RESEARCH TRENDS ON GLOBAL COMPETENCE IN EDUCATION: A BIBLIOMETRIC ANALYSIS

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Abstract: This bibliometric analysis examines research trends in global competence in education from 2005 to June 2024, revealing their evolution, interdisciplinary nature and future research directions. The study finds that academic interest in the subject has grown significantly, at an annual rate of 14.45%, reflecting the importance of developing individuals' ability to navigate complex global environments. The research highlights the impact of international organizations, technological advances, theoretical developments, and labor market demands in shaping the research directions on global competence. The analysis also emphasizes the interdisciplinary collaboration of prolific authors, influential institutions, and active countries in the field and projects forthcoming research trends, encompassing the amalgamation of digital competency, the ascendancy of soft skills, and repercussions of globalization on marginalized communities. The study concludes with a call for continued attention to emerging trends to promote a profound understanding of global competencies, thereby equipping individuals to thrive in an increasingly globalized world.
Keywords: Global competence; Bibliometric analysis; Interdisciplinary; Digital competence; Future trends

1 INTRODUCTION

The late 20th century's globalization has reshaped education, driven by economic, political, social, and cultural shifts, including the Soviet Union's dissolution[1]. Since the 1990s, the global division of labour and production has defined economic globalization[2], creating cultural imbalances and challenges for identity and education amid increasing diversity. This has heightened the demand for human capital skilled in international engagement, prompting educational reforms to foster global competencies[3]. Global Competence (GC), encompassing cognitive, affective, and behavioral dimensions, has emerged as a strategic solution, enabling individuals to navigate diverse cultures and address global challenges[4].

Advanced regions and institutions, such as York University and Victoria University, have integrated GC into curricula, supported by international organizations like the UN and OECD. The UN has embedded GC in the 2030 Education Agenda and Sustainable Development Goals, while the OECD's PISA framework assesses GC among youth[5]. These efforts reflect a global commitment to advancing GC education.

As 21st-century education shifts toward developing GC, research in this field has grown significantly. To synthesize this complex and extensive literature, a systematic approach is essential. Bibliometric analysis, with its quantitative synthesis, is well-suited to mapping the knowledge landscape, identifying trends, and guiding future research[6]. This study employs bibliometric analysis on 757 documents from the Web of Science (2005–June 2024) to address four research questions:

(1) What are the descriptive characteristics of GC research?
(2) What are the influential studies in GC research?
(3) What are the core terms and themes explored in GC research?
(4) What are the future research trends for GC research?

2 LITERATURE REVIEW

Review studies play a critical role in academia by systematically collating, evaluating, and synthesizing existing research[7]. Current reviews in GC research provide valuable insights but often focus narrowly on higher education and specific aspects of GC. For instance, Guo et al. conducted a systematic review (2013–2023) on GC's conceptualization and dimensions, categorizing it into knowledge, attitudes, and skills, primarily referencing the OECD framework. Their study highlighted gaps in global knowledge despite positive attitudes and identified influencing factors such as personal traits and cross-cultural experiences[8]. Fisher et al. examined short-term study abroad programs, finding significant improvements in cultural understanding and diversity attitudes, while emphasizing the need for standardized GC measurement[9]. Yari et al. and Peng et al. conducted bibliometric analyses on GC dimensions like Cultural Intelligence and Intercultural Competence, identifying influential publications, authors, and research trends, particularly in medical education[10-11].

However, these reviews are limited in scope. Guo's study focuses solely on higher education, excluding K-12 contexts, while Fisher's work is restricted to study abroad programs, neglecting broader influences on GC. Yari and Peng's analyses, though methodologically robust, only address specific GC dimensions, such as cultural intelligence and global

mindset, rather than the entire construct. This narrow focus leaves a significant gap in the literature, as no comprehensive synthesis of GC research exists.

A broader bibliometric analysis is therefore essential to provide a holistic understanding of GC research, identify trends, and uncover gaps. Such an approach would not only map the field's knowledge landscape but also inform future academic and policy directions, addressing the need for a more inclusive and systematic exploration of GC.

3 METHODOLOGY

3.1 Data Collection

The choice of data collection agency in bibliometric analysis is critical, as it directly impacts the study's outcomes. Databases such as Web of Science (WoS), Scopus, and PubMed are popular choices due to their indexing of various journal types.

This study selected WoS for its extensive historical coverage, interdisciplinary scope, academic prestige, and compatibility with bibliometric tools[12]. The search, conducted in June 2024, spanned a 20-year period from 2005 to 2024 to capture the most recent scholarly discussions. It utilized precise keywords like "global competency" and "global competence" within document titles, abstracts, and keywords to ensure a thorough collection of relevant literature.

The search was refined by applying filters for document types, prioritizing journal articles, book chapters, conference proceedings, and review articles to focus on scholarly and peer-reviewed materials. The search was limited to English-language documents to maintain dataset consistency and facilitate analysis. The initial search identified 757 documents, which underwent a stringent evaluation to ensure they met the study's relevance and quality criteria.

3.2 Data Analysis

This bibliometric study employed RStudio for a comprehensive dataset analysis. The initial phase involved data cleaning within RStudio, leveraging the bibliometric and Biblioshiny packages to remove duplicates and standardize data inconsistencies. The Biblioshiny web interface facilitated preliminary analysis for descriptive insights into the research landscape. Further analysis using Biblioshiny generated visual representations of publishing trends, citation metrics, and collaboration networks, offering a multifaceted perspective on the influential scholarly communication within the field. In the subsequent phase, co-occurrence and thematic analyses were conducted to identify interrelationships among research indicators, uncovering prevalent themes and systematically mapping them onto a thematic framework for a structured overview. Finally, the findings were contextualized within the broader scholarly discourse, highlighting contributions and identifying gaps for future research directions in GC.

4 RESULTS AND DISCUSSION

4.1 Descriptive Characteristics of Global Competence Studies

From 2005 to June 2024, GC research has expanded significantly, with 757 documents identified in the Web of Science database and an annual growth rate of 14.45%. This growth is driven by several factors: international organizations like the OECD promoting GC through initiatives such as PISA, technological advancements enabling cross-cultural interaction, theoretical developments refining GC's conceptualization, labour market demands for globally competent individuals, and efforts to localize GC beyond Western-centric perspectives [13-15]. These dynamics reflect a societal recognition of the need to prepare individuals for an interconnected world (Table 1).

Table 1 Descriptive Statistics of Research on Global Competence

Description	Results
DOCUMENTS CHARACTERISTICS	
Timespan	2005:2024
Sources (Journals, Books, etc.)	223
Documents Number	757
Annual Growth Rate (%)	14.45
Document Average Age (years)	5.83
Average Citations Per Doc	15.54
References	34025
DOCUMENT TYPES	
Journal Article	694
Book Chapter	2
Early Access	50
Proceeding Papers	10
Retracted Publication	1
DOCUMENTS CONTENTS	
Keywords Plus (ID)	1368
Author's Keywords (DE)	2542
AUTHORS	
Authors	2250

Authors of Single-Authored Docs	159
AUTHORS COLLABORATION	
Single-authored Docs	169
Co-Authors per Doc	3.17
International Co-Authorships (%)	24.83

Looking at the curves in Figure 1, two notable surges in GC research occurred in 2009 and 2020, coinciding with significant global events. The 2009 increase likely stemmed from the 2007 financial crisis, which underscored economic interdependence and the need for international cooperation[16]. Similarly, the 2020 surge can be linked to the COVID-19 pandemic, which highlighted transnational challenges and the urgency of fostering a globally competent workforce[17]. These events emphasized the importance of GC skills, driving increased scholarly attention.

The field's literature has an average age of 5.83 years, indicating active engagement, and an average of 15.54 citations per article, reflecting its academic influence. The 34,025 references across articles demonstrate deep research engagement, while publications in 223 journals and books highlight the interdisciplinary nature of GC research. Journal articles dominate (694), with fewer chapters (2), early access publications (50), and conference proceedings (10). One retracted publication was noted, raising concerns about research integrity.

A total of 2,250 authors have contributed to the field, with 159 authors producing single publications, indicating significant individual effort. Collaboration is evident, with only 169 single-authored papers and an average of 3.17 co-authors per document. International co-authorship stands at 24.83%, reflecting substantial global academic collaboration, consistent with the inherently global focus of GC research.
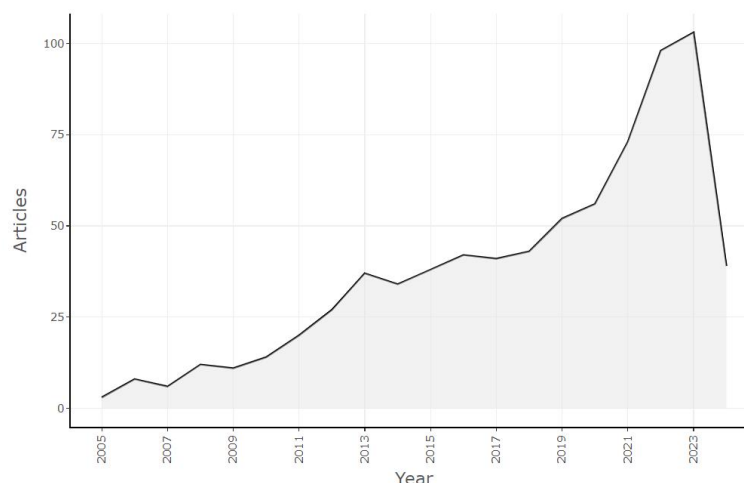

Figure 1 Annual Distribution of Scientific Production of Global Competence Studies (2005-2024)

4.2 Influential Global Competency Research

4.2.1 Most relevant sources

From 2005 to 2024, the academic discourse on GC is represented by 757 papers published across 223 sources. Applying Bradford's Law, the distribution of these papers reveals a three-zone stratification, reflecting the concentration of scholarly work in key journals. Zone 1, comprising a single journal, contributed 103 papers; Zone 2 accounted for 216; and Zone 3 encompassed 437 papers (excluding one retracted article). The top 10 source journals, listed in Table 2, contribute nearly one-third of the field's research, making them essential references for scholars.

Zone 1 journals, particularly "BMC Medical Education" (66 articles) and "Nurse Education Today" (37 articles), exert significant influence due to their high publication volume. Zone 2 journals sustain the research flow and broaden the discourse, while Zone 3 journals, though individually contributing fewer articles, collectively enrich the multidisciplinary nature of GC research. The prominence of "BMC Medical Education" and "Nurse Education Today" in Zone 1 highlights their pivotal role, yet their limited number underscores the need for researchers to also consider the top 10 journals, which collectively provide a more comprehensive view of the field.

Table 2 Most Relevant Sources of Global Competence Studies (2005-2024)

Journal	Rank	Numbers of Article	Zone
BMC Medical Education	1	66	1
Nurse Education Today	2	37	1
International Journal of Sustainability in Higher Education	3	22	2
Advances in Health Sciences Education	4	18	2
Academic Medicine	5	16	2
Journal of Studies in International Education	6	16	2
Language and Intercultural Communication	7	12	2
Medical Education	8	11	2

Compare: A Journal of Comparative and International Education	9	10	2
International Journal of Engineering Education	10	10	2

Table 2 highlights the significant concentration of GC research in medical and nursing education, reflecting the inherently global nature of healthcare. Journals such as "BMC Medical Education" and "Nurse Education Today" emphasize the development of GC in healthcare, focusing on cross-cultural communication, ethical decision-making, and international collaboration in medical practice and research[18-19]. These areas are central to preparing healthcare professionals for diverse settings.

GC research also spans disciplines such as language education, engineering education, and international education, underscoring its interdisciplinary relevance. In language education, journals like "Language and Intercultural Communication" highlight the role of language in fostering intercultural understanding[20-21]. Engineering education journals stress the need for engineers to address global challenges, work in multinational teams, and consider ethical implications in a global context[22]. International education journals explore how educational systems cultivate GC, preparing students to engage with global issues and diverse perspectives[23-24].

Influential sources of research on GC education, which span various subject areas, suggest that educators recognize the need for interdisciplinary professionals with a global mindset capable of navigating complex, interconnected global systems. This indicates that global competence is a multidisciplinary concept critical for a wide range of professionals in today's globalized world. Focusing on these influential journals can assist subsequent researchers by guiding their literature review process and providing an interdisciplinary perspective on GC research.

4.2.2 Most relevant authors and countries

This section analyses the most influential contributors in GC research, including authors, institutions, and countries, using quantitative metrics such as the h-index, g-index, m-index, total citations (TC), and number of publications (NP) to assess academic impact. Table 3 highlights the top authors ranked by NP, with Thomas, I., Brydges, R., Hu, J., Li, Y., and Mori, J. emerging as the most prolific. Their closely aligned NP reflects a competitive research environment. Notably, Brydges, R., Harendza, S.G., Barth, M., and Chiu, T.K.F. have exceptionally high TC, all exceeding 2000, with Brydges, R., focusing on GC in medical education, achieving a TC of over 7000. These metrics underscore their significant contributions to the field.

Table 3 The Most Relevant Authors

Rank	Author	h-index	g-index	m-index	TC	NP	Affiliation
1	Thomas, I.	19	36	0.67	1423	5	RMIT University
2	Brydges, R.	35	83	1.85	7011	4	Unity Health Toronto
3	Hu, J.	17	29	1.21	931	4	Zhejiang University
4	Li, Y.	9	15	1.00	269	4	Shanghai Normal University
5	Mori, J.	14	27	0.54	813	4	University of Wisconsin-Madison
6	Alsharif, N. Z.	19	30	0.63	1001	3	Lebanese American University
7	Barth, M.	26	51	1.50	2824	3	Eberswalde University for Sustainable Development
8	Brown, L.	15	22	1.00	588	3	Monash University
9	Chiu, T.K.F.	27	49	2.45	2534	3	Chinese University of Hong Kong
10	Harendza, S.G.	32	55	1.07	3684	3	Universitätsklinikum Hamburg-Eppendorf

Table 4 ranks authors by h-index, highlighting Brydges, R., Harendza, S., and Chiu, T.K.F. as particularly influential. Brydges, R. leads with the highest g-index (83) and m-index (1.85), while Harendza, S. and Chiu, T.K.F. also demonstrate strong academic presence with g-indexes of 57 and 49 and m-indexes of 1.07 and 2.45, respectively. These metrics provide a nuanced assessment of impact: the h-index measures consistent citation influence, the g-index emphasizes highly cited papers, and the m-index adjusts for career length by dividing the h-index by years since the first publication[25]. Combining these indices, Chiu, T.K.F. and Brydges, R. emerge as particularly impactful, with their work likely more focused and influential among the top authors.

Table 4 The Most Influential Authors

Rank	Author	h-index	g-index	m-index
1	Brydges, R.	35	83	1.85
2	Harendza, S.	32	57	1.07
3	Chiu, T.K.F.	27	49	2.45
4	Barth, M.	26	51	1.50
5	Thomas, I.	19	36	0.67
6	Alsharif, N. Z.	19	30	0.63
7	Hu, J.	17	29	1.21
8	Brown, L.	15	22	1.00
9	Mori, J.	14	27	0.54
10	Li, Y.	9	15	1.00

Chiu's research focuses on developmental models in GC, particularly emphasizing technology competencies such as AI and digital literacy. His work highlights the importance of integrating these skills into educational frameworks to prepare individuals for a digitalized, interconnected society[26-27]. This topic is highly relevant due to rapid digital transformation across industries and the growing demand for expertise in AI and digital technologies. Chiu's

exploration of effective strategies for cultivating these skills addresses the needs of the 21st-century workforce, making his work widely cited and influential. Its interdisciplinary nature, bridging education, technology, and global research, further enhances its appeal and applicability across fields. As AI advancements increase expectations for global competence, Chiu's research provides timely models and strategies, making it a critical resource for addressing contemporary educational challenges.

Brydges' research examines pedagogical strategies in medical education, emphasizing critical thinking, empathy, and intercultural awareness as essential components of GC for medical students[28-29]. Given the global nature of healthcare, which requires coordinated international responses, Brydges' work resonates with medical professionals, educators, and policymakers. His interdisciplinary approach, integrating medical expertise with education, cultural studies, and ethics, reflects the growing interest in transdisciplinary research. Brydges' focus on GC development in medical education offers valuable insights for researchers exploring multidisciplinary methods.

Other influential authors, such as Thomas, I. and Mori, J., contribute to GC research in engineering and language education, exploring its connotations, developmental models, and effectiveness[30-31]. Their work provides additional perspectives for researchers investigating GC in these interdisciplinary fields. Collectively, these authors highlight the diverse and evolving nature of GC research, offering critical insights for addressing global challenges across disciplines.

4.2.3 Most relevant journal articles

The compilation of papers listed in Table 5 represents the most globally cited works in the field of GC studies, providing a wealth of influential research. The 10 highly cited articles cover topics in areas as diverse as medicine, language education, and new age literacy development. Notably, while two articles are dedicated to the study of language education, the remaining eight offer a diverse array of research perspectives within the domain of GC education, contributing to a comprehensive understanding of the field.

Table 5 Most Global Cited Documents of Global Competence Studies

Author (Year)	Title	Total Citations	TC Per Year	Normalized TC
Smith-Donald, R. et al. (2007)	Preliminary Construct and Concurrent Validity of the Preschool Self-regulation Assessment (PSRA) for Field-Based Research	323	17.94	4.59
Kramsch, C. (2014)	Teaching Foreign Languages in An Era of Globalization: Introduction	279	25.36	9.76
Park, J.S.Y. (2011)	The Promise of English: Linguistic Capital and the Neoliberal Worker in the South Korean Job Market	172	12.29	3.70
Gutiérrez, A. & Tyner, K. (2012)	Media Education, Media Literacy and Digital Competence	161	12.38	4.55
Wilkinson, T. J. et al. (2009)	A Blueprint to Assess Professionalism: Results of a Systematic Review	152	9.50	3.47
Drudy, S. (2008)	Gender Balance/Gender Bias: The Teaching Profession and the Impact of Feminization	148	8.71	3.22
Morais, D. B. & Ogden, A. C. (2011)	Initial Development and Validation of the Global Citizenship Scale	135	9.64	2.91
Albareda-Tiana, S. et al. (2018)	Implementing the Sustainable Development Goals at University Level	125	17.86	6.90
Area, M. & Pessoa, T. (2012)	From Solid to Liquid: New Literacies to the Cultural Changes of Web 2.0	123	9.46	3.47
Melby, M. K. (2016)	Beyond Medical "Missions" to Impact-Driven Short-Term Experiences in Global Health (STEGHs): Ethical Principles to Optimize Community Benefit and Learner Experience	122	13.56	6.64

The study by Kramsch and Park delves into the intricate relationship between language acquisition and the development of global competence[32-33]. They argue that the complexities of global interconnectedness necessitate a pedagogical approach that is reflective, interpretive, and politically conscious. In response to the challenges posed by globalization, Kramsch advocates for a re-envisioning of the traditional 'five C's' of language education—communication, culture, connectivity, comparison, and community—to encompass a broader spectrum of competencies essential in the global arena. Kramsch posits that the evolution of foreign language education should place a premium on fostering GC, which extends beyond linguistic proficiency to include critical engagement with cultural diversity, adept navigation of global networks, and the strategic use of technology to enhance cross-cultural understanding. Park's research complements this perspective by highlighting the dual role of English in GC—as both a linchpin for global interaction and a catalyst for social and economic advancement, albeit subject to the influence of market dynamics and power structures. Overall, these two articles emphasize that language learning is key to GC, and both exemplify the integration of GC with

interdisciplinary fields. The high citations and increased attention to articles on GC in language education also suggests that it is a focus of researchers' attention.

Highly cited works like Smith-Donald et al., with 323 citations, emphasize self-regulation in early childhood education, a key GC component. Gutiérrez and Tyner cited 161 times, stress media literacy's importance in a digitalized world. In healthcare, Wilkinson et al., cited 152 times, provide a framework for evaluating professionalism, crucial for GC in global health. Other notable contributions include Drudy's analysis of gender dynamics in teaching and Melby's ethical considerations in global health, collectively addressing themes like sustainable development, media literacy, and gender issues[34-38].

The corpus of highly cited literature on GC exhibits several distinctive characteristics. It spans a variety of disciplines, with education, language studies, and healthcare emerging as particularly influential. The prominence of these fields in the literature can be attributed to the inherently global nature of these professions, which demand a profound understanding of diverse cultural contexts and the capacity to function effectively within them. Secondly, the topics addressed in these articles—self-regulation, linguistic capital, media literacy, professionalism, and ethical considerations in global health—are central to the discourse on GC. These topics resonate with a broad academic audience, as they pertain to the essential competencies required for individuals to excel in our interconnected world. Furthermore, the methodological approaches employed in these studies, including systematic reviews, structural validations, and ethical analyses, exemplify a rigorous research methodology. This rigor enhances the credibility and impact of the findings, rendering these articles as valuable references for future research. The high citation counts of these articles also reflect their interdisciplinary relevance, with concepts such as self-regulation in early childhood education being pertinent to fields like psychology, sociology, and public policy, and media literacy to communication and information science.

According to the above tables, several research directions present themselves as deserving of future scholarly attention. The integration of technological and digital competencies into the framework of GC is one such area, given the escalating digitalization of global interactions. Additionally, the role of soft skills, such as adaptability and intercultural communication, in the development of GC warrants further exploration, particularly in professional settings. The assessment and cultivation of global competencies in non-traditional educational contexts, including online platforms and community-based initiatives, is another promising area for research. Moreover, the impact of globalization on marginalized communities and the potential of GC to foster social equity and inclusion represents an emerging and significant field of inquiry.

4.3 Core Terms and Themes in Global Competency Research

4.3.1 Co-occurrence network of keywords

A co-occurrence network analysis reveals the connections between frequently co-occurring keywords in documents, illuminating the thematic structure of research fields. This method identifies dominant keywords and their relationships, tracking thematic evolution over time. Figure 2's network illustrates such patterns within GC literature.

The network identifies eight distinct research streams:

Intercultural and Global Competence: Focuses on 'intercultural competence', 'education', 'global competence'.

Medical Education: Centers on 'medical education' and 'medical students'.

Assessment and Clinical Competence: Emphasizes 'assessment', 'clinical competence', 'simulation', and 'global health'.

Sustainable Learning: Addresses 'learning', 'sustainability', 'education for sustainable development', and associated concepts.

Professional Development: Concentrates on 'professional development' and 'teacher'.

Globalization and Multilingualism: Explores 'globalization' and 'multilingualism'.

COVID-19 and Teaching: Investigates 'covid-19' and 'teaching'.

Intercultural and International Citizenship: Includes 'competence', 'intercultural', 'study abroad', 'identity', 'intercultural communication', 'cultural', 'students', 'global citizenship', and 'international citizenship', with a focus on 'nursing'.

Figure 2 Co-occurrence Networks of Author's Keywords

The eight research streams in global competence (GC) literature can be grouped into four categories: Intercultural Competence and Communication, Educational Strategies and Professional Development, Globalization and Multilingualism, and Sustainability and Global Health.

The first and eighth streams fall under Intercultural Competence and Communication, emphasizing the importance of cross-cultural communication in navigating a globalized world. The first stream, highlighted in orange, focuses on foundational GC concepts like 'intercultural competence', 'education', 'culture', and 'global', stressing the need for effective communication and internationalization in education. Scholars such as Li and Schejbal and Irvine highlight the importance of intercultural skills for understanding diverse business cultures, political systems, and religious contexts, essential for success in international settings. The eighth stream, in red, integrates personal development, such as identity formation, with professional competencies, particularly in globally relevant fields like nursing[39-41].

The fifth stream, Educational Strategies and Professional Development, marked in purple, introduces 'professional development' and 'teachers', indicating a growing focus on educators' role in fostering GC. Research by Kerkhoff underscores the effectiveness of experiential learning and reflective practice in enhancing teachers' global competencies. Empirical studies, such as Parmigiani et al., show that improving teachers' GC positively impacts student development in this area, highlighting the need for continuous professional growth in intercultural and global skills.

The sixth research stream falls within the Globalization and Multilingualism category. The emphasis on multilingualism underscores the recognition that language proficiency is fundamental to accessing global knowledge and fostering intercultural dialogue. Research in this domain seeks to illustrate language skill development's critical role and effectiveness in nurturing GC.

The final category encompasses research streams 2, 3, 4, and 7, reflecting a significant body of work. The integration of sustainability and global health into the research streams indicates a shift towards considering the broader implications of global competence. This focus is particularly relevant in the face of shared global challenges such as pandemics, which necessitate collective and informed responses. The second research stream, in pink, centers on 'medical education' and 'medical students,' suggesting that the development of GC is integral to preparing future healthcare professionals for a diverse and globalized healthcare environment. The third stream, in blue, intertwines 'assessment,' 'clinical competence,' and 'simulation' with 'global health' and 'OSCE,' indicating a concern with evaluating clinical skills within the broader context of global health challenges. The fourth research stream, in grey, accentuates the imperative of equipping students to contribute to a sustainable future and to become responsible global citizens. The seventh research area, in green, addresses 'covid-19' and 'teaching and learning,' reflecting the impact of global crises on educational practice and the need for GC to encompass adaptability and response to unprecedented challenges.

4.3.2 Thematic map of global competence studies

In the realm of bibliometric analysis, thematic mapping serves as a critical tool for classifying and prioritizing research themes based on their relevance and centrality within a scholarly domain. Quadrant 1 (upper right) contains themes that are both highly relevant and central, indicating established areas of research with significant scholarly attention. Quadrant 2 (upper left) features themes that are relevant but not central, suggesting emerging areas that are gaining traction. Quadrant 3 (bottom left) includes themes of low relevance and centrality, often representing specialized or less explored areas. Quadrant 4 (bottom right) comprises themes that are central but less relevant, potentially indicating areas that are core to the field but are currently overlooked.

Based on the thematic map, it is evident that multilingual education and Covid-19, while significant, are currently niche research areas and do not rank highly in relevance. In contrast, GC research on themes such as globalization, education

for sustainable development, competency assessment, and the fields of medicine and global health are more mature, with a substantial body of literature and ongoing scholarly interest. Furthermore, in Quadrant 4, themes such as nursing competence and intercultural competence are identified as well-developed research areas. Conversely, teacher education appears to be an area currently less active, with a limited amount of mature research. Notably, the emergence of themes like translation and hiring in Quadrant 2 suggests potential new research trends that warrant further exploration.
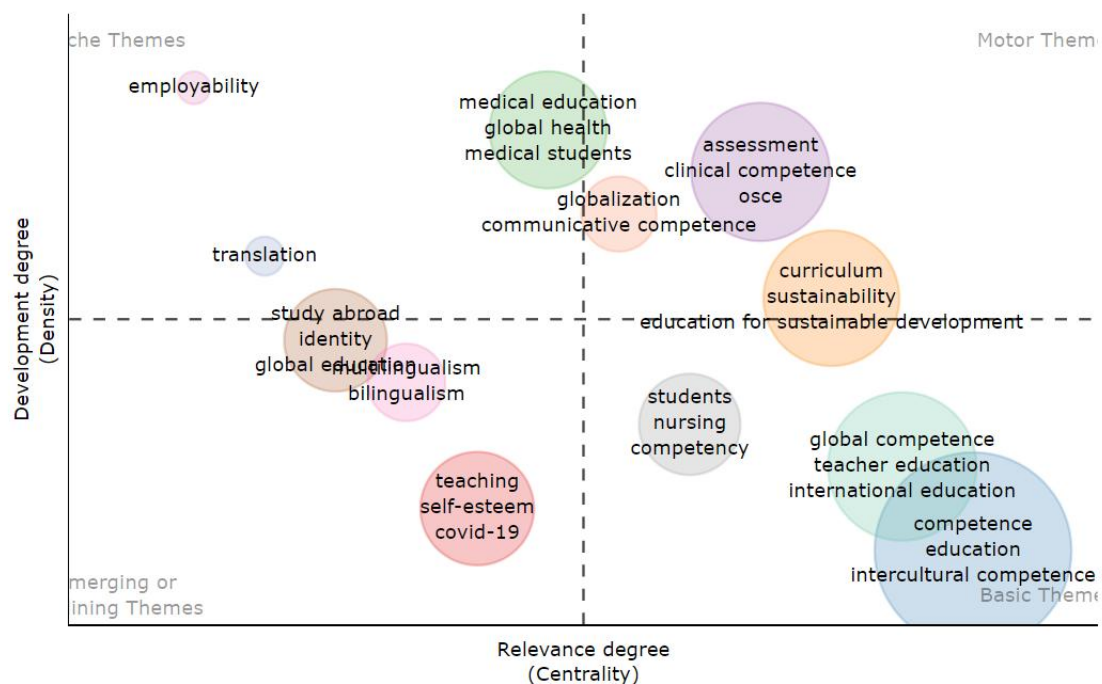
Figure 3 Thematic Map of Global Competence Studies

The synthesis of descriptive statistics and influential research points toward burgeoning avenues for future trends within the realm of GC. A prominent trend is the integration of technology and digital literacies into GC frameworks. This evolution is propelled by the digital transformation that is redefining the global landscape. As society becomes increasingly digital, there is a heightened demand for individuals capable of adeptly navigating, innovating, and leveraging digital tools. Digital fluency transcends technical proficiency, emerging as a pivotal element of GC that facilitates engagement with diverse communities and the resolution of complex, cross-cultural issues.

The role of soft skills, particularly adaptability and cross-cultural communication, is another area for further exploration. These soft skills are receiving escalating attention due to their documented impact on professional success and personal development within a globalized labor market. Adaptability equips individuals to flourish in volatile and unpredictable contexts, while cross-cultural communication fosters understanding and collaboration across diverse cultural landscapes. These abilities are fundamental to nurturing effective international partnerships and promoting mutual respect within our heterogeneous global society.

Additionally, the assessment and cultivation of global competence in non-traditional educational settings, such as online learning platforms, represents an emerging research domain. This inquiry is a response to the evolving educational paradigms and the burgeoning recognition that learning occurs in various environments beyond the traditional classroom. The exploration of global competencies in virtual spaces is essential for understanding how these competencies can be nurtured in the digital education era, catering to a diverse array of learners seeking to develop a global outlook.

The impact of globalization on marginalized communities and the role of GC in advocating for social equity and inclusion is also gaining traction as a significant research area. As global disparities become more pronounced, there is an urgent need for inclusive approaches to development. Globalization, if not managed equitably, risks exacerbating inequality. Research in this domain aims to uncover how GC can empower marginalized groups, level the playing field of opportunity, and champion social justice on a global scale.

Figure 3 illustrates additional trending research themes within the GC discourse, including employability and translation. Employability within the context of GC encompasses a spectrum of skills and attributes that enable individuals to contribute effectively to the global labor market. These include adaptability, problem-solving, and intercultural communication skills, which are increasingly valued as economies globalize. Educational institutions are thus incorporating GC into their curricula to prepare graduates for diverse work environments and to cultivate the global awareness vital for career success.

Translation is also a crucial component of GC, transcending its role as a language conversion tool to become a conduit for cultural exchange. It facilitates access to knowledge across linguistic barriers, deepening the understanding of diverse cultures and ideas. The demand for precise and culturally sensitive communication in sectors such as medicine,

law, and technology has surged, elevating the importance of translation skills. Moreover, the advent of machine translation and artificial intelligence technologies has catalyzed interdisciplinary research into how these advancements can complement human translation abilities, underscoring the dynamic and ever-evolving nature of translation in global communication.

5 CONCLUSION

This bibliometric analysis maps the global research landscape of GC, revealing a field of growing scholarly interest. Descriptive statistics indicate a significant increase in research output since 2005, underscoring the rising importance of preparing individuals for a complex global environment. The study highlights the multidisciplinary nature of GC research, spanning areas such as medical education, language pedagogy, and sustainable development, driven by international organizations, technological advancements, theoretical developments, and labour market demands. Analysis of influential authors and countries demonstrates global scholarly collaboration, with key contributors like Brydges and Chiu shaping the discourse through their focus on pedagogical strategies and technological competencies. Keyword co-occurrence networks identify central themes, including intercultural competence, educational strategies, globalization, and sustainable development, pointing to emerging research directions.

Future trends in GC research are expected to include the integration of digital and technological competencies, the role of soft skills in professional development, and the assessment of GC in non-traditional educational settings. Additionally, there is a growing focus on redefining traditional educational paradigms to incorporate global perspectives. The future of GC research will likely emphasize interdisciplinary approaches, engagement with technological innovations, and addressing the challenges of globalization.

The study has limitations, such as reliance on the Web of Science database, potential language bias, and a restricted timeframe. Future research should adopt more inclusive data collection methods, conduct longitudinal studies, and integrate quantitative and qualitative analyses to provide a comprehensive understanding of GC.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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