0.7%)	1	26	3.9	Education & Educational Research Q1

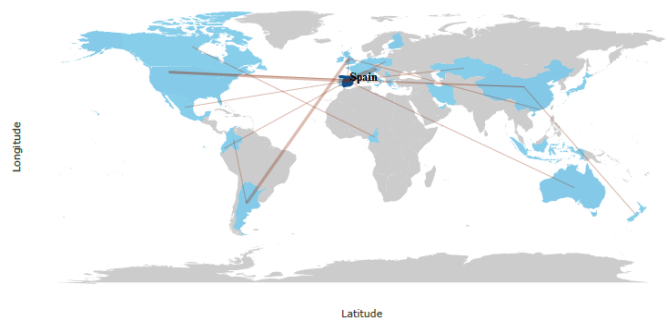
## 7. WORLD RESEARCH PRODUCTION AND COLLABORATIONS

Figure 5A presents a comprehensive overview of the foremost countries that have substantially contributed to the discourse surrounding CLIL in primary education. Notably, Spain, China, Australia, and Austria emerged as the principal publishing nations within this research domain. In an effort to highlight the most impactful collaborative endeavors, our analysis revealed a total of 19 country-based collaboration combinations. From this array, we have highlighted the ten most significant global collaborations pertinent to this research topic. This insight was effectively depicted through the sunburst plot (Figure 5B), which illuminated the landscape of collaborative efforts between 2007 and 2023. Among these, prominent collaborative endeavors included Spain → Austria (n = 2), Spain → USA (n = 2), and UK → Argentina (n = 2).

Figure 5C portrays a comprehensive worldwide map of collaborations among researchers engaged in the study of CLIL in primary education. In a holistic assessment, we constructed a three-field plot (Figure 5D) to elucidate the interconnectedness between the top ten journals, affiliations, and countries that have significantly contributed to research in this field over the past 16 years (2007–2023). This plot effectively captures the ebb and flow of interactions within these domains, with the vertical dimension of the rectangular nodes reflecting their frequency of occurrence.



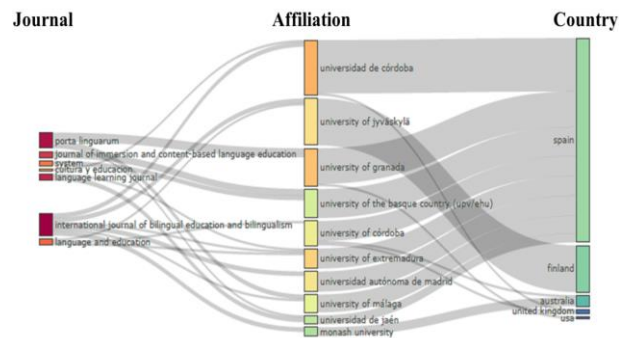
A



B



C



D

FIGURE 5. A) The top ten countries on publishing the CLIL in primary education; B) Publication collaborations between countries; C) worldwide collaboration map of the researchers and D) three-Fields Plot representing the incoming countries

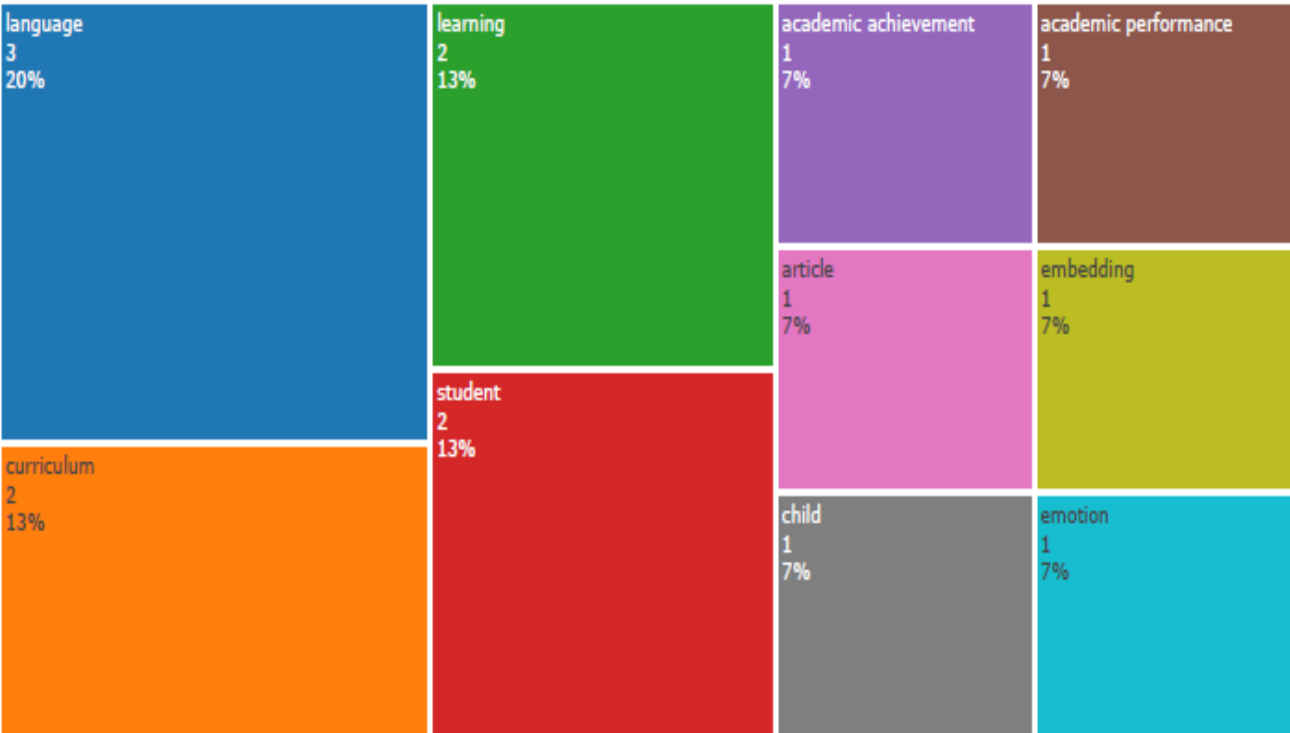


and outgoing flows among top ten journals, affiliations and countries contributing to research on CLIL in primary education in the past 16 years (2007–2023).

8. TREEMAP AND THEMATIC MAP

The TreeMap illustration offers insight into the top ten author-assigned keywords that have been prominently utilized within the context of this research topic spanning the years 2007 to 2023 (Figure 6A). Among these keywords, the three most prevalent are: (i) "languages" (constituting 20%), (ii) a cluster encompassing "curriculum," "learning," and "student" (collectively accounting for 13%), and (iii) "academic achievement" (comprising 7%).

By harnessing Keywords Plus, we constructed the Thematic Map (Figure 6B) utilizing keywords frequently found in the titles of cited references within the articles, though not present in the articles' titles themselves. The Thematic Map emerged through a two-dimensional matrix that integrates centrality (X-axis, signifying thematic significance) and density (Y-axis, indicating thematic development). A close examination of the Thematic Map has revealed specific trends: themes situated in Quadrant 1 (Q1) include words such as "language learning," "science," "language education," "bilingual education," "teacher training," and "language policy," indicating both high importance and advanced development. Themes within Quadrant 2 (Q2) represent niche areas, featuring keywords like "CLIL education" and "socioeconomic status," signifying a high level of development. Quadrant 3 (Q3) is marked by keywords such as "Content Language Integrated Learning," "cognition," and "academic performance," while Quadrant 4 (Q4) encompasses keywords "primary education" and "secondary education." Notably, the size of the bubbles within the Thematic Map corresponds to the frequency of appearance of each term. The ranking of density and centrality follows the pattern  $Q1 > Q2 > Q3 > Q4$  and  $Q1 > Q4 > Q3 > Q2$ , respectively, within the Thematic Map. This ranking framework showcases the thematic intensity and significance across the various quadrants.



A

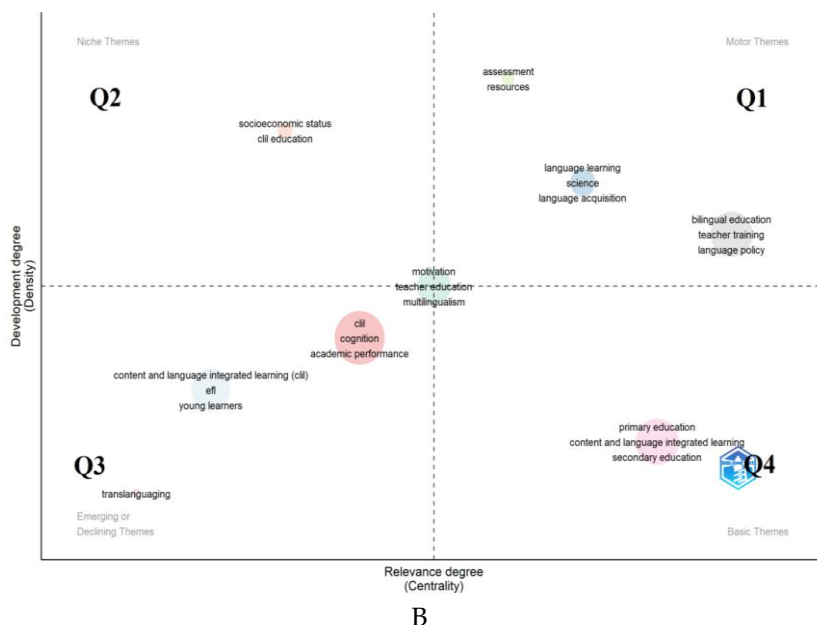


FIGURE 6. A) TreeMap representing top ten author's keywords and B) Thematic Map using keywords plus utilized in the research of CLIL in primary education (2007-2023).

#### IV. DISCUSSION

Bibliometric analysis stands as a robust method offering a structured and forward-looking overview of targeted research domains. It achieves this through a clear, comprehensible, and logical procedure that is both replicable and intelligible [32-34]. This analytical approach holds great promise in the evaluation and quantification of the impact of published papers, while simultaneously illuminating potential avenues for future research [35]. By scrutinizing core elements like authors, citations, keywords, titles, journals, and publication years, bibliometric analysis provides a valuable mechanism for assessing the progression and trends of specific research topics [36,37]. Its effectiveness in evaluating the merits and trends of various fields, including medical and health sciences, has established bibliometric analysis as a pivotal research platform, offering diverse applications across a multitude of domains [38-40]. The study's focus on CLIL implementation within Europe limits its global applicability, as exploring its adoption and adaptation in regions like Asia and Africa, with their unique educational frameworks, could provide valuable insights for cultivating proficient human resources and expanding multilingual education practices worldwide.

The bibliometric analysis of CLIL (Content and Language Integrated Learning) in primary education from 2007 to 2023 yielded several significant findings with important pedagogical implications for various contexts:

**Primary Education in Kazakhstan:** The study's results underscore the need for Kazakhstan's primary education system to consider implementing CLIL methodologies. As the analysis showed a growing trend in CLIL research and publication, it suggests that this approach could enhance language learning and content acquisition in Kazakhstani primary schools. While the majority of CLIL research originates from European countries, Kazakhstan can leverage insights from Spain's robust engagements with various nations to adapt and integrate CLIL successfully.

**Primary Education in Non-Kazakh Contexts:** The research findings can serve as a valuable reference for primary education in regions or countries outside of Kazakhstan. With the increasing adoption of CLIL in European nations, including the UK, Australia, Austria, and Finland, educators in these regions can benefit from the insights provided in this study. Understanding the publications and journals with substantial influence, such as "System" and "Teaching and Teacher Education," can guide curriculum development and teaching practices.

**Education in General:** The increasing mean citation rate in recent years highlights the growing recognition and influence of CLIL in primary education. This trend reflects the broader implications for education at all levels. It suggests that CLIL is not limited to primary education and can be applied in various educational contexts. The

study's emphasis on the quality of content over the impact factor of journals reminds researchers and educators that effective CLIL implementation depends on the quality of pedagogical practices.

In summary, this bibliometric analysis suggests that CLIL has significant pedagogical implications. It can enhance language and content learning in primary education, not only in Kazakhstan but also in other international contexts. The study emphasizes the importance of recognizing influential publications and journals and highlights the strong collaboration among European countries in CLIL research. These findings contribute to the evolving landscape of CLIL and its potential to enrich teaching and learning practices in primary education and beyond.

Future research could explore the application of CLIL across diverse educational contexts, including secondary and higher education, to assess its scalability and effectiveness beyond primary education. Additionally, studies could investigate the specific challenges and best practices for implementing CLIL in non-European regions, such as Asia and Africa, where educational and linguistic landscapes differ significantly. Furthermore, research could focus on the long-term impact of CLIL on student outcomes, including language acquisition, content mastery, and cognitive development, while also examining how teacher training and pedagogical practices can be optimized to ensure successful implementation of CLIL in diverse cultural and educational settings.

## V. CONCLUSION

This comprehensive bibliometric analysis provides both qualitative and quantitative assessments of prominent aspects encompassing CLIL in primary education. Among these facets are the examination of leading countries, authors, institutions, influential journals, and global collaborative dynamics.

In summation, our findings lead to the compelling conclusion that Spain emerges as a significant contributor, demonstrated through authorship, institutional affiliations, and high citation counts, within the expansive realm of research concerning CLIL in primary education.

Bibliometric studies, when meticulously executed, serve as cornerstones for advancing a field in innovative and substantive ways. They equip scholars with the ability to (1) acquire a comprehensive overview of the domain, (2) pinpoint gaps in knowledge, (3) unearth new avenues for exploration, and (4) strategically position their intended contributions within the scholarly landscape.

The search strategy appears effective in achieving the research goal. However, the key rationale for conducting this search strategy lies in the need to address the research gap identified in Kazakhstan's primary education system and to understand how CLIL has evolved over the years. The strategy focuses on uncovering trends, influential contributors, and areas for further exploration. Given the specific context of Kazakhstan and its educational modernization, this strategy is well-suited to provide valuable insights into CLIL in primary education, not only in Kazakhstan but also in a broader international context.

## Funding statement

This research received no external funding.

## Author contribution

All authors made an equal contribution to the development and planning of the study.

## Conflicts of Interest

The authors declare no conflicts of interest.

## Data Availability Statement

All data are presented in the article.

## Acknowledgments

Not applicable.

## REFERENCES

1. Zhumay, N., Tazhibayeva, S., Shaldarbekova, A., Jabasheva, B., Naimanbay, A., & Sandybayeva, A. (2021). Multilingual education in the Republic of Kazakhstan: Problems and prospects. *Social Inclusion*, 9(1), 56-62.
2. Aubakirova, B., Mandel, K. M., & Benkei-Kovács, B. (2019). Multilingual education in Kazakhstan and model of multilingual education in the European context. *PedActa Journal*, 9(2), 25-36.
3. de Bot, K. (2019). Defining and assessing multilingualism (pp. 1-18).
4. Al'Aidid, S. S. S., & Mulyono, H. (2023). Pre-service EFL teachers' perception of multilingualism and multilingual education. *Eduvelop: Journal of English Education and Development*, 6(2), 199-210.
5. Martinez-Soto, T., & Prendes-Espinosa, P. (2023). A systematic review on the role of ICT and CLIL in compulsory education. *Education Sciences*, 13(1), 73.
6. Agudo, J. d. D. M. (2019). Which instructional programme (EFL or CLIL) results in better oral communicative competence? Updated empirical evidence from a monolingual context. *Linguistics and Education*, 51, 69-78.
7. Pokrivčáková, S. (2012). *Research in foreign language education*. MSD.
8. Korosidou, E. I., & Griva, E. A. (2013). "My country in Europe": A content-based project for teaching English as a foreign language to young learners. *Journal of Language Teaching and Research*, 4(2), 229.
9. Lasagabaster, D. (2008). Foreign language competence in content and language integrated courses. *The Open Applied Linguistics Journal*, 1, 30-41.
10. Ruiz-Cecilia, R., Medina-Sanchez, L., & Rodriguez-Garcia, A. M. (2023). Teaching and learning of mathematics through CLIL, CBI, or EMI: A systematic literature review. *Mathematics*, 11(6), 1347.
11. Akbota, S., & Akmaral, Y. (2020). A critical analysis of CLIL application in physics curriculum of secondary school exploited in NIS schools in Kazakhstan. In *Proceedings of the 10th International Scientific and Practical Conference "Modern Science: Problems and Innovations" (December 13-15, 2020)* (p. 273). SSPG Publish.
12. Ilyassova, T. (2022). Content and language integrated learning (CLIL) and the multilingual turn: A qualitative study on translanguaging in multilingual schools in Kazakhstan.
13. Karabassova, L. (2020). Understanding trilingual education reform in Kazakhstan: Why is it stalled? (pp. 37-51).
14. Karabassova, L., & Oralbayeva, N. (2023). CLIL materials: From theory to practice. In *The Routledge Handbook of Content and Language Integrated Learning*.
15. Kuzembayeva, G., Umarova, A., Maydangalieva, Z., Gorbatenko, O., Kalashnikova, E., Kalmazova, N., & Chigisheva, O. (2022). Content and language integrated learning practices in Kazakhstan secondary schools during COVID-19 pandemic. *Contemporary Educational Technology*, 14, ep362.
16. Ayapova, T., Shayakhmetova, D., Kemelbekova, Z., Bukabayeva, B., & Seidaliyeva, G. (2021). Modeling of teaching content in a foreign language at the university based on CLIL approach. *Review of International Geographical Education Online*, 11.
17. Kudabayeva, P., & Issabekova, G. (2022). The problem of implementing CLIL policy in the context of lifelong education in Kazakhstan. *Norwegian Journal of Development of the International Science*, 39-43.
18. Kydyrbayeva, G., Stambekova, A., Svetlana, U., Gulsim, N., & Gulvira, M. (2021). Preparing future primary school teachers for trilingual teaching with CLIL technology. *World Journal on Educational Technology: Current Issues*, 13(4), 617-634.
19. Omarbekova, G. (2020). Implementation of content and language integrated learning (CLIL) at the university level. In *Proceedings of the Linguistic Forum: A Journal of Linguistics* (pp. 8-14).
20. Omarbekova, G. (2023). Content and language integrated learning (CLIL) as an effective approach for teaching Kazakh language at the university level.

21. Satayev, M., Barrios, E., Fernandez-Costales, A., Agaidarova, S., Izbassarova, R., & Balta, N. (2022). The effect of CLIL combined with language instruction on language learning and the role of individual and institutional factors in students' perspectives: Empirical evidence from Kazakhstan. *EURASIA Journal of Mathematics, Science and Technology Education*, 18.
22. Bedeker, M., & Kerimkulova, S. (2023). "My English seems not enough": Moving from language deficit views to Kazakhstani CLIL teachers' funds of knowledge.
23. Bedeker, M., Ospanbek, A., Simons, M., Yessenbekova, A., & Zhalgaspayev, M. (2023). 'I can easily switch to the Kazakh language, also to the Russian language': Reimagining Kazakhstani CLIL implementation as a third space. *Language, Culture and Curriculum*, 1-18.
24. Karabassova, L. (2019). CLIL or "just good teaching" in Kazakhstan? *Revista Nebrija de Lingüística Aplicada a la Enseñanza de Lenguas*, 13(1), 55-81.
25. Karabassova, L., & San Isidro, X. (2023). Towards translanguaging in CLIL: A study on teachers' perceptions and practices in Kazakhstan. *International Journal of Multilingualism*, 20, 556-575.
26. Konyssova, A., Atemova, K., Chakanova, S., Gulmira, A., Konyssova, S., & Konkabayeva, G. (2022). Experience of CLIL in the natural science disciplines in Kazakhstan's schools. *Cypriot Journal of Educational Sciences*, 17(5), 1588-1602.
27. Mehisto, P., Winter, L., Kambatyrova, A., & Kurakbayev, K. (2022). CLIL as a conduit for a trilingual Kazakhstan. *The Language Learning Journal*, 1-15.
28. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285-296.
29. Donthu, N., Kumar, S., & Pandey, N. (2021). A retrospective evaluation of *Marketing Intelligence and Planning: 1983–2019*. *Marketing Intelligence & Planning*, 39(1), 48-73.
30. Donthu, N., Kumar, S., Pandey, N., & Lim, W. M. (2021). Research constituents, intellectual structure, and collaboration patterns in *Journal of International Marketing: An analytical retrospective*. *Journal of International Marketing*, 29(1), 1-21.
31. Verma, S., & Gustafsson, A. (2020). Investigating the emerging COVID-19 research trends in the field of business and management: A bibliometric analysis approach. *Journal of Business Research*, 118, 253-261.
32. Huang, J., You, J. X., Liu, H. C., & Song, M. S. (2020). Failure mode and effect analysis improvement: A systematic literature review and future research agenda. *Reliability Engineering and System Safety*, 199, 106885.
33. Li, H., & Yazdi, M. (2022). Advanced decision-making methods and applications in system safety and reliability problems (Vol. 211).
34. Mi, J. H., Cheng, Y. H., Song, Y. F., Bai, L. B., & Chen, K. (2022). Application of dynamic evidential networks in reliability analysis of complex systems with epistemic uncertainty and multiple life distributions. *Annals of Operations Research*, 311, 311-333.
35. Yazdi, M., Mohammadpour, J., Li, H., Huang, H. Z., Zarei, E., Pirbalouti, R. G., & Adumene, S. (2023). Fault tree analysis improvements: A bibliometric analysis and literature review. *Quality and Reliability Engineering International*, 39, 1639-1659.
36. Allen, L., Jones, C., Dolby, K., Lynn, D., & Walport, M. (2009). Looking for landmarks: The role of expert review and bibliometric analysis in evaluating scientific publication outputs. *PLoS One*, 4(e5910).
37. Lou, J., Tian, S. J., Niu, S. M., Kang, X. Q., Lian, H. X., Zhang, L. X., & Zhang, J. J. (2020). Coronavirus disease 2019: A bibliometric analysis and review. *European Review for Medical and Pharmacological Sciences*, 24, 3411-3421.
38. Blanco-Mesa, F., Merigo, J. M., & Gil-Lafuente, A. M. (2017). Fuzzy decision making: A bibliometric-based review. *Journal of Intelligent & Fuzzy Systems*, 32, 2033-2050.
39. Martinez-Lopez, F. J., Merigo, J. M., Valenzuela-Fernandez, L., & Nicolas, C. (2018). Fifty years of the *European Journal of Marketing*: A bibliometric analysis. *European Journal of Marketing*, 52, 439-468.
40. Mas-Tur, A., Modak, N. M., Merigó, J. M., Roig-Tierno, N., Geraci, M., & Capecci, V. (2019). Half a century of *Quality & Quantity*: A bibliometric review. *Quality & Quantity*, 53, 981-1020.