

A Bibliometric Analysis of Cross-Cultural Adaptation Research on International Students

Niu Yue¹, Dr. Nazeera Binti Ahmed Bazari¹, Sun Xiaotong¹, Xia Liyao²

¹Faculty of Education, Universiti Teknologi MARA, Selangor, Malaysia, ²Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, Johor, Malaysia

Corresponding Author Email: nazeera@uitm.edu.my

To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v13-i4/23166> DOI:10.6007/IJARPED/v13-i4/23166

Published Online: 12 November 2024

Abstract

This study utilizes bibliometric analysis to investigate research trends in cross-cultural adaptation among foreign students, assessing 445 publications published from 1990 to 2024. Since 2006, the discipline has advanced swiftly, with China and the United States at the forefront in terms of publication output and international collaboration. Notable institutions comprise the Chinese University of Hong Kong and the Ohio University System, with the International Journal of Intercultural Relations acknowledged as the first in the field. The primary study themes encompass intercultural competence, adaptation processes, and social support systems, with a contemporary focus on digital technologies and online learning in the post-pandemic setting. The research delineates three developmental phases in the domain, emphasizing a growing focus on predictive analytics using big data and artificial intelligence to improve adaptation experiences. This thorough analysis offers significant insights into the changing dynamics of cross-cultural adaptation research, presenting a lucid overview of existing trends and prospective avenues for enhancing foreign students' experiences.

Keywords: International Students, Cross-Cultural Adaptation, Bibliometric Analysis, international Education.

Introduction

The acceleration of globalization within higher education in recent decades has made the research in international students' cross-cultural adaptation important. Intercultural adaptation here refers to the ability to communicate effectively and appropriately in multicultural situations, which is imperative for international students going to study in an unfamiliar place and social surroundings (Rienties et al., 2011). The cultural differences may cause miscommunication, thereby resulting in conflicts across the cultures and thus are a major concern for the international students (Ahmed et al., 2020; Zhao et al., 2023). According to Ramsay said such conflicts bring into light the importance of raising intercultural awareness that could help facilitate transitions and improve the overall educational experiences of overseas students (Ramsay et al., 2006). The research studies also show anxiety, depression, and other mental health problems associated with cultural adjustment are prevalent among

the students concerned (Dewi et al., 2022). By the same issue, it has also been realized that social ties significantly play a critical role in eliminating these psychological obstacles, implying that making friends and developing community networks would greatly contribute to the process of adaptation. Their ability to adjust themselves to the culture of a visiting country directly affects their academic success. As Rienties indicated, students who are effective in managing cultural differences tend to achieve better academic results. The critical positive consequence of cross-cultural adjustment is social integration (Rienties et al., 2011). Such students mostly face difficulties in building durable relationships with local students, which further increases their alienation from surroundings and troubles an international student's general adjustment. Research points out that intercultural friendships facilitate the process of adjustment, give emotional support creating a sense of belonging (Sias et al., 2008). Therefore, researching the cultural adaptation of international students is very important. This is a highly meaningful research topic.

Bibliometrics is a commonly used method in educational research for effectively analyzing and depicting research trends (Prahani et al., 2022; Sarpong, 2023; Turmuzi et al., 2023). These analyses can assist researchers in gaining a comprehensive understanding of the current state of the discipline and its evolving research patterns. Furthermore, they help identify potential research areas and key issues, assess the quality and impact of research, understand research trajectories and methodologies, and facilitate academic communication and collaboration. These papers contribute to advancing the development of this field.

While previous studies have addressed the challenges of cross-cultural adaptation among international students (Ramsay et al., 2006; Rienties et al., 2011), bibliometric studies that reveal trends in this field remain limited. This paper seeks to provide valuable insights into the current state, key areas of focus, and future developmental trends in research on international students' cross-cultural adaptation through a bibliometric analysis encompassing country, institutional, and journal analyses, as well as keyword relationships.

Method

We collected online literature data on 2 October 2024 from the Science Citation Index WOS database. The online literature data was collected from the database with the following search strategy:: TS=("international student*" OR "foreign student*" OR "overseas student*" OR "cross-border student*" OR "global student*" OR "non-domestic student*" OR "student* abroad" OR "international scholar*" OR "foreign scholar*" OR "overseas scholar*" OR "international learner*") AND TS=("international student*" OR "foreign student*" OR "overseas student*" OR "cross-border student*" OR "global student*" OR "non-domestic student*" OR "student* abroad" OR "international scholar*" OR "foreign scholar*" OR "overseas scholar*" OR "international learner*").

The author independently conducted the inclusion-exclusion process for the literature. This study did not restrict document types to only "Article," and duplicate studies were excluded. The literature meeting the research criteria, including full records and cited references, was exported in plain text format. CiteSpace was used for the visualization and analysis of the literature.

Result

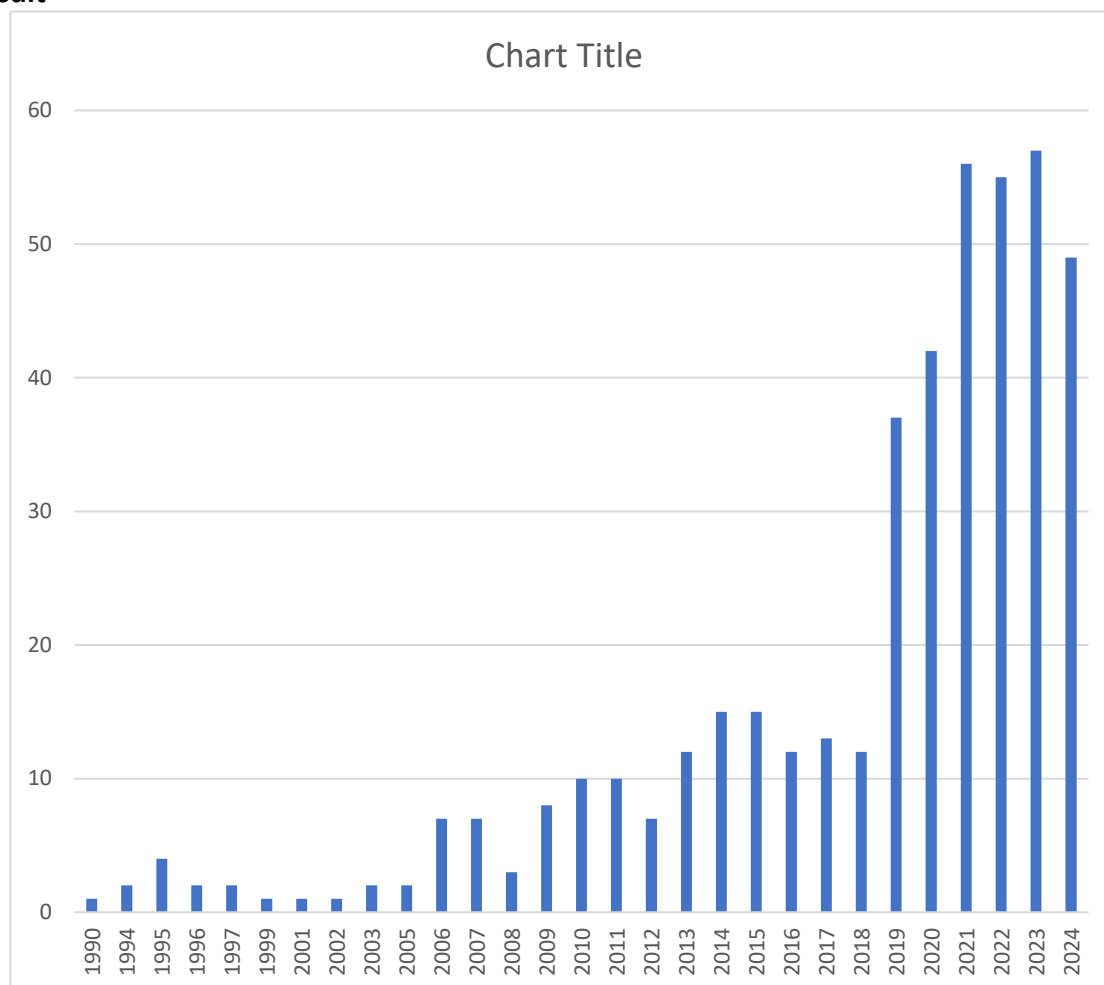


Fig. 1 Annual Publication Growth Chart

Annual Literature Growth

This analysis includes 445 papers published between 1990 and 2024. Notably, as shown in Figure 1, from 1990 to 2005, the field of research on international students' cross-cultural adaptation was in its early stages, with few publications and slow growth. During this 15-year period, the annual number of publications remained in the single digits, reflecting the initial stage of development in this field. However, since 2006, the number of papers has shown a clear upward trend. Notably, starting in 2019, the number of publications saw a significant surge, rising from 12 papers in 2018 to 37 in 2019, and remaining above 50 per year in the following years. In 2023, the number peaked at 57, indicating that the field has entered a phase of rapid development. With the increase in international student mobility, cross-cultural adaptation issues became more prominent, attracting widespread attention from researchers. At the same time, growing global awareness of cultural differences and inclusivity has prompted researchers to explore the mechanisms and strategies of cross-cultural adaptation more deeply.

Country Analysis

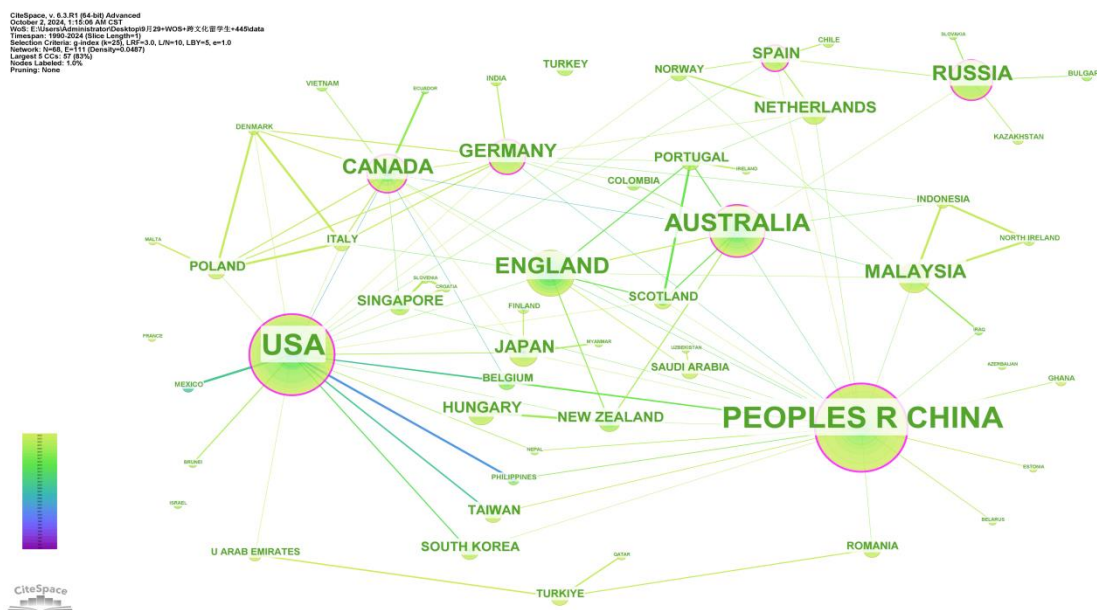


Fig. 2 Country Co-occurrence Analysis

Table 1
TOP10 Countries by Publication Volume

Publication Volume	Degree	Centrality	country	Year
112	23	0.48	PEOPLES R CHINA	2003
107	21	0.34	USA	1990
24	13	0.15	CANADA	2005
16	12	0.13	GERMANY	2010
46	11	0.15	AUSTRALIA	2006
33	10	0.06	ENGLAND	2007
17	7	0.05	MALAYSIA	2013
9	6	0.11	SPAIN	2018
6	6	0.05	PORTUGAL	2016
4	6	0	ITALY	2016

According to the search results from the WOS database, a total of 445 academic articles on the topic of cross-cultural adaptation of international students have been published. These articles were authored by researchers from 301 different institutions across 68 countries. Figure 2 shows the Country Contribution Network, and Table 1 lists the Top 10 Countries by Publication Volume. Notably, China has the highest number of published articles, totaling 112. The United States follows closely with 107 articles, while Australia, England, and Canada rank next with 46, 33, and 24 articles, respectively. This indicates that China and the United States are the primary contributors in this field. There is a significant degree of collaboration between countries.

As shown in Table 1, the centrality and degree indicators reveal significant insights. China has the highest centrality (0.48) and a degree of 23, indicating its central position in the collaboration network within this field, with the broadest range of partnerships with other countries. Although the United States slightly lags behind China in terms of the number of

publications, its centrality (0.34) and degree (21) rank second, demonstrating its important role in international collaboration.

Table 2

Countries with the Strongest Citation Bursts

Burst	BurstBegin	BurstEnd	country	Year
6.27	2007	2016	ENGLAND	2007
5.68	1999	2008	USA	1990
4.95	2011	2016	AUSTRALIA	2006
3.71	2020	2022	RUSSIA	2019

According to the Burst indicators, as shown in Table 2, four countries have experienced burst activity. The United States experienced a research surge between 1999 and 2008, with a burst strength of 5.68. England also experienced a significant research surge between 2007 and 2016, with a burst strength of 6.27. Australia experienced a research surge between 2011 and 2016, with a burst strength of 4.95. These data reflect the concentrated research efforts of these countries in this field during specific periods.

Overall, these data depict a research field led by China and the United States, with active participation from countries such as Australia and England. International collaboration plays a crucial role in this field, particularly with the strong cooperation networks demonstrated by the United States and China. This extensive international collaboration contributes to driving innovation and progress in this field, potentially leading to more advanced research outcomes.

Institution Analysis

In the field of research on the cross-cultural adaptation of international students, a total of 301 institutions are involved. According to the visual analysis in Figure 3 and Table 3, the Chinese University of Hong Kong ranks first with 8 articles, followed by the University of Hong Kong (7 articles), and Ohio University System, City University of Hong Kong, and the University of Queensland (each with 6 articles). Notably, the Chinese University of Hong Kong leads not only in publication volume but also has the highest degree (9), indicating extensive collaboration with other institutions. It is also noteworthy that, although the Ohio University System has the same publication count as the City University of Hong Kong and the University of Queensland, its degree (8) is higher, reflecting a broader collaborative network. Similarly, although the Florida State University System has only 4 articles, its degree (7) is relatively high, indicating its importance within the collaboration network. These data depict a research field led by universities in the Hong Kong region, with active participation from institutions in the United States, Australia, mainland China, and other regions. As shown in Figure 3, the University of Sydney is connected with institutions in Hong Kong, reflecting Australia-Hong Kong research collaboration. The Instituto Universitario de Lisboa in Portugal is connected with the University of Queensland, demonstrating cross-continental collaboration.

CiteSpace v. 5.8.R1 (64-bit) Advanced
 October 12, 2019, 12:40:39 AM CST
 Work: E:\InternationalJournal\Progressive Education and Development
 Timespan: 1990-2024 (Slice Length=1)
 Selection Criteria: g-index (q=0.25), LRF=1.0, L/N=10, LBY=5, m=1.0
 Network: N=301, E=208 (Density=0.0046)
 Largest CC: 89 (19%)
 Modularity: 0.97
 Pruning: None

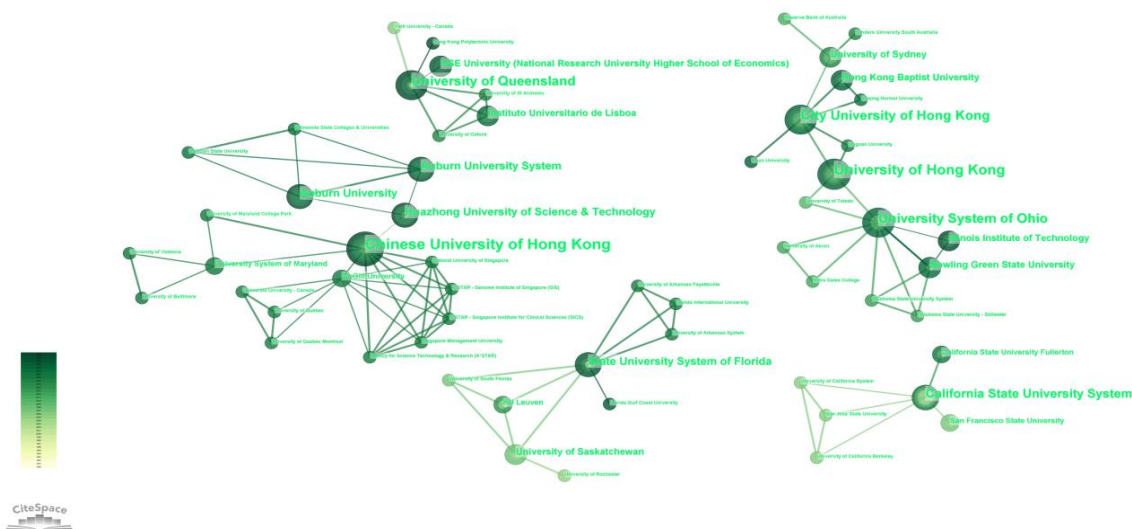


Fig. 3 Institutional Co-occurrence Analysis

Table 3

Top 10 Institutions by Publication Volume

Freq	Degree	Institution	Year
8	9	Chinese University of Hong Kong	2011
7	4	University of Hong Kong	2010
6	8	University System of Ohio	2010
6	6	City University of Hong Kong	2012
6	6	University of Queensland	2006
6	0	Education University of Hong Kong (EdUHK)	2013
5	5	California State University System	2006
5	2	Changchun University of Science & Technology	2018
4	7	State University System of Florida	2007
4	4	Auburn University System	2019

As an international financial center and education hub in Asia, Hong Kong has long played a key role in connecting academic exchanges between East and West. As shown in the figure, the Chinese University of Hong Kong leads in both publication volume and the breadth of its collaboration network, highlighting its central role in this field. Meanwhile, the United States is home to world-leading research universities and a robust scientific research system. U.S. universities attract top global talent, fostering international collaboration. Certain U.S. university systems, such as the Ohio University System and the California State University System, also demonstrate their important positions within the collaboration network.

Journal Analysis

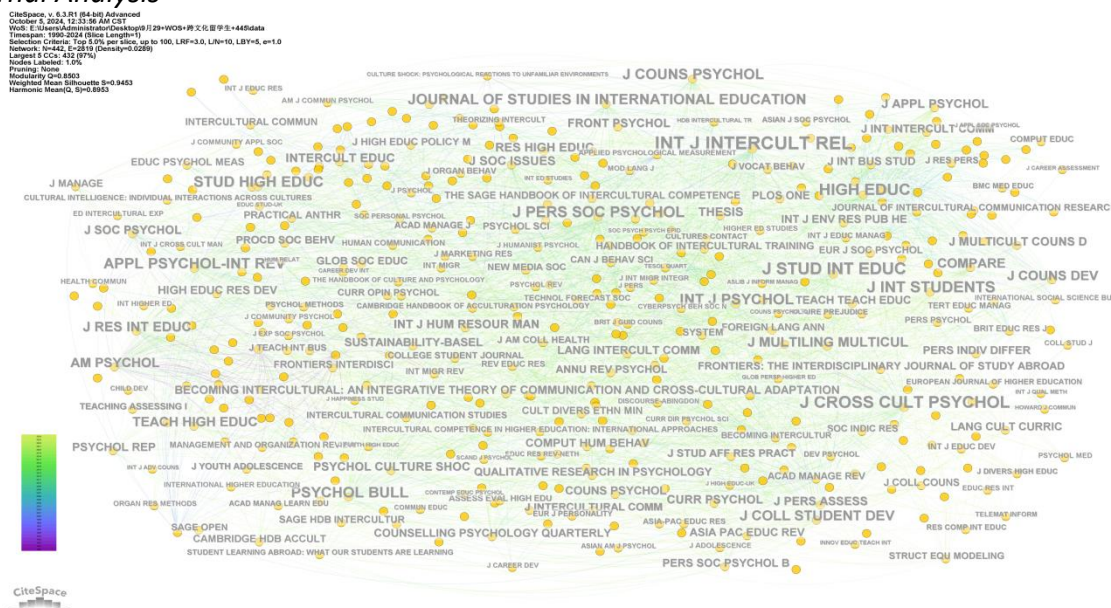


Fig. 4 Journal Co-occurrence Analysis

Table 4

Top 10 Journals by Publication Volume

Publication Volume	Degree	Journal	Year
317	100	INT J INTERCULT REL	1994
183	68	J STUD INT EDUC	2010
164	70	J CROSS CULT PSYCHOL	1990
154	54	HIGH EDUC	2009
124	35	J INT STUDENTS	2016
106	76	J PERS SOC PSYCHOL	1994
103	161	APPL PSYCHOL-INT REV	2003
99	88	INT J PSYCHOL	1990
99	49	STUD HIGH EDUC	2009
97	65	PSYCHOL BULL	1994

According to the visual analysis in Figure 4 and as shown in Table 4, the top 10 journals have played a significant role in academic research. Among them, 《International Journal of Intercultural Relations》published the highest number of articles, totaling 317. Following closely is 《Journal of Studies in International Education》, with 183 articles, followed by 《Journal of Cross-Cultural Psychology》 with 164 articles. Other journals in the top 10 include 《Higher Education》 (154 articles), 《Journal of International Students》 (124 articles), 《Journal of Personality and Social Psychology》 (106 articles), 《Applied Psychology: An International Review》 (103 articles), 《International Journal of Psychology》 (99 articles), 《Studies in Higher Education》 (99 articles), and 《Psychological Bulletin》 (97 articles).

According to the Degree indicator in Table 4, 《INT J INTERCULT REL》 has a degree value of 100, indicating its extensive connections with other journals in the academic network, and highlighting its central role in research collaboration and citations in the relevant field. Other journals, such as 《Journal of Studies in International Education》 (Degree 68) and 《Journal of Cross-Cultural Psychology》 (Degree 70), also demonstrate their importance in the research network. Although their connection levels are slightly lower than 《INT J INTERCULT REL》, they still have significant academic influence.

Table 5

Jouanl with the Strongest Citation Bursts

Burst	BurstBegin	BurstEnd	Jouanal	Year
32.95	2020	2024	J INT STUDENTS	2016
24.28	2019	2024	J STUD INT EDUC	2010
16.82	2019	2024	HIGH EDUC	2009
16.76	2016	2020	THESIS	2016
14.23	2022	2024	FRONT PSYCHOL	2022
13.93	2021	2024	STUD HIGH EDUC	2009
12.88	2022	2024	COMPUT HUM BEHAV	2022
12.52	2022	2024	SUSTAINABILITY-BASEL	2022
10.94	2020	2024	J MULTILING MULTICUL	2012
10.31	2017	2022	INT J HUM RESOUR MAN	2008

According to the Burst indicators shown in Table 5, 《Journal of International Students》 (citation strength of 32.95, 2020–2024) and 《Journal of Studies in International Education》 (citation strength of 24.28, 2019–2024) have drawn significant attention in recent years, reflecting the importance of research on international students' cultural adaptation and higher education policy during the pandemic. Following them is 《Higher Education》 (citation strength of 16.82, 2019–2024), which has also been widely cited during this period, further highlighting the research focus on the higher education system. 《Frontiers in Psychology》 (citation strength of 14.23, 2022–2024) and 《Computers in Human Behavior》 (citation strength of 12.88, 2022–2024) have emerged as new research focuses since 2022, reflecting the rapid development of psychology and remote learning technologies, particularly in the context of adapting to new learning environments post-pandemic. Although 《Thesis》 (citation strength of 16.76, 2016–2020) and 《International Journal of Human Resource Management》 (citation strength of 10.31, 2017–2022) were highly cited in earlier periods, their citation strength has gradually declined since 2020. These data indicate that the research impact of journals has significantly increased during specific time periods, aligning with the global trends and topics related to the COVID-19 pandemic, policy changes, and social-cultural shifts, including international student mobility, education policy, online education, remote learning, cross-cultural adaptation, and mental health。

Keyword Co-occurrence Analysis

CiteSpace v. 5.8.R1 (64-bit) Advanced
 October 4, 2024, 3:02:03 PM CST
 TimeSpan: 2014-2024 (Slice Length=1)
 Randomize Criteria: g-index (p=0.75, LRF=1.0, UIN=10, LBY=5, w=1.0)
 Network: N=281, E=1812 (Density=0.0401)
 Nodes Labeled: 1.9%
 Pruning: None

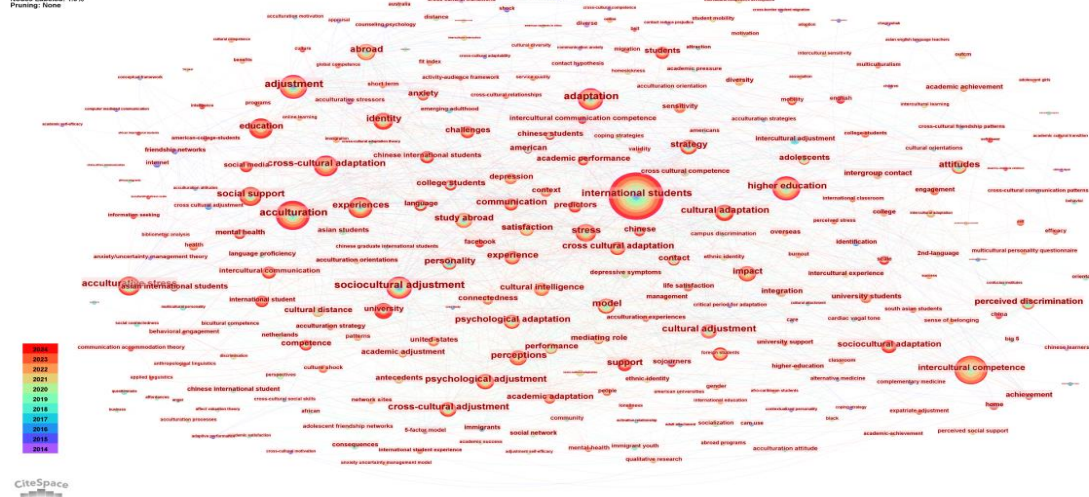


Fig. 5 Keyword Co-occurrence Analysis

Table 6
 TOP 10 Keyword Co-occurrence

Freq	Degree	Centrality	Keyword	Year
170	56	0.11	international students	2014
69	61	0.14	acculturation	2015
64	29	0.04	intercultural competence	2014
46	70	0.15	adjustment	2014
43	41	0.12	higher education	2014
40	66	0.12	sociocultural adaptation	2015
38	61	0.12	adaptation	2014
36	46	0.1	cross-cultural adaptation	2015
36	40	0.05	experiences	2015
33	32	0.03	education	2019

In this section, the researcher analyzes the co-occurrence of keywords. In this study, relevant software was used to analyze the co-occurrence of keywords related to international students and cultural adaptation research. The keyword co-occurrence network is shown in Figure 5. Table 6 displays the co-occurrence of the top ten terms. The top ten keywords favored by scholars are international students, cultural adaptation, intercultural competence, adjustment, higher education, sociocultural adaptation, adaptation, cross-cultural adaptation, experience, and education. International students, adjustment, and sociocultural adaptation are closely related to recent research on international students' cultural adaptation.

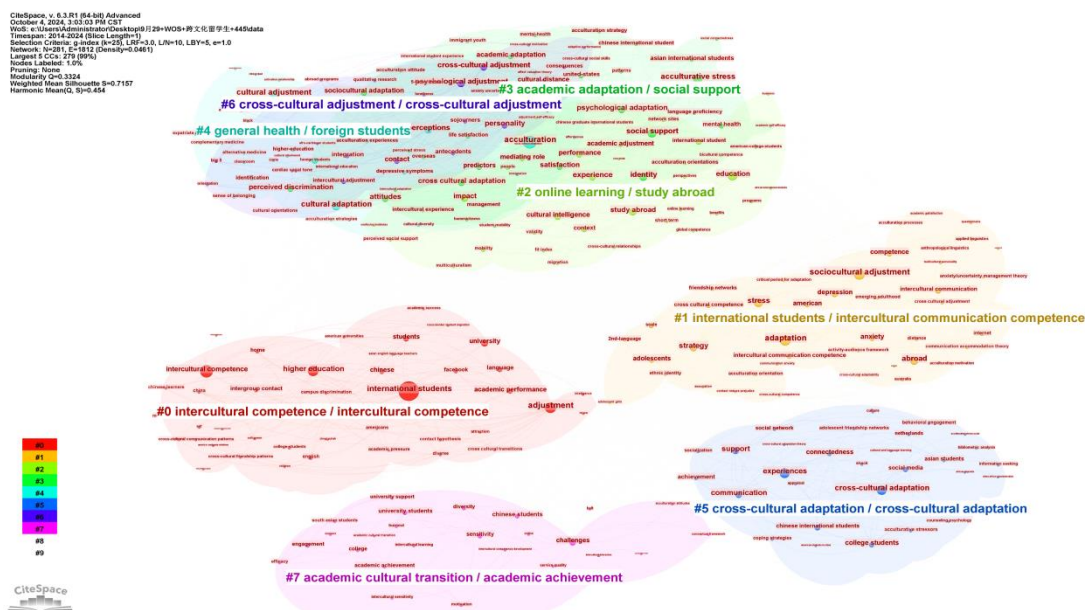


Fig. 6 Keyword Clustering Analysis Map

Keyword clustering analysis

The research results, presented through visual images in Figure 6 and data tables in Table 7, revealed eight major clusters in the field of cross-cultural adaptation of international students. In Figure 6, each cluster is color-coded and labeled with a number and a theme. The largest cluster, #0, focuses on "intercultural competence," while other key clusters include #1 "International Students/Intercultural Communication Competence," #2 "Online Learning/Study Abroad," and #3 "Academic Adaptation/Social Support." The data in the table further support these findings, showing that the largest two clusters (#0 and #1) each contain 43 items, with silhouette values of 0.745 and 0.711, respectively. Notably, cluster #2 contains 36 items, primarily focused on online learning and study abroad, with an average year of 2020, reflecting the latest research trends in this field. Additionally, clusters #3 and #4 each have 34 items, focusing on academic adaptation and health issues of international students, with an average year of 2018. Below is the detailed analysis of the clusters from Table 7.

Cluster0: principally emphasizes intercultural competency and its implementation among foreign students. The labels encompass intercultural competence, foreign students, peer-assisted learning, and intercultural personality, signifying that this cluster highlights the crucial importance of intercultural communication in international education. The mean silhouette value for this cluster is 0.745, signifying a strong level of internal keyword correlation.

Cluster1: primarily examines the processes of identity construction, cultural disorientation, and adaptation among international students. This cluster includes subjects such as intercultural communication competence, communication accommodation theory, and racial identity, emphasizing the challenges and growth experienced by international students in a new situation. It also analyzes the impact of social media, highlighting the role of modern technology in the adaptation process of international students.

Cluster2: This cluster highlights the employment of online learning and virtual international collaboration coming into play in international education. Other categories include online

learning, collaborative online international learning, and global virtual teams, with a focus on emerging trends in international education in this day and age. It comes forth to include themes related to cultural intelligence and intercultural collaborations. It prioritizes complexity in virtual environmental intercultural communication.

Cluster3: Starting is focused on the academic adaptation and social support problems of international students. The categories include social support, sociocultural, and psychological adaptation, all of which outlined poignantly the significance of social support towards the international students' adaptation process. This cluster targets Chinese international students, thus addressing persons from different cultural paths.

Cluster4: This cluster speaks to the overall well-being and academic adjustment of international students. Categories include foreign students, international student experience, and cultural adjustment, which shows that one is concerned with the overall adjustment or well-being of the international student. In this cluster, the spotlight is on cultural competence and cultural adjustment, hence giving nuanced attention to the adjustment process of international students.

Cluster5: Focuses on the issue of cross-cultural adaptation and the experience of Chinese international students. This cluster underlines the role of social media and interpersonal networks in enhancing cross-cultural adaptation. The term itself, including intercultural proficiency, signals its practical importance within international education.

Cluster6: Cross-cultural adaptability or individual flexibility, makes the following elements stand out: qualitative research and psychological adjustment, with the view that students' international experience is to be researched. It also includes moderation-mediation models to see the complexity and heterogeneity of the approaches.

Table7

Keyword Clustering Analysis

ClusterID	Size	Silhouette	Year	Label (LSI)	Label (LLR)	Label (MI)
0	43	0.745	2017	intercultural competence; international students; peer-assisted learning; intercultural personhood; planned behaviour intercultural communication; cultural adaptation; intercultural education; cultural diversity; intercultural understanding	intercultural competence (17.71, 1.0E-4); higher education (8.7, 0.005); cross-cultural adaptation (7.47, 0.01); social support (7.19, 0.01); cross-cultural adjustment (6.27, 0.05)	interpersonal communication (1.32); students-turne
1	43	0.711	2017	international students; identity	intercultural communication competence (10.63, 0.005); accommodation theory (7.64, 0.01); ethnic	integration strategies

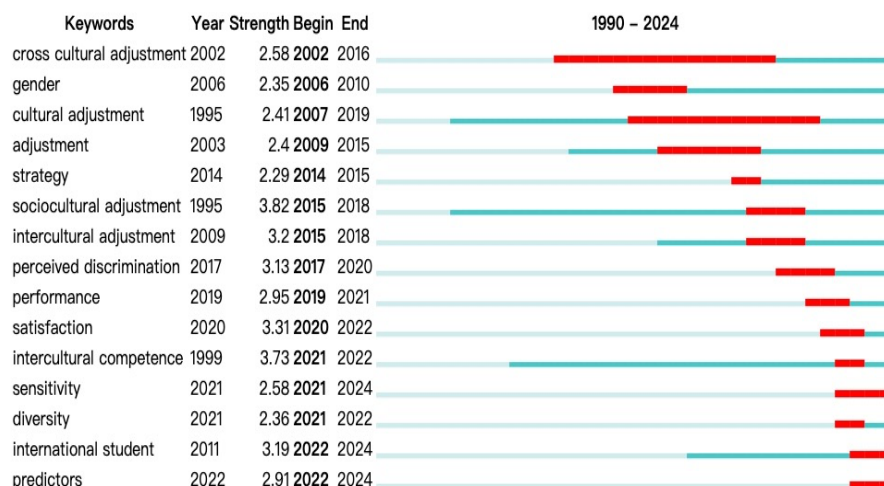
				development; identity (7.29, 0.01); intercultural (0.66); culture shock; communication (4.53, 0.05); social media identity developm emerging (4.16, 0.05) en adulthood; acculturation processes cross-cultural adaptation; psychological adaptation; sociocultural adaptation; international student; language proficiency	
2	36	0.642	2020	intercultural competence; online learning; collaborative online international learning; global virtual teams; friendship cultural intelligence; cross-cultural relationships; ethnic self-awareness; cross-cultural communication; friendship	study abroad (21.5, 1.0E-4); cultural intelligence (10.63, 0.005); online learning (8.95, 0.005); career constructi on theory - qualitative approach
3	34	0.763	2018	international students; academic adaptation; general health; integration strategy; autonomous orientation sociocultural adaptation; international student; language proficiency; social adaptation; emerging adulthood	social support (19.79, 1.0E-4); sociocultural adaptation (15.09, 0.001); psychological adaptation (10.95, 0.001); social connectedness (8.46, 0.005); adolescence (0.51); chinese self-construal (0.51); local I
4	34	0.762	2018	international students; general health; academic adaptation; learning engagement; doctoral students cultural adaptation; foreign students; programme adaptation; suicide alertness; physical education	foreign students (9.57, 0.005); international student experience (8.32, 0.005); physical education (0.54); cultural competence (8.32, 0.005); critical race theory (0.54); cultural adaptation (5.65, 0.05);

					cultural adjustment (4.99, 0.05)	
					cross-cultural adaptation (21.64, 1.0E-4); chinese international students (19.15, 1.0E-4); social media (15.69, 1.0E-4); music (0.41); friendship (0.41); self-formation (0.41); japanese student	
5	29	0.669	2018	cross-cultural adaptation; chinese international students; intrapreneurial self; cultural intelligence; gender differences international students; teaching culture; intercultural learning; chinese names; name choices	networks (9.19, 0.005); intercultural competence (8.18, 0.005)	
					cross-cultural adjustment (19.41, 1.0E-4); qualitative research (7.4, 0.01); psychological adjustment (5.97, 0.05); moderated mediation model (5.53, 0.05); host culture identification (5.53, 0.05)	moderate d mediation model (0.23); host culture ide
6	28	0.751	2017	cross-cultural adjustment; individual adaptability; host culture identification; interpersonal relationship; cross-cultural social skills	academic achievement (8.12, 0.005); university students (6.5, 0.05); language ideology (5.9, 0.05); esl learners (5.9, 0.05); cross-culture adaptation theory (5.9, 0.05)	language ideology (0.18); esl learners (0.18); cro
7	27	0.728	2020	intercultural competence; academic cultural transition; social cultural transition; ethnic cultural transition; college		

Cluster7:Primarily focuses on academic cultural shift and social transformation. The keywords here include academic success, university students, and linguistic ideology. These indicate a great concern for the academic and social settlement of international students. This cluster,

therefore, responds to the needs of ESL students and proves how crucial the role of language is in higher education across the globe.

Top 15 Keywords with the Strongest Citation Bursts



The keyword Burst Analysis

In Figure 7 shows the top 15 most prominent keywords with the highest growth between 1990 and 2024. These prominent bursts represent the development and trends in research on the cross-cultural adaptation of international students. The keyword burst analysis presents three distinct stages of development.

The first stage spans from 2002 to 2010. Research on the cross-cultural adaptation of international students emerged against the backdrop of increasing student mobility driven by globalization. Intercultural adaptation was the core concept of research during this stage (2002-2016). During this period, most research centered on intercultural adaptation, gender differences, and cultural adjustment, reflecting researchers' basic focus on the adaptation process of international students.

The second stage spans from 2011 to 2018, where, with the establishment of foundational theories, researchers began to explore more specific types and processes of adaptation. Sociocultural adaptation, intercultural adaptation, and adaptation strategies became research hotspots. Many topics extended beyond the basic concept of adaptation, such as perceived discrimination, indicating a growing focus on the social and psychological challenges faced by international students.

The third stage spans from 2019 to 2024, during which a large body of accumulated research laid the foundation for more systematic and comprehensive studies. The research focus deepened and expanded further. With increased competition in global higher education, improving international students' learning experiences and outcomes became a priority. The application of big data, artificial intelligence, and other technologies made more complex predictive models and analyses possible. Keywords from this stage include performance, satisfaction, intercultural competence, sensitivity, and diversity, reflecting a shift towards

researchers focusing on learning outcomes, subjective experiences, and the development of intercultural skills among international students. The sudden burst of the keywords "international students" and "predictive factors" (2022-2024) indicates that research has begun to systematically explore the various factors influencing the adaptation of international students.

Overall, the keyword co-occurrence analysis revealed eight major clusters in the study of international students' cross-cultural adaptation, with intercultural competence and online learning as the core themes. The clusters cover a wide range of topics, from psychological adaptation and academic adaptation to social support, reflecting the emerging trends in post-pandemic research on online education and cultural adaptation. The keyword burst analysis shows that research has gone through three stages since 2002, evolving from early discussions on the adaptation process to today's more complex and systematic studies, with particular attention on improving international students' learning outcomes, cultural sensitivity, and diversity. In recent years, with the application of big data and artificial intelligence, research has begun to systematically explore the predictive factors affecting international students' adaptation.

Conclusion

This study systematically reviews and discusses the current state, hotspots, and development trends in the field of cross-cultural adaptation of international students through bibliometric analysis. A total of 445 relevant papers published between 1990 and 2024 were analyzed, revealing a clear growth trend in this field, particularly after 2006. As globalization accelerated and international student mobility increased, the volume of research grew annually, reaching its peak in 2023.

China and the United States are the leading contributors in this field, with 112 and 107 articles published, respectively. The two countries have developed research further in the form of large-scale international collaboration. Other countries such as Australia, the United Kingdom, and Canada are also playing an important role in this aspect, specifically regarding academic collaborations and impacts of research. Centrality and scope of collaboration from the literature reveal that China acts as a leading nation within the network of international research.

Institution analysis reveals that universities in Hong Kong, particularly The Chinese University of Hong Kong and The University of Hong Kong, play a central role in cross-cultural adaptation research, leading not only in publication volume but also in their roles within the international academic collaboration network. U.S. university systems, such as the Ohio University System and the California State University System, also demonstrate strong collaboration networks, further advancing the internationalization of this field.

Journal analysis shows that International Journal of Intercultural Relations is the most prolific journal in this field, with a high level of academic influence. Other journals, such as the Journal of Studies in International Education and Journal of Cross-Cultural Psychology, have also played significant roles in advancing research on cross-cultural adaptation, particularly as research priorities shift toward psychological adaptation, social support, and cultural sensitivity in the context of globalization and educational internationalization.

Keyword co-occurrence analysis revealed several key research themes: "intercultural competence," "adaptation," "social support," and "higher education" have become core topics, demonstrating scholars' high level of attention to improving international students' cross-cultural adaptation abilities. Additionally, with changes in the global educational environment post-pandemic, keywords such as "online learning" and "intercultural communication" have become new research hotspots, reflecting the impact of digital technologies on the adaptation process of international students in remote learning and virtual environments.

The study also identified three major stages of development in this field: the initial construction of adaptation theory (2002-2010), followed by detailed studies on specific adaptation processes (2011-2018), and recent research focusing on systematic and complex studies (2019-2024). In recent years, research has gradually shifted toward using big data and artificial intelligence technologies for more complex predictive analysis, particularly exploring the factors affecting international students' cultural adaptation and strategies to improve their adaptation experiences.

Overall, this paper provides a clear framework and forward-looking direction for research into international students' cross-cultural adaptation. This will contribute to the development of diversity and inclusion within global education systems as international student mobility continues to grow.

References

- Ahmed, A. H., Hamed, O. A. O., & Gocheva, S. (2020). Intercultural Conflict and Experiences of International Students in Turkey. *Open Education Studies*, 2(1), 202–213. <https://doi.org/10.1515/edu-2020-0120>
- Dewi, S., Tenggara, R., & Hasan, S. (2022). Association Between Stress, Depression and Anxiety With Body Fat Percentage Among Medical Students of Faculty of Medicine and Health Sciences of Atma Jaya Catholic University. *Public Health and Preventive Medicine Archive*, 9(1). <https://doi.org/10.53638/phpma.2021.v9.i1.p07>
- Prahani, B. K., Jatmiko, B., Pristianti, M. C., & Amelia, T. (2022). Trend of Mobile, Web, E-Learning Research in 2002-2021: Contribution to Physics Learning. *World Journal on Educational Technology Current Issues*, 14(5), 1450–1467. <https://doi.org/10.18844/wjet.v14i5.7416>
- Ramsay, S. G., Jones, L., & Barker, M. (2006). Relationship Between Adjustment and Support Types: Young and Mature-Aged Local and International First Year University Students. *Higher Education*, 54(2), 247–265. <https://doi.org/10.1007/s10734-006-9001-0>
- Rienties, B., Beusaert, S., Grohnert, T., Niemantsverdriet, S., & Kommers, P. (2011). Understanding Academic Performance of International Students: The Role of Ethnicity, Academic and Social Integration. *Higher Education*, 63(6), 685–700. <https://doi.org/10.1007/s10734-011-9468-1>
- Sarpong, A. A. (2023). A Bibliometric Analysis of Missed Nursing Care Research: Current Themes and Way Forward. *Nursing Forum*, 2023, 1–17. <https://doi.org/10.1155/2023/8334252>
- Sias, P. M., Drzewiecka, J. A., Meares, M. M., Bent, R., Konomi, Y., Ortega, M. D. M., & White, C. (2008). Intercultural Friendship Development. *Communication Reports*, 21(1), 1–13. <https://doi.org/10.1080/08934210701643750>

- Turmuzi, M., Suharta, I. G. P., Astawa, I. W. P., & Suparta, I. N. (2023). Mapping of Mobile Learning Research Directions and Trends in Scopus-Indexed Journals: A Bibliometric Analysis. *International Journal of Interactive Mobile Technologies (Ijim)*, 17(03), 39–69. <https://doi.org/10.3991/ijim.v17i03.36461>
- Zhao, K., Lenz, T., & Fang, L. (2023). Understanding Chinese International Students' Perception of Cultural Conflicts in Canada: Through the Case of Cannabis Use. *Culture & Psychology*, 29(4), 791–811. <https://doi.org/10.1177/1354067x231169287>