



Visualization Analysis of University Student Communities Based on CiteSpace

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Abstract. Objective: This study aims to examine the current status, research hotspots, and trends in student communities within higher education institutions globally. Methods: Data were extracted from the China National Knowledge Infrastructure (CNKI), Wanfang, and Web of Science Core Collection. CiteSpace was utilized to visualize the publication timeline, geographical distribution, and keyword networks of research on student communities. Results: The analysis included 630 Chinese and 147 English publications. The annual publication output exhibited a steady increase. Key research themes encompass "integrated student communities," "political and ideological education," as well as student mental health, educational experiences, and safety. While some universities demonstrated active collaboration, inter-institutional partnerships require further strengthening. Conclusion: Future research should emphasize cross-institutional and cross-regional collaboration, interdisciplinary approaches, and addressing students' individualized needs. Additionally, exploring complex challenges in student communities, supporting vulnerable groups, tailoring services, and fostering international exchanges to adapt global best practices to local contexts will be pivotal for advancing student community development.

Keywords: Universities; Student Housing; Students; Visual Analytics

1 Introduction

A student community in universities is a designated space centered around dormitories, encompassing dining halls, cultural venues, residential areas, and commercial facilities, where students engage in extracurricular activities such as living, studying, and socializing[1]. Characterized by its youthful demographic, multifunctional design, and regulated environment, this space transcends its physical dimensions to serve as an educational platform enriched with cultural and developmental resources[2]. In 2020, China's Ministry of Education and other relevant bodies highlighted the growing sig-

nificance of student communities by issuing the "Guidelines for Strengthening University Ideological and Political Work," which identified these communities as vital for implementing holistic education. As universities adapt to contemporary demands, student communities have become integral to achieving educational objectives, optimizing resources, empowering student self-governance, enhancing quality of life, and fostering holistic development. This study employs visualization techniques to map the evolution and thematic focus of student community research globally, offering insights into current trends and future directions for scholars in this field.

2 Materials and Methods

2.1 Data Sources

Keyword Strategy

This study employed a hybrid search strategy integrating controlled vocabulary and free-text terms. For Chinese literature, core demographic terms included "university students," "undergraduates," and "graduate students," combined with scenario-specific terms ("community," "student community," "campus community," "residential community," "virtual student communities," "Shuyuan System (a traditional Chinese residential college model)," and "student dormitories") using the Boolean operator AND, ensuring coverage of policy documents (e.g., "One-Stop Student Community" and "Three-All Education [whole-process, all-round, whole-staff education]") and emerging research directions. Literature from Peking University Core Journals, Chinese Science and Technology Core Journals, and Chinese Social Sciences Citation Index was included, yielding 630 valid Chinese records. For English literature, population terms ("university student," "college student," "higher education student*") were combined with scenario terms ("student community," "campus community," "residential community") and synonym expansions ("campus climate," "mental health"), resulting in 147 English-language records. Keywords were selected based on preliminary literature reviews and high-frequency terms from policy texts, excluding irrelevant domains (e.g., corporate communities, social communities).

Time Span and Rationale

The search spanned from January 2016 to April 23, 2025. The starting year (2016) was determined by policy groundwork (Implementation Outline for Improving the Quality of Ideological and Political Work in Higher Education, 2017) and nascent research trends, while the endpoint (April 2025) aligned with the actual data retrieval date to ensure inclusion of the latest studies.

Database Selection and Deduplication

Data were sourced from China National Knowledge Infrastructure (CNKI), Wanfang Data, and Web of Science (WoS) Core Collection. Cross-database deduplication was performed using EndNote X9, with automated matching of titles, authors, and DOIs, supplemented by manual verification (two researchers independently cross-checked abstracts and publication details). Duplicate records were merged to ensure data uniqueness.

2.2 Inclusion and Exclusion Criteria

Inclusion criteria: (1) Relevance to university student communities; (2) Published peer-reviewed articles with full-text available. Exclusion criteria: (1) Conference papers, book chapters, news articles, and non-peer-reviewed materials; (2) Incomplete or duplicate records.

2.3 Data Extraction and Analysis

Two researchers independently screened the literature. Eligible studies were analyzed using CiteSpace (version 6.1.R5) [5] with the following parameters: Time span: 1995-2025 for English literature, 2016-2025 for Chinese literature; Time slice: 1 year; Node types: Countries, institutions, keywords. Clustering quality was assessed using silhouette ($S > 0.5$) and modularity ($Q > 0.3$) scores. Descriptive analysis was performed using NoteExpress.

3 Results

3.1 Publication Trends

The final analysis included 777 publications (147 English, 630 Chinese). Annual publications showed sustained rapid growth since 2022, peaking at 99 articles in 2024 (Figures 1 and 2).

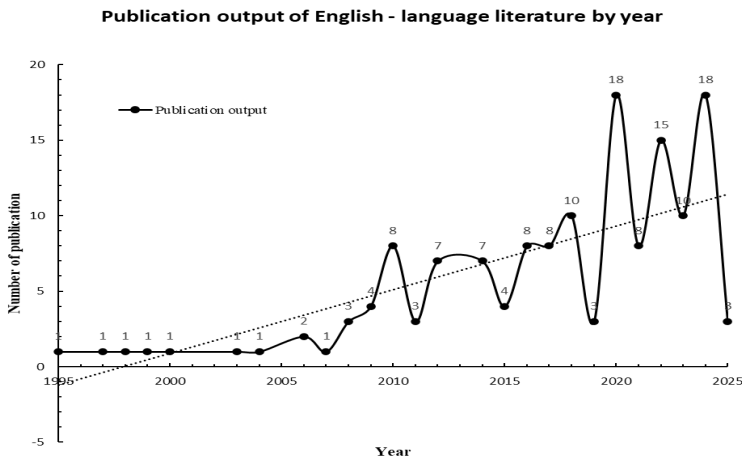


Fig. 1. Publication output of English-language literature by year

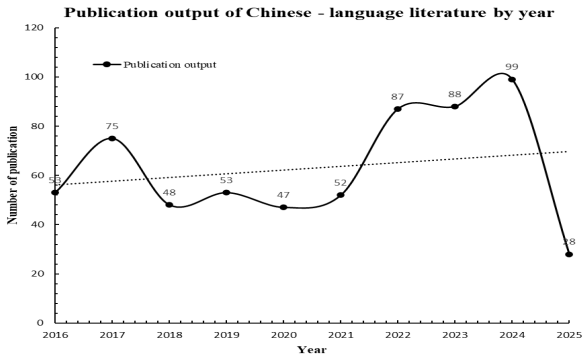


Fig. 2. Publication output of Chinese-language literature by year

3.2 Keyword Analysis

Keyword Frequency Analysis Keyword frequency analysis was conducted to identify prominent research themes. We consolidated synonyms, grammatical variants (including singular/plural forms), and abbreviations, while excluding non-relevant terms. Table 1 presents the ten most frequently occurring keywords from both Chinese and English literature. In Figure 2, nodes represent keywords, and the size of each node corresponds to the co-occurring frequency of the keywords (Table 1, Figure 3, and Figure 4).

Table 1. High-Frequency Keywords.

Chinese Keywords	Fre- quency	Central- ity	English Key- words	Fre- quency	Central- ity
Students	83	0.46	college students	35	0.45
Universities	43	0.21	mental health	17	0.26
Residential College System	36	0.19	higher education	15	0.15
Political Education	35	0.14	Experiences	11	0.29
Integrated Student Services	29	0.09	Impact	9	0.13
Student Housing	25	0.06	Attitudes	8	0.22
One-Stop Student Services	18	0.02	university stu- dents	8	0.07
Holistic Education	14	0.06	Health	7	0.11
University Residential Commu- nities	11	0.01	Perceptions	6	0.06
Talent Development	11	0.03	campus climate	6	0.04

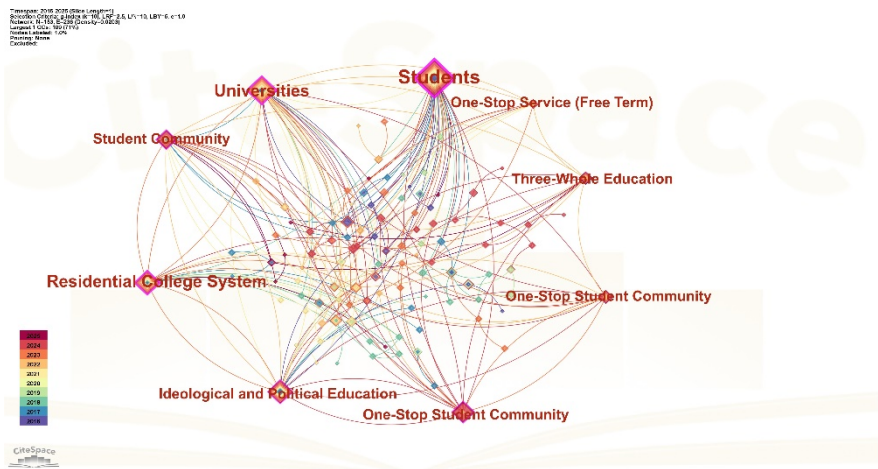


Fig. 3. Chinese Keyword Co-occurrence Network

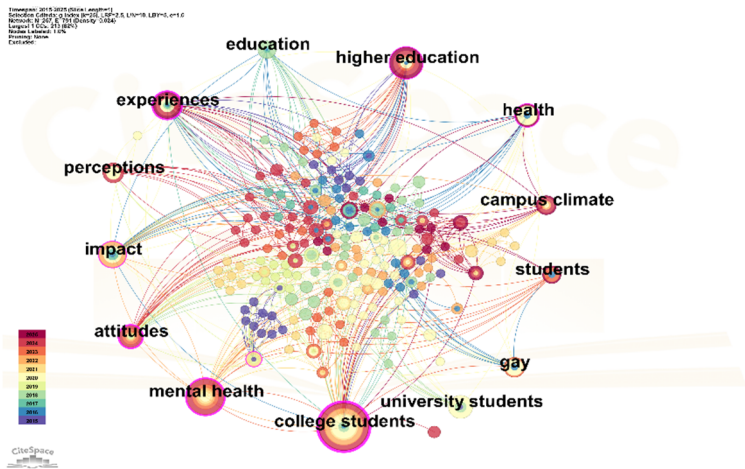


Fig. 4. English Keyword Co-occurrence Network

Keyword Cluster Analysis Keyword co-occurrence analysis identified eight distinct clusters in university student community research (modularity $Q = 0.4325 > 0.3$; average silhouette $S = 0.557 > 0.5$). Chinese scholarship prioritizes:

One-Stop Service Models (Cluster 0, $S = 0.917$): Core terms—"universities," "student housing," and "one-stop student services" (frequency = 43)—reflect post-2021 policy-driven innovations in integrated service models, e.g., the Ministry of Education's pilot programs.

Volunteerism-Ideology Synergy (Cluster 1, $S = 0.921$): Strong linkages among "voluntary service," "service learning," and "political education" (frequency = 41) underscore communities as platforms for moral education.

Residential Colleges and Liberal Education (Cluster 2, $S = 0.965$): Terms include "residential college system," "liberal education," and "civic virtues" (frequency = 27), exemplified by the modernization of Yuelu Academy^[†] and its interdisciplinary pedagogy.

Graduate-Level Ideological Training (Cluster 3, $S = 0.911$): Focus on "political education," "graduate students," and "nursing education" (frequency = 21) highlights ideological permeation in advanced talent development.

English-language studies emphasize:
Mental Health and Crisis Management (Cluster 3, $S = 0.827$): High-frequency terms like "anxiety," "depression," and "mindfulness" (frequency = 27) align with enhanced psychological support systems in European and American universities.

Cross-Cultural Governance (Cluster 2, $S = 0.941$): Keywords such as "Syrian refugee students in host countries," "cultural capital," and "inclusivity" (frequency = 31) reveal challenges in managing multicultural integration on global campuses.

Temporal trends (Figures 3–4) indicate:
2015–2019: Dominance of traditional themes (e.g., "lifelong learning," "community education").

Post-2020: Dual trajectories emerge: policy-labeled "one-stop" initiatives (burst strength = 8.7) and mental health interventions (burst strength = 6.2).

2023 onward: Rising interest in "labor education (work-study integration)" (Cluster 6) and "virtual learning communities" (frequency = 7), yet African/Latin American cases remain underrepresented (Cluster 4 focuses solely on U.S. contexts).

Network cohesion: Low thematic cohesion (density = 0.0234) underscores the need for interdisciplinary and cross-regional empirical syntheses (Tables 2 and 3, and Figures 5, 6, 7, and 8).

Table 2. Keywords Clustering Summary Table.

Cluster	Keywords	Silhouette	Mean Year	Core Keywords (Chinese)
0	43	0.917	2021	Universities*; "One-stop" Student Services; Student Housing; Integrated Student Services; Students
1	41	0.921	2020	Students*; Volunteerism; Service Learning; Universities; Political Education
2	27	0.965	2020	Residential College System*; Liberal Education; Modern Universities; Yuelu Academy; Civic Virtues
3	21	0.911	2019	Political Education*; Graduate Students; Nursing; Education; Undergraduate Students
4	13	0.911	2015	Lifelong Learning*; Reciprocity; Intergenerational Learning; United States; Community Education
5	13	0.991	2018	First-class Undergraduate Education*; Higher Education; Talent Development; "985 Project" Universities; "Residential College System"
6	7	0.957	2019	Virtual Learning Communities*; Cultural Logic; Educational Anxiety; Academic Achievement; V-CAA Model
7	4	0.978	2018	University "One-stop" Student Services*; "Structure-Function-Process" Framework; Political Education Function; Implementation Pathways; Development Approaches

Table 3. Keywords Clustering Summary Table.

Cluster	Keywords	Silhouette	Mean Year	Core Keywords (English)
0	32	0.879	2018	dating violence*;campus climate;ethnic;community readiness;social class
1	32	0.98	2020	college students*;sexual assault;sexual violence;college settings;misuse of prescription drugs
2	31	0.941	2018	syrian refugee university student*;cultural capital;critical pedagogy;campus food systems alternatives;inclusivity
3	27	0.827	2021	anxiety*;depression;universities;stress;mindfulness
4	26	0.913	2019	achievement*;american;control disorder;lifestyle disturbance;adolescents
5	24	0.882	2020	community college*;sex crimes;sex offender registration and notification;wider social impact;hong kong
6	17	0.887	2017	race and public opinion*;social support;arab;perceived racial discrimination;race and policing
7	13	0.917	2018	university students*;wellbeing;seasonal influenza;campus community garden;community health workers
8	11	0.917	2019	campus safety*;firearms;concealed carry on campus;virginia tech;students perceptions

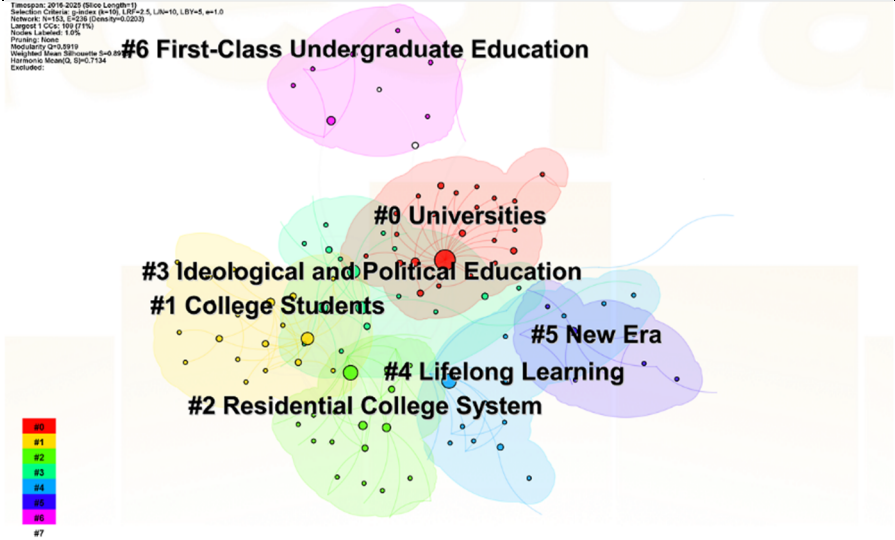


Fig. 5. Chinese Keyword Clustering Diagram

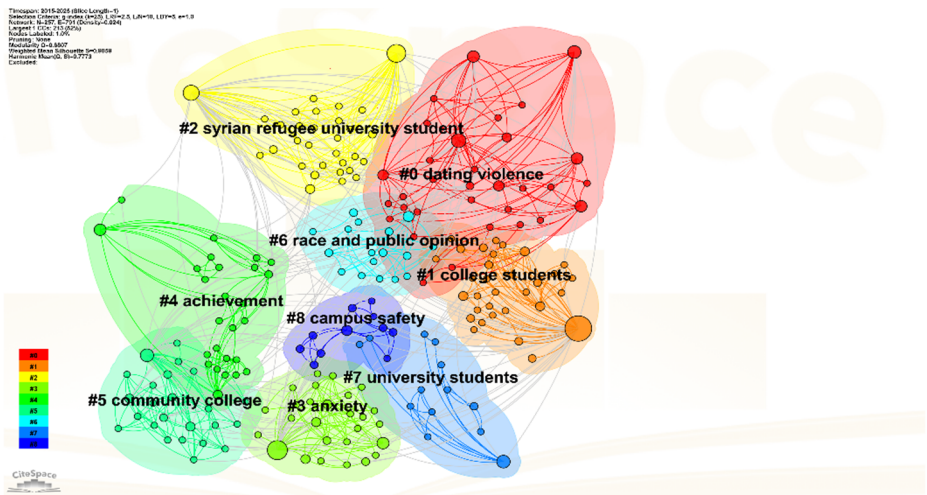


Fig. 6. English Keyword Clustering Diagram

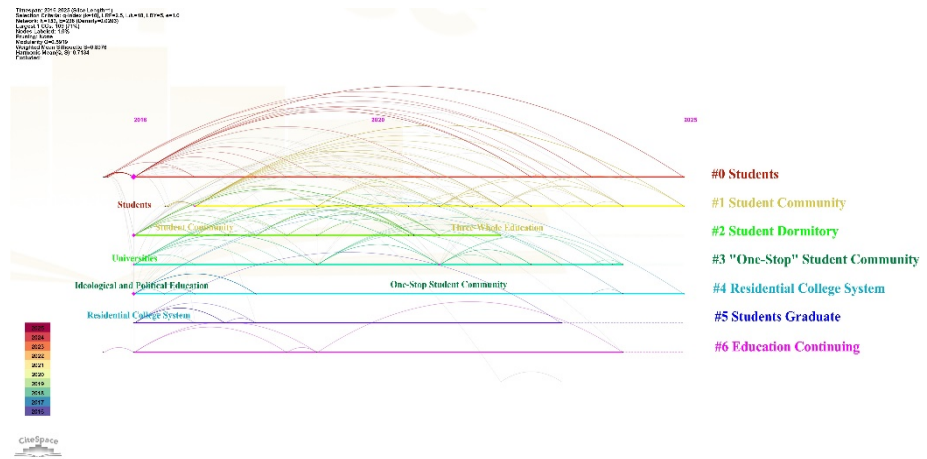


Fig. 7. Keyword Timeline Analysis for Chinese Literature

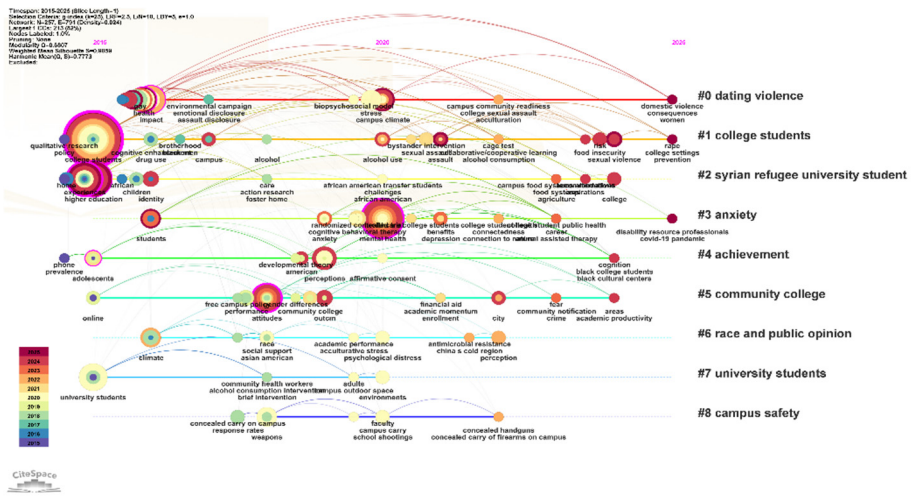


Fig. 8. Keyword Timeline Analysis for English Literature

3.3 Emerging Term Analysis

Emerging terms (burst terms) are keywords that show sudden increases in frequency, indicating research hotspots and predicting future trends. Analysis of Chinese literature revealed (Figures 9 and 10):

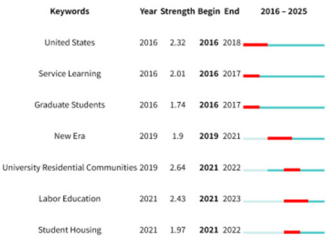


Fig. 9. Top 7 Keywords with the Strongest Citation Bursts



Fig. 10. Top 9 Keywords with the Strongest Citation Bursts

3.4 Geographic Distribution Analysis of Literature

Regional Coverage of Chinese and English Literature:

Chinese Literature: Among the 630 Chinese articles analyzed, 98.7% (622 articles) were authored by scholars from Mainland China, 1.3% (8 articles) by scholars in Hong

Kong, Macao, and Taiwan, and none originated from Africa, Latin America, or other regions.

Limitations in Regional Representation:

Chinese Literature: The overwhelming focus on Mainland China results in limited representation of studies from Hong Kong, Macao, Taiwan, and overseas Chinese communities.

English Literature: Research is predominantly centered in Europe and North America, with minimal contributions from developing regions in Africa and Latin America. Notably, studies from Africa are concentrated in South Africa and Brazil, while other areas such as West Africa and Central America remain entirely unrepresented.

4 Discussion

4.1 Research Status Analysis

Recent years have witnessed a growing academic interest in university student communities. Domestically, the introduction of the "one-stop student community" concept has catalyzed a paradigm shift from traditional administrative models to integrated educational platforms. Internationally, heightened attention to mental health issues has spurred rigorous investigations into psychological challenges within student communities. Foreign research institutions have established extensive collaborative networks, enabling cross-border resource integration and large-scale projects. In contrast, domestic collaborations remain fragmented, lacking the depth and breadth observed internationally. Current Chinese research predominantly focuses on optimizing "one-stop" student communities, which aim to consolidate campus and external resources to create multifunctional environments that blend academic, social, and recreational activities[3]. However, interdisciplinary integration is often neglected, with many studies confined to singular disciplinary perspectives (e.g., pedagogy or sociology). Additionally, overly theoretical frameworks hinder practical implementation[4].

4.2 Domestic Research Hotspots

Keyword analyses reveal three focal areas: the "one-stop" student community model, ideological-political education, and the "three-dimensional education" framework (whole-person, whole-process, whole-scenario education).

Hotspot Analysis of University Student Community Models Keyword and cluster analyses highlight the "one-stop student community" model as a focal point in Chinese higher education research. Since its pilot implementation in 2019, this model has redefined traditional residential colleges by integrating academic and non-academic resources. Residential colleges, originally designed as holistic education hubs, synergize with "one-stop" communities to enhance teacher-student interactions and optimize resource utilization[5]. However, institutional barriers between academic departments and residential colleges persist. The "one-stop" model addresses these challenges through systematic design, dismantling disciplinary silos and im-

proving service integration. Defined as a management-service-education ecosystem, it emphasizes multi-stakeholder governance, phased student development, and digital innovation to achieve collaborative education goals[6].

Key Innovations and Implications The model's significance lies in operationalizing the "Three-All Education" framework (all-round, whole-process, comprehensive education), which aligns with the mandate of fostering virtue through education. By leveraging digital tools and refining governance mechanisms, universities can build functional communities centered on talent cultivation, thereby improving educational efficiency[7]. Empirical studies, such as Liang Jianhua's apartment-based service systems[8] and Huang Jie's spatial optimization strategies[9], demonstrate its potential to enhance student engagement. Scholars like Wang Huan advocate for stronger institutional coordination and digital empowerment to maximize impact[10].

Practical Applications For instance, Jin Xin's visualization of resource allocation to grassroots levels[11] and Chen Cuifeng's integration of the "Three-All Education" into community practices[12] provide actionable insights. These findings underscore the need to optimize management systems, strengthen interdisciplinary collaboration, and explore synergies between the "one-stop" model and broader educational reforms.

Educational Functions Student communities are increasingly recognized as vital arenas for ideological-political education. The 2021 national guidelines underscore innovation in grassroots educational practices. By embedding value-driven activities into daily routines, communities cultivate collective identity and social responsibility. Research demonstrates their role in peer education, cultural influence, and value internalization[13]. Strengthening party-building initiatives and resident advisor systems is critical to harnessing these functions.

4.3 International Research Hotspots

Globally, research emphasizes mental health support, experiential learning, and campus climate. Residential colleges, involving partnerships among universities, professional agencies, and students, promote mental well-being through structured social support[14] 14and peer-led initiatives[15]. 15Studies by Alka Singh[16] 16and Manja Klemenčič[17] further highlight the importance of student self-governance in fostering inclusive campus cultures.

5 Conclusions

University student communities serve as multifunctional platforms bridging education, daily life, and cultural exchange. While China has made strides in "one-stop" models, gaps remain in interdisciplinary research and mental health integration. Future priorities include adopting collaborative governance frameworks, leveraging digital tools, and prioritizing student well-being to align with global best practices.

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The author utilized [Deepseek] to [translate the paper, and check grammar, spelling, and citations] during the writing process.

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