Assessing the Quality of Undergraduate Education for International Students in China: A Perspective of Student Learning Experiences

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Abstract

Purpose: The number of international students in China has been increasing over the recent decades. The rapid expansion of the international student population aroused concerns over the capacity of Chinese universities to fulfill international students' expectations toward academic development. Perceiving student learning experiences as an important indicator of higher education quality, this article focuses on undergraduate international students in China and discusses their learning experiences from three perspectives, i.e., perceived learning environment, academic engagement, and student development.

Design/Approach/Methods: Data were generated by a survey involving 1,428 international students studying for an undergraduate degree at 34 universities in China. Descriptive statistics were calculated, and the structural equation model was applied.

Findings: The research showed the respondents' academic development in a range of skills and abilities, while their learning experiences at the Chinese higher education institutions (HEIs) were largely unsatisfactory. Specifically, the research revealed the respondents' moderate-to-low-level evaluation of perceived classroom learning environment, their low level of academic engagement,

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and the significant negative influences of the perceived classroom learning environment and academic engagement on their academic development.

Originality/Value: The analysis holds implications for the enhancement of positive learning experiences of international undergraduate students in China and the improvement of the quality of Chinese international student education. Student learning experiences are an important indicator of the quality of college teaching. Drawing on the data generated by a survey involving 1,428 international students studying for an undergraduate degree at 34 universities in China, this presentation explores the characteristics of international undergraduate students' learning experiences in Chinese universities and analyzes the relationship among the three dimensions of their learning experiences.

Introduction

The number of international students in China has increased over recent decades, from 52,150 in 2001 to 492,185 in 2018, with an average annual growth rate of over 10%. In 2018, international students studying in China came from 192 countries and regions and studied in 1,004 Chinese higher education institutions (HEIs, The Ministry of Education of China [MOE], 2020). China is currently the most prominent international student host country in Asia and the third study-abroad destination in the world.

Economic, educational, cultural, and diplomatic factors contribute to the development of Chinese international student education. The country's remarkable economic achievement and increasing global influences have attracted international students to China. The national high-profile Belt and Road Initiative further drives the development of China's international student education, with international student education being considered as a crucial investment in China's cultural soft power. Besides, the Chinese higher education (HE) sector has enhanced its reputation worldwide and the ability to host international students. The government's generous funding on the national key "double-first-class" universities, particularly in the science, technology, and medicine (STEM) disciplines, further strengthen these universities' attractiveness to international students.

Despite the increasing number of international students in China, the percentage of those registered in non-degree programs remains high. Moreover, the emerging research, though limited, has reported a low level of international students' satisfaction with their learning at Chinese institutions and the concerns over Chinese universities' capacity to monitor the degree programs to fulfill these students' needs and expectations of academic development (Ding, 2016; Haugen, 2013; Tian & Lowe, 2018a, 2018b).

Aware of the concerns, in 2015, Ministry of Education of China announced the establishment of the "Study-in-China" quality certification system to improve the quality assurance scheme of the country's international education (MOE, 2015). In 2018, the Ministry of Education of China released *The Quality Standards for the Tertiary Level of Education for International Students in China (Trial)* (hereinafter referred to as "the *Standards*"), aiming to regulate international student education at the institutional level. The effects of the *Standards*, however, need to be empirically explored.

Worldwide, quality has been acknowledged as the higher education lifeline. Since the 1990s, with the increasingly diversified student population in higher education, research has well reported the limitations of the traditional higher education quality evaluation, which focus predominantly on funding, equipment, faculty, and research output, while largely ignoring the students' voices. In 1998, the Pew Charitable Trusts of the United States launched a study evaluating the quality of higher education from the perspective of student learning (National Survey of Student Engagement [NSSE], 2001). In addition, the Leuven Communiqué (2009) requires European universities to establish an effective quality assurance scheme based on the analysis of students' needs. More recently, the European University Association (Gaebel & Zhang, 2018) also emphasizes the significance of student-centeredness in HE reforms to better respond to new developments and challenges. In China, annual surveys on student learning experiences have been conducted with a major purpose to evaluate higher education quality at the national level (Shi et al., 2011; Shi & Wen, 2012). However, to the best of our knowledge, such research has not involved international students in Chinese HEIs. The "student-centered" quality evaluation ensures that universities provide inclusive education to effectively support the growth and development of international students in China. It was located in this context that the current research was designed and conducted.

This article discusses the quality of undergraduate education for international students in China by exploring their learning experiences in China. Data were generated by a questionnaire survey involving 1,428 international students in undergraduate programs at Chinese universities with different academic levels. Drawn on the survey data, the research analyzed general characteristics of the respondents' learning experiences and the relationship among three dimensions of their learning experiences, i.e., perceived learning environment, academic engagement, and student development. The analysis holds implications for the enhancement of positive learning experiences of international undergraduate students in China and the improvement of the quality of Chinese international student education.

Literature Review

Student Learning Experiences and Quality of Higher Education

How to measure and evaluate higher education quality has been heatedly discussed. Previous research has stressed students' learning outcomes as a valid indicator of HE quality. For

example, the Higher Education Student Learning Outcome Evaluation Project (AHELO) launched by OECD examined senior college students' academic achievements to evaluate the undergraduate education quality that these students had received.

Other research such as the Voluntary System of Accountability (VSA) Analytics, which was jointly funded by the American Association of State Colleges and Universities (AASCU) and the Association of Public and Land-grant Universities (APLU), has used the "value-added" measures to evaluate college teaching effectiveness and overall HE quality (VSA Analytics, 2020). The "value-added" method refers to the measurement of the difference in performance in standardized tests between first-year college students and fourth-year college students, while the students' academic results in college entrance exams are controlled.

As a student-centered method, "value-added" measures match the fundamental aim of HE quality evaluation. However, the "value-added" evaluation has its limitations (Chen, 2019). For example, its internal consistency is questionable when the approach is used to measure student academic performance at the different stages of their college education. Besides, the "value-added" evaluation is time-consuming and can be ethically inappropriate, given the fact that students take exams to evaluate teaching, rather than improve their learning. A further problem is its "washback" effects; that is, teaching becomes exam-oriented, and teachers teach to maximize students' grades in the exams. In this case, the evaluation negatively affects the quality of teaching and learning. Besides, the use of standardized tests may homogenize degree programs at different types of universities and universities with diverse academic levels, wiping off the features of the HEIs and affecting diversification in HE development.

More recently, countries and universities have started to use student learning experiences to assess the quality of education at the tertiary level. For example, Australian researchers have taken student learning experiences as an essential indicator to monitor and evaluate the effectiveness of undergraduate teaching and the quality of undergraduate education. Since 1992, the annual national surveys using the Course Experience Questionnaire (CEQ) have been conducted in Australia to understand and assess undergraduate students' learning experiences. The surveys provide empirical support for optimizing teaching practices and improving HE quality (Ainley & Long, 1994; Griffin et al., 2003; Mclnnis et al., 2001; Ramsden, 1991; Wilson et al., 1997). In 2002, researchers in the United Kingdom, based on the adapted CEQ, conducted the National Student Survey to assess students' learning experiences (Richardson, 1994). By far, CEQ has been widely used to evaluate the quality of college teaching in Canada, Ireland, Chinese mainland and Hong Kong SAR, Italy, Japan, Chile, Netherlands, Malaysia, Bangladesh, and Greece (Asonitou et al., 2018; Barattucci & Zuffo, 2012; Byrne & Flood, 2003; Chakrabarty et al., 2016; Fryer et al., 2012; González et al., 2012; Kreber, 2003; Jansen et al., 2013; Law & Meyer, 2011; Lu, Cheng et al., 2010; Lu, Pan et al., 2011; Thien & Ong, 2016; Yin et al., 2014; Zhang et al., 2006).

In 1998, with the funding of the Pew Charitable Trusts, researchers in the United States designed a new instrument to collect information on HE quality, i.e., the National Survey of Student Engagement (NSSE). NSSE assesses undergraduate students' learning experiences through examining students' academic engagement and their perceived institutional and teachers' support of their academic engagement. NSSE was piloted in 1999 and officially launched in the United States and Canada in 2000. In the following 20 years, over 5 million students at over 1,650 American and Canadian universities participated in NSSE (Center for Postsecondary Research of Indiana University Bloomington School of Education, 2020). Following researchers in the United States, NSSE was introduced to Australia and New Zealand, where the "Australasia Survey of Student Engagement" (AUSSE) was conducted in 2007 (Coates, 2010). In 2009, a research team at Tsinghua University in China introduced NSSE to China and adapted it into the NSSE-China (Shi & Wen, 2012). In 2013, the British Higher Education Association conducted the "United Kingdom Engagement Survey" (UKES), based on the American NSSE (Buckley, 2013).

The student learning experiences have been internationally recognized as an important indicator of the quality of undergraduate education. Compared to the value-added measures, students' perceptions of their own learning experiences reflect their evaluation of the learning experiences that they have experienced during their studies in HEIs. Through the analysis of their perceived learning experiences, not only can the quality of undergraduate education be evaluated, but the quality of the education provided by different institutions can also be compared, weaknesses in practices can be diagnosed, and suggestions for improvement can be provided. For the same reasons, the quality of international student education can also be measured and evaluated by researching international students' learning experiences (Tian, Lu et al., 2020; Yin & Li, 2015). Such research is of significance for enhancing international students' positive learning experiences in Chinese HEIs and improving the quality of Chinese international student education.

International Students in China

With the significant growth in the number of international students in China, the number of studies on these students has been increasing rapidly. Using the expression of "international students in China" and its synonyms (i.e., "overseas students in China," "foreign students in China," "transnational students in China," "cross-border students in China," "students studying abroad in China," "exchange students in China," "visiting students in China," "inbound students in China," and "outbound students in China"), the authors of this article searched for the publications published between 1949 and 2020 in the Web of Science Social Science Citation Index (SSCI) core collection and retrieved 1,552 results. After removing the irrelevant publications, most of which were on Chinese students studying abroad, we obtained 60 valid articles on international students in China. Among the 60 articles, the earliest one was published in 2003 and 55 (91.67%) were published after 2014.

Five out of these 60 SSCI research articles focused on the macro-level discussion of China's international student education, including its historical development, characteristics, and current challenges (Ma & Zhao, 2018), management (Liu & Liu, 2020), recruitment, scholarship, and China's inward student mobility (e.g., Tian & Liu, 2020). The rest focused on micro-level international students' experiences in China, which can be further categorized into three groups, i.e., the research exploring the motivations and reasons for their choice of studying in China (e.g., Wen & Hu, 2019); the research investigating learning experiences (e.g., He & Chiang, 2016); and the research examining social experiences, intercultural adaption, and identity reconstruction (e.g., Li, 2015). In particular, the research on learning experiences has explored international student–Chinese faculty interaction in the classroom (Akhtar et al., 201), learning Chinese as a foreign language (e.g., Wang & Curdt-Christiansen, 2016), PhD supervision and academic support (e.g., Wang & Byram, 2019), and employment intention upon graduation (e.g., Lin & Kingminghae, 2017). The research of particular relevance to the current study includes the interview study conducted by Haugen (2013) on international students' perceived education quality in Guangdong (see also Tian & Lowe, 2018a, 2018b), Wen, Hu & Hao's (2018) survey on international students' educational experiences in Tsinghua University, and Ding's (2016) survey on the learning satisfaction of the international students in Shanghai. These studies reported consistently low levels of international students' satisfaction with their learning at Chinese HEIs, highlighting the significance and urgency of monitoring China's international education from the students' perspective.

Although the research on international students in China has been increasing, such research remains inadequate in scope. With regard to the classroom learning of international college students in China, very limited research has been published internationally, none of which, to the best of our knowledge, has adopted a national, large-scale survey method. Worldwide, the significance of student-centered evaluation research on HE quality is well recognized (Gaebel & Zhang, 2018; Leuven Communiqué, 2009). Given the rapid expansion of international education in China, it is critical to assess the quality by analyzing international students' learning experiences at the national level.

Methodology

Despite the consensus on using student learning experiences to measure HE quality, questions remain on how to measure international students' learning experiences. Drawn on the previous research, the current study defines international student learning experiences as a three-dimension construct, involving international students' engagement in learning activities, their perceived learning environment, and their academic and personal development (Lu, Hu et al., 2013; see also Biggs, 1978). The

first dimension stresses international students' efforts in learning. The second dimension focuses on how international students perceive institutions' and faculty support and encourage them to participate in learning actively. The third dimension stresses international student development as gained through the engagement in learning activities. The interaction between international students' engagement in learning, their perceived learning environment, and their perceived learning outcomes constitute these students' overall learning experiences.

This research reports the findings of a large-scale survey, assessing international education quality from the perspective of international students' learning experiences. The research methodology is summarized below.

Research Aim and Questions

This nationwide survey aimed to assess the quality of international education in China through exploring learning experiences of international students studying for undergraduate degrees in Chinese HEIs. Following are the research questions:

(1) What are the characteristics of the three aspects of the participants' learning experiences, i.e., their perceived learning environment, their engagement in learning activities, and their academic and personal development?

(2) What are the relationships among their perceived learning environment, their engagement in learning activities, and their academic and personal development?

Participants

The questionnaire survey was carried out in the year 2016. The survey invited participation from international students studying in full-time undergraduate programs at 34 universities in six provinces in China. At the time of the research, all participants had studied in the host Chinese universities for more than one semester. Among 3,709 copies of the paper questionnaire randomly distributed to the students, 1,593 questionnaires were returned, resulting in a response rate of 42.95%. Among all returned questionnaires, 1,428 were valid, resulting in an effective rate of 89.64%.

Of all 1,428 respondents, 750 (52.5%) were male, 663 (46.4%) were female, and 15 (1.1%) did not report gender. Nine hundred and ninety-nine (70%) were from Asia; 321 (22.5%) were from Africa; 85 (6.0%) were from Europe, America, or Oceania; and 23 (1.6%) did not report their home country locations. This composition is in line with the high percentages of Asian and African students among international undergraduate students in China. One thousand one hundred and twelve (77.9%) majored in sciences and engineering; 281 (19.7%) in arts, humanities, and social sciences; and 35 (2.4%) did not report their disciplines. Three hundred and ninety (27.3%) studied in research-centered universities and 1,038 (72.7%) studied in teaching-centered universities.

Instrument

International student respondents were invited to complete a so-called "Questionnaire on Educational Experiences of International Undergraduate Students in China" (hereinafter referred to as "the Questionnaire"). The Questionnaire is in English language and consists of the following four parts. The first part is to collect essential personal information, including gender, age, institution, major, and family background. The second part is the core of the questionnaire, investigating the three dimensions of international student learning experiences. The third part is on student life, including personal expectations and goals, and overall satisfaction. The fourth part is on international students' intercultural knowledge, skills, and attitudes, with a purpose to analyze the influences of the learning experiences in China on the development of intercultural competence. This article reports the analysis of the data generated by the second part of the Questionnaire.

The second part of the survey, investigating international undergraduate students' learning experiences, includes four sections, which, respectively, explore international students' academic engagement, their perceived classroom learning environment, perceived campus environment, and perceived academic and personal development. The first section adopted 25 items of the student-engagement scale of the Student Experiences at Research University-International (SERU-I) developed by the University of California, which assessed four facets of learning engagement, i.e., "participation for analytical understanding," "meeting academic challenges," "interaction with faculty," and "extracurricular engagement." The second section adopted 43 items of the self-developed University Mathematics Course Experiences Questionnaire (UMCEQ), which assessed eight facets of perceived classroom learning environment, i.e., "teacher support," "course organization," "intellectual stimulation," "teaching innovation," "cooperative learning," "peer competition," "learning difficulty," and "student autonomy." The third section adopted 13 items of the SERU-I campus-climate scale, which assessed two facets of perceived campus atmosphere, i.e., "respect for diversity" and "general atmosphere." The last section contains 22 items assessing five aspects of perceived academic and personal development, i.e., "core skills," "research capacities," "self-understanding," "global abilities," and "Chinese proficiency." In the last section, the respondents' academic and personal development was measured by the value-added method, that is, the differences in skills and abilities between what the respondents perceived they had at the time of the survey and what they perceived they had at the time of enrollment.

In the questionnaire, the extent to which the respondents agreed with the items was measured on a 6-point Likert scale, ranging from "never/strongly disagree/very poor" (1 point) to "very often/strongly agree/excellent" (6 points). Based on the feedback from pilot studies, changes were made to better fit the potential participants with the diverse cultural and linguistic backgrounds.

Data Analysis

This study used confirmatory factor analysis to test the constructive validity of the questionnaire. Descriptive statistics, i.e., means and standard deviations, were calculated to present the characteristics of the respondents' learning experiences at Chinese universities. The structural equation model was applied to investigate the relationships among the respondents' perceived learning environment, learning engagement, and academic and personal development.

Research Results

Reliability, Descriptive Statistics, and Correlations

Table 1 presents the results of reliability analysis, descriptive statistics, and correlation analysis. As shown by Table 1, the reliability coefficients of the eight factors of the perceived classroom learning environment were between 0.769 and 0.937. The reliability coefficients of the two factors of the perceived campus atmosphere were, respectively, 0.932 and 0.905. The reliability coefficients of the four engagement factors were between 0.807 and 0.919. The reliability coefficients of the five factors of the self-reported development were between 0.721 and 0.898. The reliability coefficients tend to increase as the number of items of a measurement increase. A Cronbach alpha value of 0.7 or higher indicates an acceptable level of reliability, and a Cronbach alpha of 0.8 or higher is considered good (Pallant, 2020). In this research, the reliability coefficients of two factors, i.e., peer competition and Chinese proficiency, ranged between 0.7 and 0.8. All other factors' reliability coefficients were greater than 0.8. The results indicated a high internal consistency of the Questionnaire.

Construct Validity

Byrne (2016) emphasized that the hypothetical model fit evaluation should be assessed based on multiple criteria, given the limitations of any single fit index. In this research, the commonly used indices, i.e., Chi-square Statistic (χ^2), Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI), Comparative Fit Index (CFI), and Goodness of Fit index (GFI), were adopted to assess the model fit. Among the indices, χ^2 and GFI are sensitive to sample size. In case that the sample size is above 1000, χ^2 values would turn up as significant, and the expected model would be rejected (Bergh, 2015). An RMSEA value of 0.05 or less indicates a close fit of the expected model, an RMSEA value of 0.08 or less indicates a good fit of the predicted model, and an RMSEA value of 0.1 or less indicates an acceptable fit (Chan et al., 2007; Hu & Bentler, 1999). The values of NFI, CFI, and GFI close to 1 indicate a good fit; the values of NFI, CFI, and GFI of 0.9 or above indicate a good fit; and the values of NFI, CFI, and GFI of 0.8 or above indicate an acceptable fit (Hu & Bentler, 1999).

Table 1. Reliability, Descriptive Statistics, and Correlations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Teacher support	(0.931)																		
2. Course organization	0.646**	(0.918)																	
3. Intellectual stimulation	0.699**	0.868**	(0.937)																
4. Teaching innovation	0.577**	0.579**	0.633**	(0.896)															
5. Cooperative learning	0.463**	0.437**	0.493**	0.407**	(0.915)														
6. Peer competition	0.378**	0.328**	0.377**	0.440**	0.566**	(0.769)													
7. Student autonomy	0.491**	0.608**	0.629**	0.693**	0.409**	0.408**	(0.821)												
8. Learning difficulty	0.087*	0.113*	0.114**	0.209**	-0.017	0.156**	0.253**	(0.889)											
9. Respect for diversity	0.496**	0.498**	0.535**	0.391**	0.403**	0.302**	0.428**	0.071*	(0.932)										
10. General atmosphere	0.514**	0.556**	0.592**	0.461**	0.366**	0.318**	0.504**	0.115**	0.554**	(0.905)									
11. Participation for analytical understanding	0.280**	0.322**	0.360**	0.229**	0.286**	0.246**	0.221**	-0.015	0.274**	0.279**	(0.919)								
12. Meeting academic challenges	0.206**	0.204**	0.226**	0.137**	0.233**	0.143**	0.149**	0.026	0.146**	0.151**	0.554**	(0.856)							
13. Interaction with faculty	0.151**	0.153**	0.158**	0.142**	0.124**	0.085**	0.140**	0.092**	0.127**	0.123**	0.452**	0.558**	(0.847)						
14. Extracurricular engagement	0.157**	0.165**	0.207**	0.127**	0.285**	0.215**	0.156**	-0.089**	0.160**	0.133**	0.528**	0.464**	0.380**	(0.807)					
15. Core skills	0.135**	0.133**	0.143**	0.111**	0.055	0.013	0.142**	0.007	0.082*	0.172**	0.153**	0.095**	0.038	0.115**	(0.851)				
16. Research capacities	0.075*	0.112**	0.132**	0.112**	0.064	0.076**	0.161**	0.011	0.062	0.127**	0.148**	0.036	-0.012	0.136**	0.694**	(0.898)			
17. Self-understanding	0.117**	0.122**	0.152**	0.087**	0.153**	0.116**	0.152**	0.003	0.153**	0.151**	0.089**	-0.011	-0.046	0.123**	0.582**	0.757**	(0.854)		
18. Global abilities	0.087**	0.086**	0.112**	0.077**	0.094**	0.054	0.135**	0.011	0.094**	0.103**	0.106**	0.014	-0.035	0.110**	0.638**	0.803**	0.832**	(0.833)	
19. Chinese proficiency	0.158**	0.066*	0.132**	0.062*	0.261**	0.157**	0.070*	-0.141**	0.159**	0.146**	0.123**	0.075*	-0.049	0.124**	0.514**	0.508**	0.538**	0.554**	(0.721)
Mean	4.27	4.00	4.11	3.92	4.40	4.21	3.98	3.54	4.15	4.30	3.57	3.52	2.92	3.54	0.62	0.47	0.53	0.50	1.25
Standard Deviation	1.04	1.05	0.98	1.10	0.93	3.98	1.05	1.08	1.00	0.98	1.09	1.13	1.13	1.10	1.08	0.92	1.04	1.00	1.32

*$p < 0.05$, **$p < 0.01$. Each factor's reliability coefficient is presented along the diagonal.

Table 2. Construct Validity.

Measures	χ^2	df	P	RMSEA	NFI	CFI	GFI
Classroom learning environment	6160.667	832	0.000	0.067	0.873	0.888	0.813
Campus climate	764.099	64	0.000	0.088	0.945	0.949	0.917
Student engagement	2412.894	269	0.000	0.075	0.876	0.889	0.863
Student development	1840.269	199	0.000	0.076	0.915	0.924	0.890

The results of the confirmatory factor analysis, using the first-order structural equation model, are presented in Table 2. Based on the criteria of the model fit reviewed above, the CFA results indicated the acceptable construct validity of the Questionnaire measuring perceived classroom learning environment, perceived campus climate, learning engagement, and academic and personal development.

Characteristics of International Undergraduate Students' Learning Experiences

Table 3 presents the reliability coefficients of the eight factors of the perceived classroom learning environment. The reliability coefficients of the factors were between 0.769 and 0.937, indicating that the measure was reliable. Table 3 also presents the general characteristics of the respondents' perceived classroom learning environment. The mean scores of teacher support, course organization, intellectual stimulation, cooperative learning, and peer competition were between 4.00 and 4.50, indicating that the students' responses to these four factors were somewhere between "somewhat agree" and "agree" with an inclination toward "somewhat agree." The mean scores of teaching innovation, student autonomy, and learning difficulty were between 3.5 and 4.0, indicating the responses to these three factors were somewhere between "somewhat disagree" and "somewhat agree" with an inclination toward "somewhat agree." If this 6-point scoring system was converted to a 100-point scoring system, then the respondents' evaluation of learning difficulty would be at a failing level; their evaluation of course organization, intellectual stimulation, teaching innovation, and student autonomy would be just above the passing level; and their evaluation of teacher support, cooperative learning, and peer competition would be at a moderate level.

Table 4 presents the reliability coefficients of the two factors of perceived campus climate. The reliability coefficients of the factors were between 0.905 and 0.932, indicating that the measure was reliable. Table 4 also presents the general characteristics of the respondents' perceived campus climate. The mean scores of respect for diversity and general atmosphere were between 4.0 and 4.5, indicating that the students' responses to these two factors were somewhere between "somewhat agree" and "agree" with an inclination toward "somewhat agree." In other words, the respondents tended to "somewhat agree" that their ethnic, cultural, and religious beliefs were respected on

Table 3. Characteristics of Perceived Classroom Learning Environment.

Factor	Number of Items	Example Item	Mean	Standard Deviation	Reliability α
Teacher support	6	When I have difficulties in learning, teachers always provide help.	4.27	1.04	0.931
Course organization	5	The contents of my courses are systematically organized.	4.00	1.05	0.918
Intellectual stimulation	9	Teaching has inspired my enthusiasm for further learning.	4.11	0.98	0.937
Teaching innovation	4	Teaching methods are diverse and flexible.	3.92	1.10	0.896
Cooperative learning	6	I would like to cooperate with other students and complete learning tasks.	4.40	0.93	0.915
Peer competition	4	We compete against each other in subject studies.	4.21	0.96	0.769
Student autonomy	4	I have the freedom to choose what I would like to study.	3.98	1.05	0.821
Learning difficulty	5	I often feel that the study is difficult.	3.54	1.08	0.889

campus and that their campus culture was diverse, friendly, and caring. If this 6-point scoring system was converted to a 100-point scoring system, then the respondents' evaluation of respect for diversity would be above the passing level, and their evaluation of the general atmosphere would be at a moderate level.

Table 5 presents the reliability coefficients of the four factors of student engagement. The reliability coefficients of the factors were between 0.807 and 0.919, indicating that the measure was reliable. Table 5 also presents the general characteristics of the four dimensions of student engagement. The mean scores of participation for analytical understanding, meeting academic challenges, and extracurricular engagement were between 3.5 and 4.0, indicating that the students' responses to these three factors were somewhere between "somewhat disagree" and "somewhat agree," with an inclination toward "somewhat agree." The mean score of interaction with faculty was 2.92, indicating that the students' responses to this factor were between "disagree" and "somewhat disagree," with an inclination toward "somewhat disagree." If the 6-point scoring system was converted to a 100-point scoring system, then the respondents' evaluation of all four engagement factors would be at a failing level.

Table 6 presents the reliability coefficients of the five development factors. The reliability coefficients of the factors were between 0.721 and 0.898, indicating that the measure was reliable. Table 6 also presents the respondents' development in a range of skills and abilities, as measured

Table 4. Characteristics of Perceived Campus Climate.

Factor	Number of Items	Example Item	Mean	Standard Deviation	Reliability α
Respect for diversity	8	Students of my race/ethnicity are respected on this campus.	4.15	1.00	0.932
General atmosphere	5	The campus atmosphere is intellectual.	4.30	0.98	0.905

Table 5. Characteristics of Student Engagement.

Factor	Number of Items	Example Item	Mean	Standard Deviation	Reliability α
Participation for analytical understanding	9	I created or generated new ideas, products, or ways of understanding.	3.57	1.09	0.919
Meeting academic challenges	6	I contributed to a class discussion.	3.52	1.13	0.856
Interaction with faculty	5	I interacted with faculty during class sessions.	2.92	1.13	0.847
Extracurricular engagement	5	I extensively revised a paper before submitting it to be graded.	3.54	1.10	0.807

by the aforementioned value-added method. As shown in Table 6, learning in China positively influenced the respondents' development in these skills and abilities. Comparing the skills and abilities that the respondents perceived they had at the beginning of the undergraduate programs and those that they had at the time of the survey, the research revealed 17% increase in the respondents' core skills, 12% increase in their research capacities, 13% increase in both self-understanding and global abilities, and 42% increase in their Chinese proficiency.

Relationships among the Dimensions of International Students' Learning Experiences

Drawn on the "*presage-process-product*" Model of Study Process proposed by Biggs (1978, 1993), this research assessed the relationship among the three dimensions of international students' learning experiences. Study *processes*, with its transformative nature, mediate *presage* variables and *product* variables (ibid). In this study, the presage variables involved the participants' perceived classroom learning environment and campus atmosphere. The process variables involved the participants' self-reported engagement in learning. The product variables involved the participants'

Table 6. Characteristics of Student Development.

Factor	Number of Items	Example Item	Mean	Standard Deviation	Reliability α
Core skills	4	Analytical and critical thinking abilities	0.62	1.08	0.851
Research capacities	8	Ability to prepare and make a presentation	0.47	0.92	0.898
Self-understanding	4	Self-awareness and understanding	0.53	1.04	0.854
Global abilities	4	Ability to apply disciplinary knowledge in a global context	0.50	1.00	0.833
Chinese proficiency	2	Linguistic competency in the Chinese language	1.25	1.32	0.721

self-perceived academic and personal development. The perceived environmental factors, engagement, and their interactions determine student development (see Biggs, 1978, 1993). Previous research has reported significant impacts of the learning environment on international student engagement in academic studies (Tian, Lu et al., 2020) and the crucial influences of student engagement on their academic development (Astin, 1984). A study (Lu & Liu, 2017), focusing on Chinese domestic college students, revealed critical relationships among learning environment, student engagement, and academic development.

Drawn on Biggs (1978,1993), the current study constructs a conceptual model of the relationships among learning environment, academic engagement, and student development. The preliminary analysis revealed mismatches between the conceptual model and the questionnaire responses, indicating the inappropriateness of some proposed paths in the conceptual model. Adopting the conceptual model parameter estimation and the test result revision index, the proposed conceptual model was revised, adding the correlation between residuals and deleting the paths showing no significant correlation between variables. The revised SEM model is presented in Figure 1. The goodness of fit index of the revised model is $\chi^2 = 974.560$, df = 79, $p < 0.001$, RMSEA = 0.089, NFI = 0.935, CFI = 0.939, GFI = 0.945, indicating that the goodness of fit index of the modified model is acceptable.

Figure 1 shows significant relationships among the three dimensions of international undergraduate students' learning experiences in China. Specifically, concerning the influences of the classroom learning environment factors on learning engagement, teacher support directly and significantly positively impacted meeting academic challenges and interaction with faculty. Intellectual stimulation had a direct and significant positive impact on participation for analytical understanding, meeting academic challenges, and extracurricular engagement. Cooperative learning had a direct and significant impact on all four student engagement factors. Peer competition had a direct and significant impact on two student engagement factors, i.e., participation for
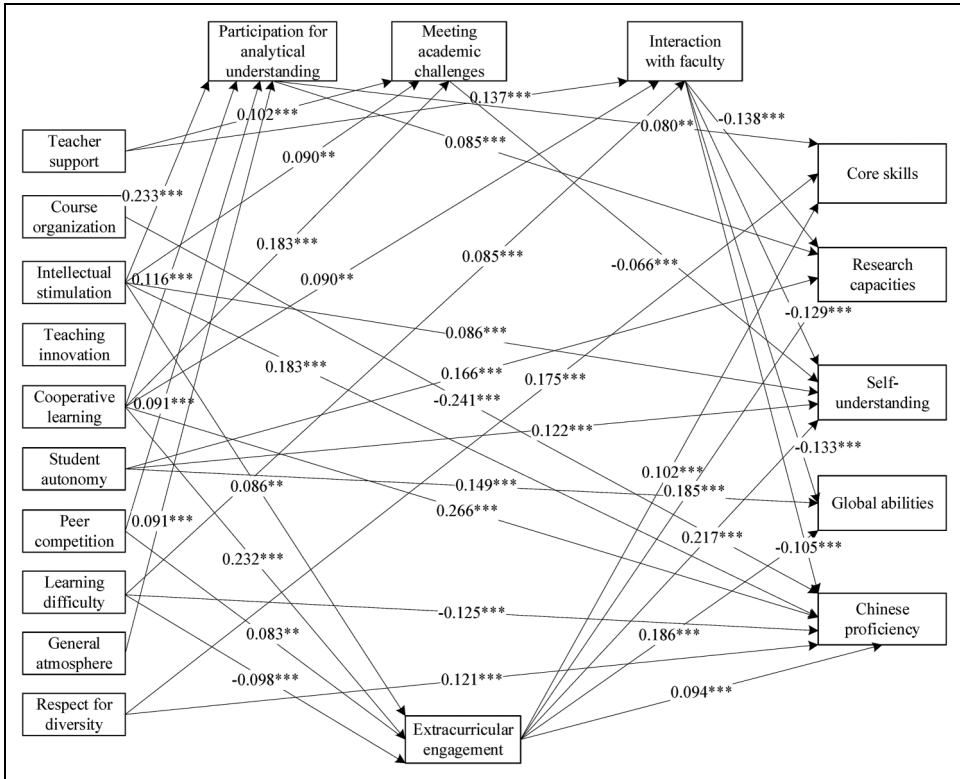
Figure 1. SEM Analysis of the Relationships among Learning Experience Dimensions.
**p < 0.01, ***p < 0.001.

analytical understanding and extracurricular engagement. Learning difficulty had a direct and significant positive impact on student engagement in interaction with faculty and a direct and significant negative impact on extracurricular engagement. Concerning the impact of the campus climate factors, general atmosphere had a direct and significant positive impact on participation for analytical understanding.

Concerning the influences of the classroom learning environment factors on student development, teacher support had an indirect and significant negative effect on the respondents' development of self-understanding, mediated by meeting academic challenges. It also had an indirect and significant negative impact on the respondents' development of research capacities, self-understanding, global abilities, and Chinese proficiency, mediated by interaction with faculty. Course organization had a direct and significant negative impact on the respondents' development of Chinese proficiency. Intellectual stimulation had a direct and significant positive impact on the respondents' development of self-understanding and Chinese proficiency. It also had an indirect and significant positive effect on the respondents' development of research capacities, mediated by

participation for analytical understanding, and an indirect and significant positive effect on all five development factors, mediated by extracurricular engagement. Cooperative learning had a direct and significant positive impact on the respondents' development of Chinese proficiency. Moreover, cooperative learning had an indirect and significant positive effect on the respondents' development of core skills and research capacities, mediated by participation for analytical understanding. It had an indirect and significant negative effect on the respondents' development of self-understanding, mediated by meeting academic challenges. It had an indirect and significant negative effect on the respondents' development of research capacities, self-understanding, global abilities, and Chinese proficiency, mediated by interaction with faculty. It had an indirect and significant positive effect on all five development factors mediated by extracurricular engagement. Peer competition had an indirect and significant positive effect on the respondents' development of core skills and research capacities, mediated by participation for analytical understanding. It also had an indirect and significant positive effect on all five development factors, mediated by extracurricular engagement. Student autonomy had a direct and significant positive impact on three development factors, i.e., research capacities, self-understanding, and global abilities. Learning difficulty had a direct and significant negative impact on the respondents' development of Chinese proficiency. It had an indirect and significant negative effect on the respondents' development of research capacities, self-understanding, global abilities, and Chinese proficiency, mediated by interaction with faculty. It had an indirect and significant positive effect on all five development factors, mediated by extracurricular engagement. Concerning the impact of the campus climate factors, respect for diversity had a direct and significant positive impact on the respondents' development of core skills and Chinese proficiency. General atmosphere had an indirect and significant positive impact on student development of core skills and research capacities, mediated by participation for analytical understanding.

Concerning student engagement, all four engagement factors were affected by the classroom learning environment factors and the campus climate factors. Engagement factors also affected student development. To be specific, participation for analytical understanding had a direct and significant positive impact on the respondents' development of core skills and research capacities. The extracurricular engagement had a direct and significant positive impact on all development factors. Meeting academic challenges had a direct and significant negative impact on the respondents' development of self-understanding. Interaction with faculty had a direct and significant negative impact on the respondents' development of research capacities, self-understanding, global abilities, and Chinese proficiency.

Influences of Learning Environment and Student Engagement on Student Development
Table 7 presents the direct, indirect, and total effects of the perceived learning environment on student development. Concerning the respondents' development of core skills, general atmosphere

Table 7. Influences of Learning Environment and Student Engagement on Student Development: Direct, Indirect, and Total Effects.

Factor	Core Skills			Research Capacities			Self-understanding			Global Abilities			Chinese Proficiency		
	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
Teacher support	—	—	—	—	-0.019[c]	-0.019[c]	—	-0.024[c]	-0.024[c]	—	-0.018[c]	-0.018[c]	—	-0.014[c]	-0.014[c]
Course organization	—	—	—	—	—	—	—	—	—	—	—	—	-0.241[c]	—	-0.241[c]
Intellectual stimulation	—	0.028[c]	0.028[c]	—	0.036[c]	0.036[c]	0.086[c]	—	0.099[c]	—	0.016[b]	0.016[b]	0.183[c]	0.008[b]	0.191[c]
Teaching innovation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cooperative learning	—	0.033[c]	0.033[c]	—	0.040[c]	0.040[c]	—	0.027[b]	0.027[b]	—	0.031[c]	0.031[c]	0.266[c]	—	0.278[b]
Peer competition	—	0.016[c]	0.016[c]	—	0.023[c]	0.023[c]	—	0.018[b]	0.018[b]	—	0.015[b]	0.015[b]	—	0.008[b]	0.008[b]
Student autonomy	—	—	—	0.166[c]	—	0.166[c]	0.122[c]	—	0.122[c]	0.14[c]	—	0.149[c]	—	—	—
Learning difficulty	—	-0.010[b]	-0.010[b]	—	-0.030[c]	-0.030[c]	—	-0.032[c]	-0.032[c]	—	-0.030[c]	-0.030[c]	-0.125[c]	-0.018[c]	-0.143[c]
Respect for diversity	—	0.007[b]	0.007[b]	—	0.008[c]	0.008[c]	—	—	—	—	—	—	—	—	—
General atmosphere	0.175[c]	—	0.175[c]	—	—	—	—	—	—	—	—	—	0.121[c]	—	0.121[c]
Participation for analytical understanding	0.080[b]	—	0.080[b]	0.085[c]	—	0.085[c]	—	—	—	—	—	—	—	—	—
Meeting academic challenges	—	—	—	—	—	—	-0.066[c]	—	-0.066[c]	—	—	—	—	—	—
Interaction with faculty	—	—	—	-0.138[c]	—	-0.138[c]	-0.129[b]	—	-0.129[b]	-0.13[b]	—	-0.133[b]	-0.105[c]	—	-0.105[c]
Extracurricular engagement	0.102[b]	—	0.102[b]	0.185[c]	—	0.185[c]	0.217[c]	—	0.217[c]	0.186[c]	—	0.186[c]	0.094[b]	—	0.094[b]

[a] $p < 0.05$, [b] $p < 0.01$, [c] $p < 0.001$.

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had the greatest total effect, followed by cooperative learning, intellectual stimulation, peer competition, learning difficulty, and respect for diversity. It is worth noting that learning difficulty had a negative total effect on the respondents' core skill development. Concerning the respondents' development of research capacities, student autonomy had the greatest total effect, followed by cooperative learning, intellectual stimulation, learning difficulty, peer competition, teacher support, and respect for diversity. Learning difficulty and teacher support had a negative total effect on the respondents' research capacity development. Concerning the respondents' development of self-understanding, student autonomy had the greatest total effect, followed by intellectual stimulation, learning difficulty, cooperative learning, teacher support, and peer competition. Learning difficulty and teacher support had a negative total effect on the respondents' development of self-understanding. Concerning the respondents' development of global abilities, student autonomy had the greatest total effect, followed by cooperative learning, learning difficulty, teacher support, intellectual stimulation, and peer competition. Concerning the respondents' development of Chinese proficiency, cooperative learning had the greatest total effect, followed by course organization, intellectual stimulation, learning difficulty, general atmosphere, teacher support, and peer competition.

Table 7 also presents the direct and total effects of student engagement factors on the development factors. Specifically, concerning the respondents' development of core skills, extracurricular engagement had the greatest total effect, followed by participation for analytical understanding. Concerning the respondents' development of research capacities, extracurricular engagement had the greatest total effect, followed by participation for analytical understanding and interaction with faculty. Interaction with faculty had a negative total effect on the respondents' development of research capacity. Concerning the respondents' development of self-understanding, extracurricular engagement had the greatest total effect, followed by interaction with faculty and meeting academic challenges. Interaction with faculty and meeting academic challenges had a negative total effect on the respondents' development of self-understanding. Concerning the respondents' development of global abilities, extracurricular engagement had the greatest total effect, followed by interaction with faculty. Concerning the respondents' development of Chinese proficiency, interaction with faculty had the greatest total effect, followed by extracurricular engagement.

Discussion

This research highlighted important characteristics of the participants' learning experiences in China. Above all, the participants reported personal growth and development in a range of skills and abilities, including Chinese language proficiency, analytical and critical thinking abilities, self-awareness, research skills, and global competence. Compared to their self-perceived levels of skills

and abilities at the beginning of undergraduate studies, the participants perceived that the skills and abilities had been improved at the time when the survey was conducted. The results showed that international undergraduate education provided by Chinese HEIs had positive influences on the participants' academic and personal development.

Despite the positive impacts, the research signaled critical areas deserving research attention to improve the quality of international education in China. Specifically, the analysis revealed moderate to low levels of the participants' satisfaction with the key aspects of the undergraduate education that they received at the host Chinese HEIs. With regard to their perceived campus climate, the participants only tended to somewhat agree that diverse ethnicity or culture was respected on campus and that their campus was friendly or caring. With regard to the perceived classroom learning environment, the respondents only tended to somewhat agree that course content was difficult, teaching was innovative, or teaching encouraged autonomous learning. Compared to the mean values of their perceived campus climate or learning environment, the mean values of the engagement in learning activities were lower. Particularly, the least positive responses were to the engagement in interaction with Chinese faculty. The participants tended to somewhat disagree that they properly engaged in communication with their teachers.

Moreover, the research revealed the significant relationships among the three dimensions of the participants' learning experiences at Chinese HEIs. It is worth noting that out of the eight classroom environment factors, one factor (i.e., learning difficulty) had significant negative influences on the participants' self-perceived academic engagement and three factors (i.e., teacher support, course organization, and learning difficulty) had significant negative influences on the participants' self-perceived development. Additionally, out of the four engagement factors, two factors (i.e., meeting academic challenges and interaction with faculty) had significant negative influences on student development. The participants' low levels of engagement in meeting academic challenges and interacting with faculty may explain the lack of positive influences of these two engagement factors on their academic and personal development.

Conclusions

The significant increase in the number of international students in China has aroused increasing concerns over the quality of international education it provides. Worldwide, the increasing diversity of the student population in higher education has questioned the validity of the traditional quality evaluation approaches, which largely ignored students' voices. Responding to the increasing stresses on the student-centeredness in higher education quality assessment, large-scale student learning experience surveys have been conducted annually in the US, Australia, and China with a major purpose to evaluate higher education quality at the national level. Drawn on the data generated from a nationwide survey involving 1,428 undergraduate international students, the current

research discussed the student participants' learning experiences. As one of the first attempts assessing the quality of China's international education from the student perspective, the article bears significance to policymakers, practitioners, and researchers striving for further quality improvement of international education in China and beyond.

Specifically, the current research confirmed the reliability and construct validity of the Questionnaire. The CFA results supported the uses of the questionnaire to measure international students' learning experiences. Empirically, the research showed the participants' self-reported development in academic skills and abilities, indicating the positive impacts of Chinese undergraduate education. Nevertheless, international students' perceptions of international education quality can be significantly affected by their perceived learning environment. In this research, the participants reported the moderate-to-low levels of the effectiveness of learning environment in their host universities. The analysis also pointed to the problematic aspects of the learning environment having significant but negative influences on the participants' learning engagement and development.

To better support international students' learning, it is suggested that Chinese institutions optimize course organization and faculty well understand international students' intercultural learning difficulties and provide adequate academic support accordingly. Given the significance of student engagement, it is suggested that course and class teaching be designed to stimulate international students' intellectual efforts and encourage their engagement in learning for analytical understanding, meeting academic challenges, interaction with faculty, and autonomous learning outside the classrooms. The enhanced levels of engagement can, in turn, support international students' academic and personal development.

Finally, our results highlighted the importance of the student-centeredness in designing and conducting evaluation research on China's international education quality. Compared to the traditional evaluation practices centering on institutional and faculty practices, the quality evaluation focusing on international students' perceptions enables the deepened understanding of common yet distinct experiences of international students, pinpointing the critical areas for improvement, and hence, supporting the sustainable development of international student education in China.

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Declaration of conflicting interests

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