

Building Multicultural Understanding Through Student Competence: A Conceptual Framework

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ABSTRACT

Increased globalization, migration, and academic mobility have brought significant cultural diversity into education, particularly in the health sciences. This diversity presents both opportunities and challenges ranging from enriched learning environments to communication barriers and stereotyping. However, prior studies on intercultural competence among students often remain fragmented, context-specific, and lack a unifying conceptual framework. This study addresses that gap by conducting a bibliometric analysis of 585 peer-reviewed articles published between 2015 and 2025, retrieved from the Scopus database, to map global research trends related to cultural diversity and student competence. Utilizing the *bibliometrix* package in R, the study identifies key themes, leading authors, collaborative networks, and keyword clusters. The analysis reveals a strong focus on cultural competence, language, cultural anthropology, and institutional management, especially within nursing and medical education. The study then develops an evidence-based conceptual framework comprising student competence as the dependent variable; cultural exposure, language proficiency, and cultural knowledge as independent variables; cultural competence as a mediating factor; and institutional support and bias as potential moderators. The findings offer both theoretical and practical contributions: advancing the integration of interdisciplinary theories such as Contact Hypothesis and Transformative Learning Theory into intercultural education research, while also guiding future empirical studies. This framework provides a foundation for designing culturally responsive curricula and institutional strategies in increasingly diverse educational settings.

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INTRODUCTION

Globalization, migration, and cross-national academic exchange have accelerated cultural diversity in the field of education. In the healthcare sector, the number of nursing students from culturally and linguistically diverse (CALD) backgrounds has increased significantly across Europe, Asia, and North America [1]. In the United States, demographic projections suggest that by 2050, non-Hispanic White populations will comprise less than 53% of the total population, while Hispanic, African-American, and Asian populations will continue to grow [2], [3], [4]. In Indonesia, cultural diversity is becoming increasingly complex, with more than 600 local languages and cultures, necessitating intercultural learning at all levels of education [5]. This situation presents a significant opportunity to enrich the learning process, but also poses challenges such as communication barriers, differing learning styles, and the risk of negative stereotyping [6], [7], [8].

Numerous studies have explored strategies to enhance students' intercultural competence [9], [10], [11]. Programs such as the Cultural Competence OSCE help medical students integrate theory into practice; experiential learning approaches increase intercultural awareness and openness; and the integration of multicultural curricula in secondary schools and higher education institutions has shown a positive impact on intercultural attitudes and skills [12]. Moreover, factors such as cultural identity, personality traits, and social exposure have been found to influence

the development of intercultural competence [13], [14], [15]. Nonetheless, most studies remain partial in scope, focusing on specific contexts or interventions, thereby limiting a comprehensive understanding of the most relevant variables.

This gap highlights the need for research that not only synthesizes findings across studies but also systematically maps research trends, collaborations, and key variables explored at the global level. A bibliometric approach is vital, as it enables the identification of broad and objective research patterns while also providing insight into the relationships between topics and factors influencing intercultural competence [16], [17], [18]. Unfortunately, studies that combine bibliometric analysis with the development of a conceptual framework for future research remain scarce, both internationally and nationally.

Based on this context, the main issue addressed in this article is the absence of a bibliometric evidence-based conceptual framework that can guide researchers in identifying key variables and their interrelations in studies on cultural diversity and student competence. Without a structured conceptual framework, research in this field risks becoming fragmented, difficult to compare across contexts, and less impactful in contributing to theoretical advancement and educational policy.

This article aims to contribute in three key ways. First, it presents a bibliometric analysis to map the focus, trends, and global research collaborations related to cultural diversity and student competence. Second, it develops a conceptual framework for future research that outlines key variables and possible relationships among them, based on bibliometric findings and literature review. Third, it directs future research agendas toward more integrative, interdisciplinary, and internationally relevant studies, thereby strengthening the quality of research and its impact on educational development in an era of global diversity.

METHODOLOGY

This study employs a bibliometric design with a quantitative-descriptive approach [19], [20], [21], [22]. This approach was chosen because it enables the systematic analysis of publication metadata to map research trends, author collaborations, keyword networks, and the distribution of publications across institutions and countries [23]. The analysis was conducted retrospectively on internationally indexed scholarly documents, allowing the results to reflect a global research landscape on the topics of cultural diversity and student competence.

Data were obtained from the Scopus database for the publication period 2015–2025. Data retrieval was conducted on August 4, 2025, at 09:45 AM using the following Boolean search string: TITLE-ABS-KEY (cultural AND diversity) AND TITLE-ABS-KEY (student AND competence). The initial search yielded 1,174 documents, which were then filtered to include only English-language journal articles within the fields of Social Sciences and Arts and Humanities. After filtering, a total of 585 documents were obtained and fully analyzed (total sampling) to ensure comprehensive coverage and to avoid selection bias. The unit of analysis in this study is scholarly publications relevant to the topic.

The research instrument consisted of bibliographic metadata downloaded in CSV format from Scopus. The metadata included: (1) year of publication, (2) journal name, (3) authors, (4) institutional affiliations, (5) number of citations, and (6) keywords. Initial processing was conducted using Microsoft Excel for data cleaning and tabulation. Further analysis, including visual mapping, was carried out using R and RStudio, which feature the *bibliometrix* package for bibliometric analysis.

Data collection was conducted in three stages. The first stage involved a literature review to identify the relevance of the topic and to formulate representative keywords. The second stage consisted of document retrieval from Scopus using the defined keywords and filters, resulting in 585 relevant documents. In the third stage, bibliometric analysis was carried out using Scopus Analyzer, R, and RStudio to identify publication trends by year, document distribution,

the most productive authors, affiliations, countries of origin, and keyword relationships. The data were then organized and visualized using Microsoft Excel.

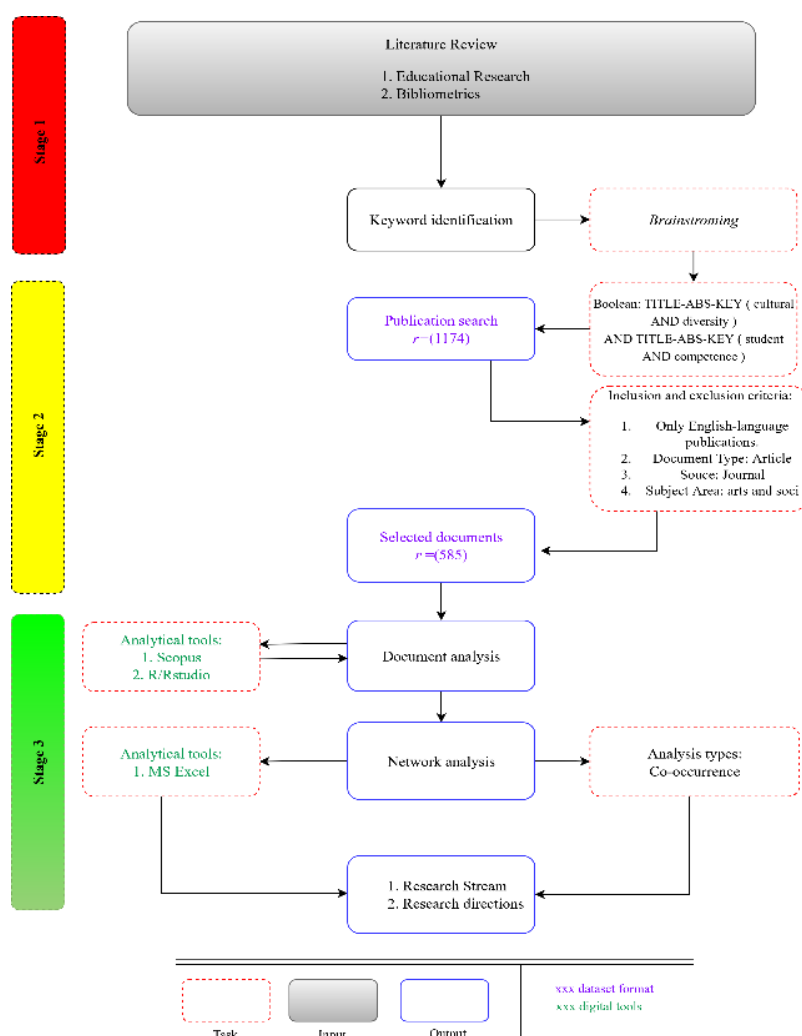


Figure 1. Research Procedure

Validity was ensured through metadata triangulation, which included publication year, authors, keywords, journal, and citation data. The use of the Scopus database guaranteed adherence to internationally recognized curation standards. RStudio was selected for its ability to generate stable and replicable visual mappings. Reliability was reinforced through systematic data cleaning to remove duplicates and irrelevant entries, as well as through the use of the entire document population as the sample, ensuring that the analysis was both accurate and representative.

RESULTS AND DISCUSSION

Research Findings

Table 1. Main Data Information

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2015:2025
Sources (Journals, Books, etc)	314
Documents	585
Annual Growth Rate %	7,94

Document Average Age	4,1
Average citations per doc	10,37
References	4753
DOCUMENT CONTENTS	
Keywords Plus (ID)	1132
Author's Keywords (DE)	2533
AUTHORS	
Authors	3612
Authors of single-authored docs	0
AUTHORS COLLABORATION	
Single-authored docs	0
Co-Authors per Doc	10,1
International co-authorships %	15,56
DOCUMENT TYPES	
Article	585

The bibliometric analysis of publications on the themes of cultural diversity and student competence during the 2015–2025 period identified 585 articles published across 314 sources, with an annual growth rate of 7.94%. The average document age was 4.1 years, indicating a predominance of recent publications in the dataset. Each article received an average of 10.37 citations, and the total number of references cited amounted to 4,753, reflecting a broad and substantial literature base. All documents were peer-reviewed journal articles, highlighting the study's emphasis on formal scholarly publications. Topical diversity was evidenced by 1,132 Keywords Plus and 2,533 author keywords, suggesting a wide research scope and a strong potential for identifying thematic clusters through keyword co-occurrence analysis.

From the authorship perspective, the study involved 3,612 authors, with no single-authored articles, and an average of 10.1 authors per document demonstrating a high degree of collaboration. International co-authorship reached 15.56%, indicating the global nature of research in this area and the inclusion of diverse international perspectives. Overall, these trends suggest that the topic of cultural diversity and student competence is rapidly growing, supported by extensive collaboration networks and considerable potential for further development through the integration of multidisciplinary perspectives and more in-depth thematic analyses.

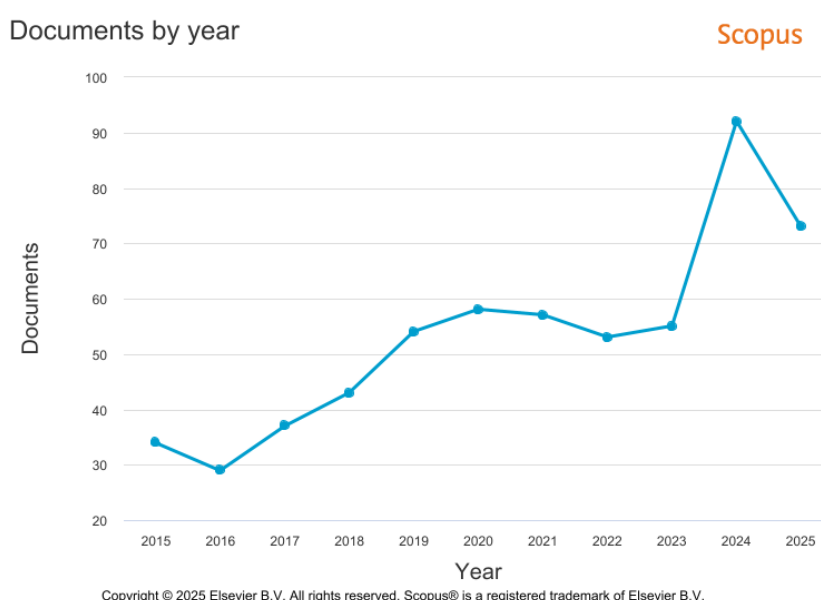


Figure 2. Publication by Year

The publication trend on the themes of cultural diversity and student competence during the 2015–2025 period demonstrates a dynamic growth trajectory. In the early years, publication output was relatively low, with 34 documents in 2015 and reaching its lowest point in 2016 with only 29 publications. Subsequently, a gradual increase occurred from 2017 to 2020, with the number of publications rising from 37 to 58. This phase indicates a steady growth in research interest, aligning with the expanding attention to issues of cultural diversity in education and student competence.

The 2021–2025 period reveals a pattern of fluctuation followed by a significant surge. After a slight decline in 2022 (53 publications) and a modest increase in 2023 (55 publications), the number of publications rose sharply to 92 in 2024 the highest annual output within the observed timeframe. Although there was a decrease to 73 publications in 2025, the figure remains higher than in most of the preceding years. This pattern suggests that the topic has gained strong academic momentum toward the end of the study period, potentially driven by external factors such as global inclusive education policies, increased international student mobility, and growing demand for intercultural competence across sectors.

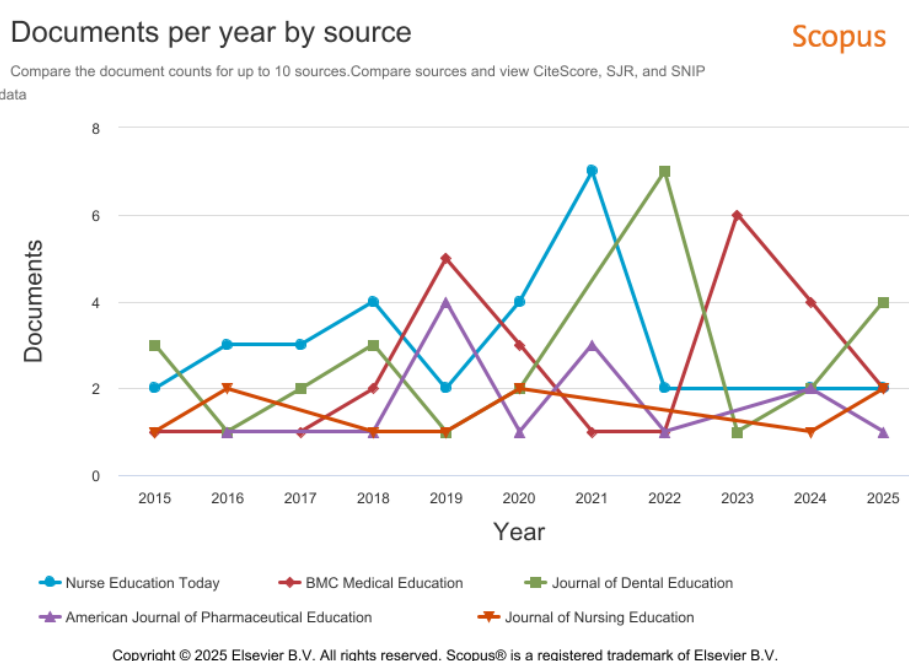


Figure 3. Publication by Each Source

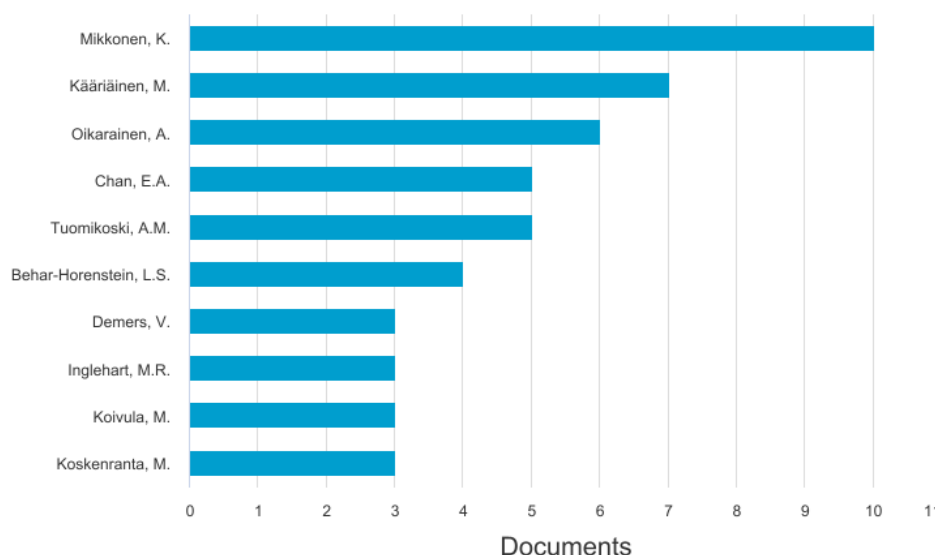
An analysis of the top publication sources reveals that the themes of cultural diversity and student competence were most frequently published in the journal *Nurse Education Today*, which contributed a total of 31 articles. The next two leading journals, *BMC Medical Education* and the *Journal of Dental Education*, each accounted for 26 publications. The dominance of these three journals indicates a strong association between the topics of cultural diversity and student competence with professional health education particularly in nursing, medicine, and dentistry. The high volume of publications in these fields underscores the urgency of integrating intercultural competence into health education curricula to prepare graduates for increasingly diverse patient populations.

In addition, the *American Journal of Pharmaceutical Education* and the *Journal of Nursing Education* contributed 14 and 10 articles, respectively, further broadening the scope of inquiry to include pharmacy education and general nursing education. Although their publication numbers are lower compared to the top three journals, their inclusion reflects a cross-disciplinary recognition of cultural diversity and student competence within the health sciences. This pattern also suggests that research in this area holds potential for broader expansion into other academic disciplines, as awareness of the importance of intercultural competence continues to grow across all sectors of education.

Documents by author

Scopus

Compare the document counts for up to 15 authors.



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Figure 3. Documents by Author

The analysis of author productivity indicates that Mikkonen, K. is the leading contributor in research on cultural diversity and student competence, with a total of 10 publications. The next most prolific authors are Kääriäinen, M. with 7 publications, followed by Oikarainen, A. with 6. The presence of these three authors who likely share academic affiliations and overlapping research foci suggests the existence of a core research group actively producing scholarly work in this field. The consistency of their contributions has the potential to shape both theoretical development and practical application in studies on cultural diversity and student competence, particularly within health education contexts.

In addition, there is a group of mid-level contributors, such as Chan, E.A. (5 publications), Tuomikoski, A.M. (5), and Behar-Horenstein, L.S. (5), alongside authors with somewhat lower but still significant contributions, including Demers, V., Ingelaart, M.R., Koivula, M., and Koskenranta, M., each with 3 to 4 publications. This distribution illustrates that while a small number of key figures dominate the field, research contributions are also dispersed across multiple authors from diverse institutions and countries. This pattern has the potential to strengthen international collaboration, enrich research perspectives, and ensure the sustainability and continued evolution of scholarship in this area.

Table 2. Research Topic Trend

Term	Frequency	Year (Q1)	Year (Median)	Year (Q3)
Stereotyping	8	2015	2015	2016
Prejudice	7	2015	2015	2017
Social Behavior	5	2015	2015	2019
Ethnic Groups	9	2016	2016	2018
Pilot Projects	7	2015	2016	2020
Language	28	2017	2017	2019
Cultural Factor	11	2017	2017	2018
Standards	9	2015	2017	2018
Cultural Anthropology	28	2015	2018	2024
Organization and Management	24	2016	2018	2024

Based on the analysis of research topic trends, it is evident that during the 2015–2025 period, scholarly attention encompassed a wide range of social and cultural issues. The most frequently occurring topics were *Language* and *Cultural Anthropology* (each appearing 28 times), followed by *Organization and Management* (24 occurrences) and *Cultural Factor* (11 occurrences). The dominance of language and cultural anthropology themes suggests that research on cultural diversity and student competence is largely grounded in cross-linguistic understanding and deep cultural perspectives. Other topics, such as *Standards* (9 occurrences), *Ethnic Groups* (9), as well as *Stereotyping* and *Prejudice* (8 and 7 occurrences, respectively), indicate a continuing scholarly concern with normative issues, ethnicity, and social bias factors that shape intercultural interactions.

From a chronological perspective, several topics emerged early in the study period, such as *Stereotyping*, *Prejudice*, *Social Behavior*, *Cultural Anthropology*, and *Standards*, all of which began receiving attention as early as 2015. In contrast, *Language* and *Cultural Factor* began to gain prominence from 2017 onward, corresponding with a growing awareness of the importance of intercultural communication competence in education. Interestingly, topics like *Cultural Anthropology* and *Organization and Management* reached their third quartile (Q3) of prominence in 2024, indicating that these discussions remained relevant through the end of the study period. This reflects a shift in focus from merely understanding cultural differences to managing organizations and shaping educational policies that are responsive to diversity.

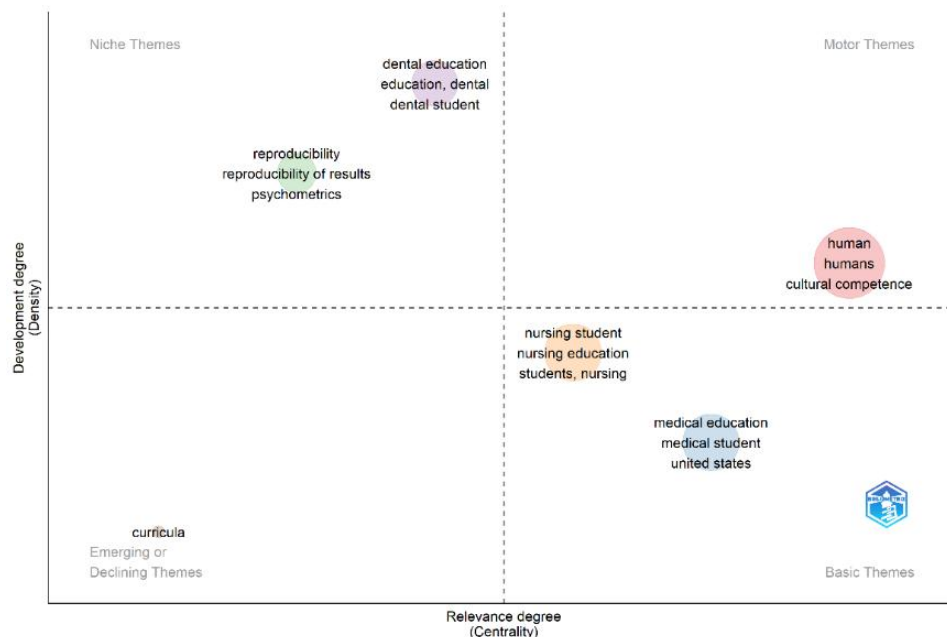


Figure 5. Thematic Map

Based on the thematic map, the Motor Themes quadrant (upper right) positions the topics *human*, *humans*, and *cultural competence* as core themes characterized by both high relevance and a well-developed state of advancement. These topics represent the central focus of the literature on cultural diversity and student competence, indicating that recent research has established them as primary areas of inquiry with significant potential to contribute to theoretical advancement and practical applications in intercultural education. Conversely, the Niche Themes quadrant (upper left) includes topics such as *dental education*, *education, dental*, *dental student*, as well as methodological issues such as *reproducibility* and *psychometrics*. These themes are specialized and internally developed, yet limited in scope to specific subfields. As such, they are well-suited for in-depth investigations focusing on particular contexts or research methodologies.

In the Emerging or Declining Themes quadrant (lower left), *curricula* appears as a topic with both low relevance and low development. This may indicate a recently emerging theme or one that is experiencing a decline in scholarly

attention. This presents a research opportunity to address the gap by linking curriculum-related issues to cultural diversity and student competence. Meanwhile, the Basic Themes quadrant (lower right) includes *medical education*, *medical student*, and *United States* topics with high relevance but relatively low levels of thematic development. These themes serve as foundational areas of research that may be further expanded into more complex studies, for instance, by integrating cross-national perspectives or interprofessional approaches within health education.

Discussion

The findings of this study demonstrate that the scholarly discourse surrounding *cultural diversity* and *student competence* has evolved dynamically over the past decade [24], [25], [26]. This is evident in the increasing number of publications, the diversification of research topics, and the high level of author collaboration across countries. Such developments cannot be separated from the broader context of educational globalization, which increasingly demands individuals to interact effectively within multicultural environments.

Within the framework of Global Citizenship Education, cultural diversity is no longer perceived as a peripheral challenge but as a foundational element in shaping reflective, inclusive, and collaborative global citizens [27], [28], [29]. As such, the growing scholarly attention to these themes reflects a paradigmatic shift in education from a homogeneous, localistic approach to one that is heterogeneous, adaptive, and transnational in nature [30], [31].

One of the most significant findings of this study is the dominance of publications in health education, particularly in the fields of nursing, medicine, and dentistry [32], [33], [34], [35]. This indicates that the healthcare sector serves as a critical arena where intercultural competence is not merely an added value, but a practical imperative. In this context, Campinha-Bacote's Model of Cultural Competence (2002) becomes particularly relevant. The model emphasizes that cultural competence is not a static condition but a developmental process involving five core constructs: *cultural awareness*, *cultural knowledge*, *cultural skill*, *cultural encounter*, and *cultural desire* [36], [37]. Through this lens, the rapid growth of literature in health education suggests a systemic push to cultivate these five dimensions within professional training programs ensuring that graduates are equipped to provide culturally sensitive care to patients from diverse backgrounds [38], [39].

Another important finding is the high frequency of keywords such as *language*, *cultural anthropology*, and *organization and management*, indicating that cultural competence in education is inseparable from issues of communication, value-based understanding, and institutional structures [40]. In this regard, language functions not merely as a tool for communication but also as a carrier of cultural meaning and social identity. This aligns with Intercultural Communication Theory, which asserts that differences in communication systems can become sources of conflict if not managed through deep cultural contextual understanding [4]. In educational settings, students' ability to navigate these linguistic differences is a critical determinant of their academic and social success.

The appearance of *organization and management* as a third-quartile theme (Q3) in 2024 also suggests that concern for cultural diversity is extending beyond interpersonal dynamics into the institutional domain. Educational institutions are now expected not only to produce culturally competent individuals but also to transform their structures, policies, and organizational climates to systemically support diversity [41]. This perspective resonates with Bronfenbrenner's Ecological Systems Theory (1979), which posits that individuals develop within nested systems of influence—from the microsystem (classroom) to the mesosystem (relationships between teachers, students, and parents), and the macrosystem (policy and cultural norms) [42]. Therefore, efforts to enhance students' intercultural competence must go beyond curricular or individual interventions and include structural reforms at the institutional level [43], [44], [45].

Another prominent issue emerging from this analysis is the sustained presence of *stereotyping* and *prejudice* as themes since the beginning of the study period. This indicates that social bias and prejudice continue to be major barriers to effective intercultural interaction [5]. In the field of social psychology, Implicit Bias Theory demonstrates

that individuals often hold unconscious attitudes or beliefs that influence their judgments and behaviors toward members of different groups [46]. When left unaddressed, these biases can increase the risk of conflict, marginalization, and even discrimination in learning environments [47]. Therefore, transformative learning approaches, such as those proposed by Mezirow (1997), which promote critical reflection on one's assumptions and belief systems, become crucial in designing cross-cultural learning programs [48].

The thematic mapping analysis also reveals that topics such as *medical education*, *medical student*, and *United States* are categorized as Basic Themes that is, topics with high relevance but still in early stages of development. This suggests substantial potential for further exploration, particularly by broadening the geographical scope beyond specific national contexts or by adopting more comprehensive interprofessional approaches [49]. Meanwhile, the theme *curricula*, which falls under Emerging or Declining Themes, indicates that although curriculum is critically important, it remains underexplored as a strategic arena for fostering intercultural competence [50]. This is particularly significant in light of Culturally Responsive Pedagogy, which views curriculum as a primary medium for reflecting the values of inclusion, pluralism, and social justice [51]. A curriculum that fails to respond to students' cultural contexts may inadvertently reinforce dominant cultural hegemony and weaken minority participation.

Methodologically, these findings also highlight opportunities to strengthen the evaluative dimension of research on cultural competence, as reflected in niche themes such as *psychometrics* and *reproducibility* [52]. The absence of valid and reliable measurement tools may obscure our understanding of the effectiveness of cross-cultural educational interventions [53]. Therefore, integrating quantitative, psychometrically grounded approaches with qualitative, experience-based narratives is essential allowing future research to address not only *what* is happening, but also *why* and *how* certain competencies are formed and developed within specific cultural contexts.

In sum, this bibliometric analysis provides a robust foundation for the development of an evidence-based conceptual framework. By identifying key variables such as cultural competence, ethnic identity, intercultural communication, institutional structural influences, and social bias or stereotypes the resulting conceptual model can bridge individualistic and structuralist approaches to understanding intercultural competence [54]. In this regard, an integrative theoretical approach one that combines cognitive, affective, behavioral, and systemic dimensions emerges as the most relevant framework for capturing the complex dynamics of student competence in the face of cultural diversity in the global education era.

The bibliometric findings of this study not only provide a comprehensive map of global research trends related to *cultural diversity* and *student competence*, but also offer opportunities for conceptualizing key variables that may serve as the foundation for future quantitative studies [55], [56]. Through thematic analysis and keyword co-occurrence mapping, it becomes evident that constructs such as *cultural competence*, *language*, *nursing/medical education*, *curricula*, and *cultural anthropology* occupy central positions in the literature whether as *motor themes*, *basic themes*, or *niche themes* [57]. The presence of keywords such as *cultural competence*, *humans*, and *language* in the upper-right quadrant of the thematic map suggests that these concepts are theoretically and methodologically mature, and empirically relevant for development as research variables.

From these findings, a set of variables can be derived with strong potential for testing within a quantitative framework: *Student competence* as the dependent variable, *Cultural diversity exposure*, *language proficiency*, and *cultural anthropology knowledge* as independent variables, and *Cultural competence development* as a mediating variable. In addition, the emergence of topics such as *organization and management* and *prejudice/stereotyping* in the dataset points to potential moderating variables, such as *institutional support* and *implicit bias*, which may influence the relationship between cultural exposure and student learning outcomes. The conceptual framework can be visualized as shown in the following figure 6:

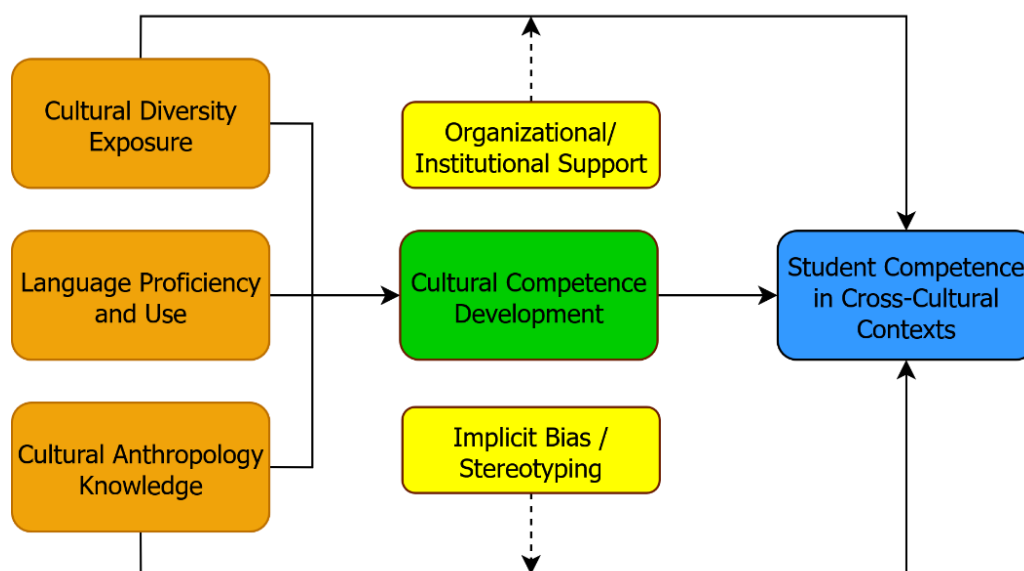


Figure 6. Conceptual Framework

The selection of these variables is supported by a strong theoretical foundation. For instance, the hypothesis that exposure to cultural diversity enhances student competence (H1) is rooted in Contact Hypothesis, which emphasizes the importance of direct interaction in reducing prejudice and fostering understanding [55]. Similarly, the role of language proficiency in promoting intercultural competence (H2) aligns with Intercultural Communication Theory, which posits that language is the primary medium for building cross-cultural trust and shared meaning [58]. The variable of cultural anthropology knowledge (H3) is grounded in Cultural Schema Theory and Cultural Intelligence Theory, both of which highlight the importance of culturally informed cognitive structures in navigating intercultural adaptation [59].

Notably, the bibliometric findings also support the formulation of mediation hypotheses that explain internal processes linking key variables. For example, cultural competence is hypothesized to mediate the relationship between cultural exposure and student learning outcomes (H6), a mechanism theoretically underpinned by Transformative Learning Theory [60]. This theory asserts that intercultural experiences often provoke disorienting dilemmas, which, through critical reflection, can lead to the emergence of new competencies. In this context, *cultural competence* is not merely an outcome but a developmental process that reshapes how individuals perceive the world and themselves.

Moreover, the bibliometric analysis identifies potential moderating variables such as organizational support and stereotyping, which may strengthen or weaken the primary relationships among variables. For instance, institutional support may amplify the effect of cultural exposure on student competence (H4), in line with Ecological Systems Theory, which emphasizes the role of macro-level systems in shaping individual micro-level experiences [61], [62]. Conversely, implicit bias may attenuate the relationship between cultural competence and learning outcomes (H5), consistent with insights from Implicit Bias Theory [63].

Thus, the bibliometric findings in this study not only offer a descriptive overview of research trends and dominant topics, but also provide a robust conceptual and methodological foundation for constructing a theory-driven quantitative research framework. The identified variables and formulated hypotheses offer clear directions for future studies aiming to test causal relationships, develop structural models, and design effective educational interventions within culturally diverse contexts. Subsequent research may employ analytical techniques such as Structural Equation Modeling (SEM) or Partial Least Squares SEM (PLS-SEM) to empirically test the proposed framework across both national and international educational settings.

CONCLUSION

The bibliometric analysis of the global literature on cultural diversity and student competence reveals a rapidly growing interest in cultural diversity issues within education, particularly in the field of health education. Key thematic areas such as *cultural competence*, *language*, *cultural anthropology*, and *organization and management* occupy strategic positions within the global knowledge network. The prominence of these themes reflects a scholarly shift from interpersonal to institutional approaches, and from normative concerns to the management of policies and educational structures that are more responsive to diversity.

The bibliometric findings have enabled the identification of several key variables for future research, including *student competence* as a dependent variable, and *exposure to cultural diversity*, *language proficiency*, and *knowledge of cultural anthropology* as independent variables. *Cultural competence* is proposed as a mediating variable, while *institutional support* and *social stereotypes* emerge as potential moderating variables. The relationships among these variables align with major theoretical frameworks such as Contact Hypothesis, Intercultural Communication Theory, Transformative Learning Theory, and Ecological Systems Theory which together provide a strong foundation for developing an evidence-based conceptual model.

It is recommended that future research empirically test these variable relationships using statistical approaches such as Structural Equation Modeling (SEM) or Partial Least Squares SEM (PLS-SEM), while accounting for cross-cultural and interdisciplinary contexts. Educational institutions should integrate intercultural competence training into their curricula and institutional policies, while policymakers are encouraged to design culturally inclusive educational systems. Moreover, continued strengthening of international academic collaboration is essential to develop a more comprehensive and applied understanding in response to the increasingly complex dynamics of global education.

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Author Contribution

All authors contributed equally to the conceptualization, design, analysis, and writing of the manuscript. Awang Khairul Nizam was responsible for formulating the research concept, bibliometric design, and theoretical framework. Mirzaq Khairan conducted data analysis, visualization, and synthesis of bibliometric results. Tayven Corliss contributed to the interpretation of findings and refinement of the conceptual model. Seren Alwyn was in charge of manuscript editing, coherence, and final review for publication standards. All authors discussed the results, revised the manuscript critically for intellectual content, and approved the final version of the paper.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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