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Cultivating global minds: the development of undergraduates' international capabilities at an elite university in China's Yangtze River Delta

Lingqin Zeng[1], Xiujuan Sun[2], Hantian Wu[1✉] & Chen Ding[1]

This study employs a mixed-methods approach to investigate the development of undergraduate students' international capabilities at a prestigious Chinese university in the Yangtze River Delta. Drawing on survey data from 335 undergraduate students and interviews with both students and faculty members, the study examines the impact of multiple institutional and individual factors on students' self-perceived development in international capability (IC) in relation to their participation in the formal curriculum implemented as part of the university's internationalization at home (IaH) initiatives. Quantitative findings highlight that institutional resources and quality assurance, as well as students' engagement attitudes and individual internationalisation experience, significantly influence IC growth. Additionally, structural equation modelling elucidates the mediating role of personal internationalisation experiences on engagement attitudes. Qualitative findings uncover key challenges, including disparities in English language proficiency, limited cultural diversity in classrooms, and insufficient institutional support. These findings underscore the need for systematic and well-coordinated IaH at the institutional level to cultivate a globally and nationally competent workforce, particularly in global South contexts.

[1] Zhejiang University, Hangzhou, China. [2] Xiamen University, Xiamen, China. ✉email: wuhantian7@gmail.com

Introduction

In a rapidly evolving global landscape, internationalisation of higher education (HE) is increasingly seen as essential for preparing students to address complex social and structural challenges. This trend is evident in the concerted efforts of higher education institutions (HEIs) worldwide to integrate international and intercultural elements into both the formal and informal curricula for domestic and international students (Nghia et al., 2019). Moreover, there is a growing consensus that the benefits of HE internationalisation should extend beyond the minority of internationally mobile individuals to encompass the entire university community (Crowther et al., 2000; Heffernan et al., 2019). Consequently, the past few years have seen a significant rise in the popularity of 'internationalisation at home' (IaH), an approach aimed at producing globally competent graduates without requiring cross-border mobility, which is often accessible only to economically privileged students (Beelen and Jones, 2015; De Wit, 2019).

Internationalisation programmes delivered domestically are believed to offer non-mobile students opportunities to engage in 'experiential learning in an intercultural context' (Jones, 2013, p. 101). This shift has led to the emergence of new concepts and strategies seeking to foster global engagement beyond physical mobility, including distance internationalisation (Mittelmeier et al., 2021) and virtual internationalisation (Bruhn-Zass, 2022). Advancements in information technology and geopolitical tensions have also accelerated the development of IaH (Wang and Dai, 2023). Meanwhile, the COVID-19 pandemic has further catalysed a paradigm shift in HE internationalisation, promoting more inclusive and sustainable educational practices (Helm & Guth, 2023; Wolf & Schmohl, 2023). This emphasis has also been reinforced in the global South, where IaH has gained increasing prominence. Hence, in the post-pandemic era, key drivers of internationalisation, including IaH, expanding participation, decolonizing curricula, and sustainability (Tsiligkiris & Ilieva, 2022), present an opportunity to integrate global learning into the mainstream curriculum, repositioning internationalisation from the periphery to a central institutional priority (Green, 2021).

Aligning with this perspective, some have examined students' learning experiences within domestic universities that create international and multicultural situations. Research generally casts a positive light on various IaH initiatives in enhancing intercultural awareness and developing students' ability to interact with people from different cultures (Sercu, 2023; Simões & Sangiamchit, 2023; Soria & Troisi, 2014; Watkins & Smith, 2018). However, literature on IaH largely originates from the Global North, especially Anglo-Saxon countries, where HE stakeholders have reflexively recognised the limitations of study abroad as the dominant path to fostering global student development (Soria & Troisi, 2014). The HEIs in the global North, particularly those in native English-speaking countries, naturally benefit from linguistic and multicultural environments. In addition, the dominant theoretical and analytical frameworks for internationalisation remain largely grounded in Western contexts, rather than reflecting a genuinely globally engaged perspective.

In emerging economies, historically positioned on the periphery but striving to elevate their status within the global knowledge system, HE internationalisation approaches have undergone a pronounced shift over the past decade. China exemplifies this dynamic shift (Wu, 2019; Zheng & Kapoor, 2021). Initially relying heavily on exporting students to developed nations and importing international curricula and pedagogies, China has faced criticism for demonstrating 'a strong conformity to Western norms and practices' (Zha et al., 2019, p. 671). This criticism has prompted universities to devise 'locally innovative pathways' (Zha et al. 2019, p.684) for internationalisation. Recent government directives encourage Chinese universities to adjust their policies and strategies to equip graduates with a global perspective, a good understanding of international rules, and the ability to engage with international issues (Ministry of Education [MoE], 2019).

Among universities actively pursuing IaH, the internationalisation of the curriculum (IoC) is particularly favoured. By introducing foreign textbooks, offering English-medium instruction courses, and placing domestic and international students in the same classes, IoC initiatives provide international experiences for domestic students unable to afford cross-border programmes (Wang & Dai, 2023; Zha et al., 2019). Despite the growing literature on the development of internationalisation curricula and programmes in Global South countries, few studies have focused on the impact of these international courses/programmes on students' competencies measured along international and global dimensions—referred to in this research as 'international capability' (IC).

To this end, this paper reports a mixed-methods study involving 335 undergraduate students and six faculty members at a prestigious university in China's Yangtze River Delta, which is regarded as the frontier of China's HE internationalisation. In response to the restrictions imposed by the global pandemic, this university developed a series of internationalisation courses to complement its cross-border programmes. In the wake of the pandemic, with the requirement for students to obtain internationalisation credits, these courses have been retained as a crucial component of undergraduate internationalisation education. This study thus explores the institutional and individual factors affecting students' IC and the mechanisms by which these effects occur. Acknowledging the complexity of implementing at-home internationalised programmes (Nghia et al., 2019), the study also includes in-depth interviews with students and faculties to gain insights into the obstacles they have faced. In highlighting the gap between such initiatives and students' IC development, it contributes to both theory and practice of HE internationalisation in the Global South. The research questions addressed are:

1. How do institutional-level initiatives and individual attitudes and experiences affect students' IC as perceived by themselves?
2. From the viewpoints of students and faculties, what challenges undermine the process and effectiveness of IaH in their situated contexts?

Literature review

In tandem with the escalating scholarly and policy rhetoric on the importance of cultivating globally oriented and competent university graduates, research attention has increasingly focused on how HE internationalisation can shape the development of intercultural, international, and global competencies among both domestic and international students. In the context of IaH, universities are investing significant efforts and resources—though not always in a comprehensive and coherent manner (Harrison, 2015; Leask & Bridge, 2013)—to create internationalised learning environments for the majority of immobile students. Although internationalisation abroad and IaH are distinct concepts, they often interact in a complementary manner, working together to enhance internationalisation (Wolf and Schmohl, 2023).

The IoC can be seen as a fundamental component of IaH (Beelen & Jones, 2015), which incorporates international, intercultural, and global dimensions into the content of the

curriculum as well as the learning outcomes, assessment tasks, teaching methods, and support services of academic programmes (Leask, 2015). Research from both English-speaking and non-English-speaking contexts suggests that university curricula designed to promote exposure to global societal issues and cultural differences significantly contribute to forming an international and intercultural mindset, enhancing competence for engaging with a multicultural and globalised world (Hofmeyr, 2023; Sercu, 2023; Soria & Troisi, 2014). Furthermore, the extent to which individuals develop intercultural or global competence is influenced by the specific structure and arrangement of these curricula. For instance, Dong and Musah (2023) revealed a positive association between Chinese students' global competence —defined by their international competitiveness and cross-cultural leadership skills—and the number of foreign-origin teachers, credits for English-medium required and elective courses, and bilingual major courses offered within their institutions. Similarly, Hofmeyr (2023) noted that participating in formal cocurricular and extracurricular IaH programmes with an intercultural focus significantly increased Japanese first-year undergraduates' openness, curiosity, and appreciation of cultural diversity.

Research consistently advocates for increasing the variety of IaH programmes, adopting culturally responsive pedagogies, and leveraging digital technology to optimally internationalise university curricula and educate interculturally competent learners. Some studies demonstrate that on-campus global learning activities may contribute more to developing intercultural, global, and international competences than study abroad programmes (Peifer et al., 2023; Soria & Troisi, 2014). Others emphasise the use of technological advancements to create virtual global classrooms, enabling students to interact and collaborate with peers from diverse cultures (Custer & Tuominen, 2017; Naicker et al., 2022; Simões & Sangiamchit, 2023). Eftekhari et al. (2025) highlight discipline-specific variations in the implementation of the IoC at home (IoCaH) in universities, particularly in the Global North. Their study identifies distinct rationales and strategies for IoCaH, which are shaped by disciplinary differences. However, these studies uniformly emphasise that careful coordination at the institutional level is essential to ensure satisfactory learning outcomes. Alexiadou et al. (2021) revealed that, despite acknowledged benefits and promises, meaningful implementation of IaH is unlikely without a well-defined supportive institutional structure and framework, which can considerably undermine students' inclination and opportunities for internationalisation. Interestingly, Hofmeyr (2023) found that informal intercultural contact without faculty's mediation reduced students' intercultural core values (e.g., openness and cross-cultural empathy), reinforcing the need for structured support within HEIs.

On the other hand, structural factors alone are insufficient to sustain students' active engagement with IaH initiatives. Studies indicate that factors such as international mobility and migration history, previous study abroad experience, personal agreeableness and openness, and linguistic proficiency significantly shape students' inclination to embrace multiculturalism and engage in intercultural and global learning opportunities (Alexiadou et al. 2021; Hofmeyr, 2023; Sercu, 2023; Soria and Troisi, 2014). This highlights the complexity of integrating international dimensions into formal and informal curricula in global South HEIs (as illustrated by this research). Meanwhile, scholars have debated the growing significance of IaH in the post-pandemic era (Tsiligkiris & Ilieva, 2022; De Wit et al., 2023; Green, 2021). While the value of IaH is widely acknowledged, recent critiques emphasize the need for its deeper integration into HE (Green, 2021) and its potential as a sustainable internationalisation mode (Guo, 2023). This study addresses this gap by incorporating the framework of

international capabilities to examine the mechanisms driving IaH's effectiveness. These discussions resonate with the central tension outlined in the introduction regarding the varying implementation of IaH across different HE contexts, particularly in the post-pandemic landscape.

Despite the sufficiency of existing research, the geographical applicability of findings remains constrained by their emphases. For countries such as China, which has a relatively short history of implementing IaH, comprehensive research is needed to explore the relationship between institutional internationalisation programmes, students' attitudes and participation, and their related knowledge and skills. Chinese universities are increasingly focusing on developing their own unique approaches to internationalisation that align with both global standards and local needs (Zha et al. 2019). Discovering the gap between institutional narratives and the needs of faculty and students is the most important step.

This study addresses this empirical gap by exploring how Chinese undergraduates perceive, experience, and assess IaH initiatives at a leading research university located in China's Yangtze River Delta. Specifically, it aims to uncover the extent to which different dimensions of integrating internationalisation into undergraduate education—such as curricula and programmes, resources and quality assurance, and implementation procedures—impact students' development of international capability. Additionally, given the evidence that participation in formal or faculty-led/coordinated intercultural activities significantly enhances intercultural competence (Custer and Tuominen, 2017; Hofmeyr, 2023; Sercu, 2023), this study also examines whether and how students' IaH experiences mediate the influence of institutional and individual factors on their perceived competence development.

Theoretical lenses

Global competence has been explicitly referred to as a graduate attribute necessary for successfully collaborating and competing in a globalising context (Liu et al., 2020). This outcome-based approach to conceptualising the ability to function internationally was first developed by Hunter et al. (2006) and more recently adopted by the OECD for the Programme for International Student Assessment (PISA). Hunter et al.'s (2006) conceptualisation is more widely accepted due to its methodological rigour. Global competence is defined as 'having an open mind while actively seeking to understand cultural norms and expectations of others, leveraging this gained knowledge to interact, communicate and work effectively outside one's environment' (Hunter, 2004, pp. 130–131).

The core components necessary for becoming globally ready citizens include knowledge, skills, and attitudes (Hunter et al. 2006). The 'knowledge' dimension emphasises understanding globalisation and world history, and the interconnectedness of society, politics, history, economics, the environment, and related topics. The 'skills' dimension highlights the capacity for academic and professional collaboration with individuals from diverse cultures and the ability to navigate cultural variances. The 'attitudes' dimension focuses on recognizing the non-universality of one's perspectives, the willingness to step outside of own cultural box and experience life as 'the other', openness to new experiences, and a non-judgmental stance toward cultural differences. Moreover, while Hunter et al. (2006) argue that study abroad is not requisite for becoming globally employable and competent, they call on HE stakeholders to create curriculum and activities that prepare a larger pool of graduates for a globalised workplace without requiring international travel. This global competence model fits well with this study's aim to investigate the impact of

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an internationally focused curriculum on students' competence development in the IaH context.

In contrast, OECD's operationalization of global competence, based on a survey with a disproportionate representation from Anglo-American contexts, manifests a bias that equates an elite Western liberal tradition with global universals (Auld & Morris, 2019). Its socioeconomic exclusivity through the implicit valorisation of "globally mobile middle-class" attributes systematically marginalizes alternative knowledge systems. The absence of robust theoretical scaffolding reduces complex intercultural dynamics to measurable competencies, inadvertently perpetuating competitive nationalism over substantive international cooperation (Grotlüschen, 2018). Moreover, as Maxwell and Yemeni (2018) observe, the OECD's model of 'global citizen' reflects self-replication rather than embodying authentic cultural diversity. In addition to 'global competence' (Hunter et al. 2006), a similar concept has been described using various overlapping terms, including intercultural competence (Deardorff, 2006), international competence (Lambert, 1993), and transnational competence (Koehn & Rosenau, 2002). Intercultural competence overemphasises individual skills but oversimplifies the complexity of intercultural interactions (Deardorff, 2006). International competence addresses multiple dimensions of human competence but overlooks their interrelationships (Lambert, 1993). Transnational competence, primarily framed within global governance discourse, has not gained much traction in educational studies (Koehn and Rosenau, 2002). Therefore, we ultimately decided against terms other than 'global competence' (Hunter et al. 2006) due to their limited applicability to this study. However, based on Hunter et al.'s (2006) theoretical construction of the term 'global competence', this study employs the notion of IC (i.e., international capability) to highlight the distinctiveness of HE internationalisation at Chinese universities.

As previously stated, the idea of 'competence' might subtly carry an ethnocentric bias, where certain behaviours, values, or communication styles are seen as more desirable than others, often reflecting Western norms. This undermines the true spirit of intercultural understanding as it can position non-Western cultures as inferior or less competent in intercultural exchange. According to the Chinese Ministry of Education (MoE) (2019), the primary objective of 'talent development' [ren cai pei yang] in Chinese universities is to enhance students' international competitiveness and the country's international influence, as well as to prepare graduates to work in international organizations, participate in global governance, and represent China's voice. An appreciation of cultural diversity and a deep sense of national identity [jia guo qing huai] were emphasised in an earlier document (MoE, 2018). More recently, the MoE (2024) encourages universities to cultivate interdisciplinary talents with both national identity and global vision, thus contributing to China's global positioning and being better understood by the international community. This purpose statement reflects an effort to reconcile global aspirations with China's historical, social, cultural, and political specificities. Accordingly, we use 'capability' instead of 'competence' to capture more properly the dual purpose underpinning the state-driven IaH initiatives implemented on Chinese university campuses. This correspondingly guided our decision to make slight adjustments in interpreting the core meanings of Hunter's (2004) 'knowledge' and 'attitudes' dimensions. In terms of the 'knowledge' dimension, we described it as including students' understanding of globalization and world history, as well as the importance of expressing China's voice on the global stage. For the 'attitudes' dimension, the focus is placed on promoting openness and acceptance of cultural differences, while maintaining pride in one's own national culture and identity in international interactions. By examining Chinese

students' IC fostered through on-campus internationalisation programmes, this study offers a Global South perspective on the outcomes of IaH initiatives, which have been disproportionately investigated in developed economies.

Method

This study employs a mixed-methods approach to address the outlined research questions and objectives, focusing on a leading university in China's Yangtze River Delta region (hereafter referred to as University A) where undergraduates can select from an 'internationalisation module' [guo ji hua mo kuai] comprising English-medium courses and international exchange programmes to fulfil their 'internationalisation credit' [guo ji hua xue fen] requirements. Following an explanatory sequential research design (Creswell, 2014), the study began with a quantitative phase, followed by qualitative interviews to deepen the understanding of the quantitative results.

Data collection. A survey was conducted among undergraduates to explore the impacts of the internationalisation modules on enhancing students' IC. The survey design drew upon Hunter's et al. (2006) three-dimensional global competence model and the specific characteristics of the internationalisation modules at University A. In addition to collecting demographic information, the survey focused on students' participation in and evaluation of University A's internationalisation initiatives and their self-perceived changes in attitudes, skills, and knowledge related to IC. The survey items included questions on students' familiarity with the internationalisation module, perceptions of internationalisation resources and quality assurance, implementation procedures of the module, engagement attitude with the module, learning experiences within the internationalisation courses and programmes, and self-assessment of IC (see Table 1 for an overview of variables). All items were presented on a 5-point Likert scale (from "Strongly Disagree" to "Strongly Agree").

The questionnaires were administered on-site, and consent was obtained through the cover page of the questionnaire, which participants reviewed before completing the survey. A total of 335 valid responses were collected, with the largest cohort comprising third-year undergraduates (166; 49.5%), followed by fourth-year students (83; 24.7%), second-year students (61; 18.2%), and first-year students (25; 7.4%). Of these, 246 participants (73.4%) reported participating in University A's internationalisation module through internationalisation courses or (virtual) international exchange programmes. Given the study's focus on the effects of institution-level formal internationalisation initiatives and individual internationalisation experiences on students' IC, data from these 246 students were used for the final analysis. The overall reliability of the questionnaire was tested using Cronbach's alpha coefficient, which yielded an internal reliability coefficient of 0.898, indicating high reliability (Cronbach, 1951). The Kaiser-Meyer-Olkin (KMO) value was 0.924, with Bartlett's test showing a p-value of <0.001, further affirming the survey's structural validity.

To deepen the insights gleaned from the quantitative survey, the study included interviews with six students who completed the survey and earned internationalisation credits, as well as six instructors of the internationalisation courses delivered at University A. Prior to the start of the interview, all participants were informed of the purpose of the research and agreed to be audio recorded throughout the interview. Concentrating on answering the questions of 'how' and 'why' (Azungah, 2018), the interview questions were semi-structured and particularly explored participants' views of the strengths and limitations of the internationalisation module at University A in terms of

Table 1 Questionnaire design and variable setting.

Dimensions	Survey scales/Factors	Subscales	Number of survey items
Personal information		Grade, [disciplinary] college, major, participation in internationalisation, and form of internationalisation experience (exchange programmes or internationalisation courses)	8
Institutional IC development initiative	Internationalisation cultivation plan	Level of understanding of institutional internationalisation cultivation plan, and access to information	4
	Internationalisation resources and quality assurance	Resourcefulness of courses/programmes, and quality of courses/programmes	10
	Implementation procedure	Difficulties of course/programme selection	2
Individual attitudes and experience	Engagement attitude	Willingness to participate, degree of acceptance of cultivation model, and degree of recognition of cultivation pathway	6
	Internationalisation experience	Course/programme content, instructional design, assessment methods, and classroom atmosphere	8
Students' self-assessment of IC		Knowledge, skill, and attitude	7

Table 2 Background information of interview participants.

P	Gender	Title	Department	P	Gender	Grade	Major
T1	F	Associate Professor	Education	S1	F	Fourth	Education
T2	M	Professor	Mathematical Science	S2	M	First	Electronic Science & Technology
T3	M	Associate Professor	Management	S3	F	Second	Accounting
T4	M	Professor	Polymer Science & Engineering	S4	M	Forth	Polymer Materials & Engineering
T5	M	Professor	Earth Science	S5	F	Third	Atmospheric Science
T6	M	Research Fellow	Education	S6	F	Third	Education

P participants, F female, M male, T faculty member, S student.

planning and positioning, resources and support systems, and the challenges encountered in engaging with the internationalisation curriculum. The student participants include two fourth-year undergraduates, two third-year undergraduates, one second-year undergraduate and one first-year undergraduate. The six instructors came from different departments and offered specialised courses within the internationalisation module (see Table 2).

Data analysis. Quantitative data were analysed using an independent sample t-test to comprehend the effectiveness of University A's IaH initiative. We employed a multiple linear regression model to examine the influence of institutional and individual factors on students' self-perceived changes in their international attitudes, skills and knowledge (i.e., students' self-assessment of their IC as the dependent variable). More specifically, the independent variables were composed of institutional level variables including internationalisation cultivation plan, internationalisation resource and quality assurance, and implementation procedure, as well as individual level variables including students' individual engagement attitude and internationalisation experience (see Table 4). The overall explanatory power of this regression model for the dependent variable reaches 52.9%, with an adjusted R^2 of 0.519 and a significance level of $P = 0.000$ (<0.001), indicating overall significance and robust explanatory power.

However, multiple regression analysis has limitations in testing multiple mediating pathways simultaneously. A two-step structural equation modelling (SEM) approach (Anderson & Gerbing, 1988) was employed (Amos 26.0). Based on prior research (e.g., Hofmeyr, 2023; Sercu, 2023), students' internationalisation experience is hypothesised to mediate the relationship between institutional-level factors (internationalisation cultivation plans, internationalisation resources and

quality assurance, and implementation procedure), individual-level outcomes (engagement attitude) and students' IC development. After confirming the measurement model, the structural model was tested to examine hypothesised direct/indirect pathways. Non-significant paths (e.g., direct effect of institutional plans on IC) were trimmed to improve parsimony, guided by modification indices (MI > 10) and theoretical plausibility.

Subsequently, path analysis was performed using AMOS to determine the role of students' learning experiences in mediating the effects of other variables on their IC development (see Table 5 and Fig. 1). The model's goodness-of-fit indices include X^2/df=2.212 (criterion: <3 and >1), GFI = 0.979 (criterion: >0.80), AGFI = 0.926 (criterion: >0.80), TLI = 0.963 (criterion: >0.90), NFI = 0.976 (criterion: >0.90), CFI = 0.987 (criterion: >0.90), and RMSEA = 0.070 (criterion: <0.08). These indices indicate a well-fitting model with good reliability and construct validity.

For the qualitative data, all audio-taped interviews were transcribed verbatim and coded in multiple rounds using a hybrid thematic analysis (Proudfoot, 2023). Given the explanatory mixed-methods design, qualitative findings presented will centre upon themes that were deductively identified and refined in relation to quantitative results. Three preliminary findings emerged from the survey data: (1) the 'attitude' dimension receives the lowest score among survey respondents; (2) in terms of influential institutional factor, 'Internationalisation resources and quality assurance' has significant positive impact on students' self-perceived IC development. On the individual level, both engagement attitude and internationalisation experience can significantly predict students' IC development. (3) individual internationalisation experience can significantly mediate the influence of individual engagement attitude on students' self-assessed IC. Accordingly, qualitative analysis seeks to provide explanatory insights into these findings.
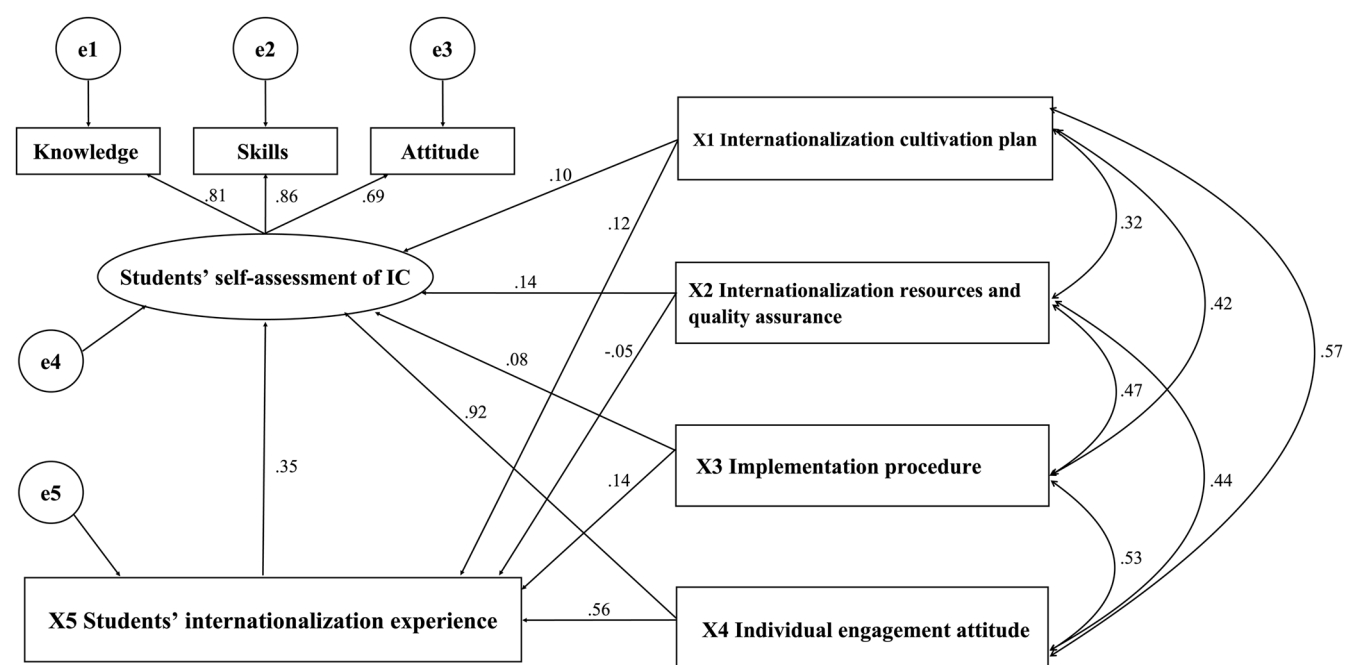
Fig. 1 Model of the mediating effect of students' internationalisation experience on self-assessment of IC.

Table 3 Descriptive statistics of students' self-assessment of IC.				
	Knowledge	**Skill**	**Attitude**	**IC**
Avg.	3.42	3.47	3.26	3.42
Std.	0.79	0.74	0.91	0.69

Findings

The quantitative findings indicate that the university's internationalisation resources and quality assurance, and students' engagement attitudes toward the internationalisation module significantly impact their self-reported growth in IC. The influence of individual engagement attitudes is notably mediated by students' actual experiences within the internationalisation programmes or courses they participated in. Semi-structured interviews with course instructors and students underscore the pivotal role of English language proficiency in shaping students' engagement with the internationalisation module. However, the focus on using English to teach major and general courses has been criticised for overlooking other dimensions of IC, such as intercultural awareness and critical thinking. Additionally, this study identified challenges related to faculty capacity, funding, and technical support for curriculum development.

Findings from quantitative analyses: influencing factors of student's IC. Descriptive analysis of participants' self-reported IC development revealed that, on average, their overall assessment was modest, with a mean score of 3.42 (see Table 3). As mentioned, IC can be deconstructed into three distinct dimensions: knowledge, attitude, and skills. When comparing the three dimensions, students rated themselves higher in the 'skills' (M = 3.47, SD = 0.74) and 'knowledge' (M = 3.42, SD = 0.79) components, while the 'attitude' dimension (M = 3.26, SD = 0.91) received a relatively lower score with significant individual differences. It means 'skill' has the highest score with the least variability, 'attitude' has the lowest score with the highest variability, and 'knowledge' falls in the middle with moderate

variability, indicating that participants got stable performance in 'skill' and significant individual differences in 'attitude'.

The results of the regression analysis (see Table 4) reveal that internationalisation resources and quality assurance ($t = 2.21$, Sig. = 0.028) have a significant positive impact on students' self-assessment of IC ($p < 0.05$), while individual engagement attitude ($t = 4.08$, Sig. < 0.001) and students' internationalisation experience ($t = 5.26$, Sig. < 0.001) have a highly significant positive impact on students' self-assessment of IC ($p < 0.001$), with a standardised regression coefficient (Beta) of 0.33. The regression coefficients are between the dependent variable and these independent variables are 0.20, 0.27, and 0.37, respectively, which imply that an increase of one unit in such factors leads to an average increase of corresponding units in the predicted value of students' self-assessment of IC. These results indicate that improving the quality of resources, encouraging active student engagement, and providing rich internationalisation experiences are effective interventions. The internationalisation cultivation module and implementation procedure were shown to have positive but statistically insignificant effects.

Path analysis using structural equation modelling further examines the relationships between institutional internationalisation cultivation plans, students' engagement attitudes, internationalisation experiences, and self-assessment of IC (see Fig. 1). The results suggest that while all institutional factors positively predict students' self-assessed IC, the influence of curriculum/programme resources and quality assurance (0.136) is greater than that of the internationalisation cultivation plan (0.105) and implementation procedure (0.076). At the individual level, participants' internationalisation experience (0.348) has a more substantial effect than their engagement attitude (0.315). To clarify the functioning paths of these factors, the study conducts a mediation effect analysis (Wen & Ye, 2014) to examine their total effect on students' self-assessed IC. As shown in Table 5, the total effect of individual engagement attitude (0.512) reaches a significant level. Subsequently, the coefficients a and b of the standardised regression equations between individual engagement attitude and experience with self-reported IC development were sequentially examined. Both coefficients achieved

Table 4 Influence of factors on students' self-assessment of IC.

Model	Unstandardised B	Coefficients Std. Error	Standardised Coefficients Beta	t	Sig.
(Constant)	0.03	0.26		0.11	0.913
Internationalisation cultivation plan	0.1	0.06	0.09	1.65	0.1
Internationalisation resource and quality assurance	0.2	0.09	0.12	2.21*	0.028
Implementation procedure	0.08	0.06	0.08	1.39	0.166
Individual engagement attitude	0.27	0.07	0.29	4.08***	0
Students' internationalisation experience	0.37	0.07	0.33	5.26***	0

*$P < 0.05$; ***$P < 0.001$.

Table 5 Path analysis of the influence of factors on self-assessment of IC.

Pathway	Direct effect	Indirect effect [confidence intervals]	Total effect
Internationalisation cultivation plan→ Students' internationalization experience→IC	0.105	0.043 [0.003,0.103]	0.148
Internationalisation resource and quality assurance→Students' internationalisation experience→IC	0.136	−0.016 [−0.072,0.021]	0.120
Implementation procedures→Students' internationalisation experience→IC	0.076	0.048 [0.007,0.116]	0.125
Students' engagement attitude→Students' internationalisation experience→IC	0.315**	0.197 [0.104,0.316]	0.512**

**$P < 0.01$.

significance (the confidence interval for a*b was between 0.104 and 0.316). Since a*b and c share the same sign, it can be inferred that individual internationalisation experience partially mediates the influence of individual engagement attitude on students' self-assessed IC, accounting for 38.5% of the total effect. The results suggest that the effect of individual engagement attitude operates through individual internationalisation experience, in conjunction with other potential mediating channels. This pathway, however, was not found among the institution-level factors.

Insights from qualitative results: Experiences of students and faculties. Building on the quantitative findings, this qualitative phase aimed to explore the underlying mechanisms and contextual factors shaping these outcomes. The analysis revealed two overarching insights: (1) the dual role of individual attitude and experience as both an enabler and a barrier to IC development and (2) a disconnect between institutional support and student/faculty experiences. Below, we present these findings through a narrative structure that integrates participant voices and contextualises the results within the broader literature on internationalisation in HE. As the descriptive statistics revealed, students self-assessed their abilities more highly in the 'skills' and 'knowledge' dimensions, while reporting lower scores in the 'attitude' dimension. This finding is noteworthy, as a positive and open attitude not only facilitates the acquisition of knowledge and development of skills but also enhances individuals' ability to solve problems and cooperate effectively in cross-cultural interactions. Consistent with the survey results, the interview data revealed that the current internationalisation courses have transitioned from their initial role as a substitute for cross-border activities during the pandemic to become a key component of the university's internationalisation education module at undergraduate level. However, many students still perceived these courses as temporary alternatives rather than fully developed internationalisation experiences, reflecting a notable sense of dissatisfaction. One student remarked,

> I think the current significance of internationalisation courses is still only reflected in the improvement of language skills. Because the internationalisation courses

seem to be a backup project that was started after online exchange programmes were suspended during internationalisation courses are offered for a relatively short period. (S3)

Strikingly, the notion that internationalisation equates merely to teaching English-medium courses was refuted by faculty interviewees. They argued that they often considered students' multifaceted development by consciously incorporating international elements into their classes. However, some acknowledged that disparities in English language proficiency added complexity to their teaching efforts, as they needed to accommodate varying levels of English ability, often at the expense of expanding students' exposure to significant content. One instructor noted,

> If one student is falling behind, it will influence the entire classroom atmosphere. Ideally, students should have a similar level of English proficiency, but now I feel that I have to spend a lot of time adjusting to each student's level of English. Language also affects the individual internationalisation experience, which in turn affects the improvement of international capability. (T3)

The low level of cultural diversity in classrooms, a challenge not uncommon in universities in the Global South, further limited students' development in the 'attitude' dimension. This lack of diversity prevented students from fully experiencing the richness and complexity of different cultures. An instructor commented,

> In my internationalisation courses, there are also some international students. However, there are indeed fewer international students this year, and it seems that the number of new undergraduate international students has been very low in recent years. Most of these students are [ethnic Chinese] from (South-)East Asian countries like Singapore and Malaysia. (T2)

A student echoed this sentiment, saying,
I feel that having classmates from other countries in a course can enhance cultural diversity, which I believe is the original intention of internationalisation in this course. If the

Internationalisation courses only use English to teach general or professional courses, it undermines the original intention of internationalisation. (S6)

Quantitative results also showed that while international experience significantly mediates the influence of individual engagement attitude on students' IC, it does not have the same mediating effect for curriculum/programme resources and quality assurance, and implementation procedures. Student participants who earned credits through internationalisation courses and programmes attributed this to the limited range of internationalisation options at University A and the uneven distribution of courses and programmes across different disciplinary colleges. Insufficient supply of internationalization curricula, in both quantity and variety, placed excessive pressure on course instructors, who had to manage large-scale classes. One instructor explained,

> The internationalisation courses that are offered on campus really put more pressure on our teachers. The issue is that not all teachers are qualified for internationalisation curriculum design and delivery. For instance, a shortage of faculty members prevents many colleges from even being able to offer Internationalisation courses. (T1)

Faculty participants also highlighted constraints related to technical support and financial assistance. Despite the presence of foreign instructors and overseas returnees, not all could effortlessly administer an internationalisation course without institutional support. Moreover, while international exchange programmes included both online and cross-border options, the latter had a smaller radius for undergraduates due to a strict selection process. A student majoring in accounting noted,

> I think it is still challenging to take part in cross-border programmes, and the evaluation procedure consists of a language proficiency interview and takes the GPA into account. On the other hand, the programmes have a limited number of spots, so the strict assessment requirements will weed out a lot of applicants. (S3)

Nearly all participants emphasised the vital importance of English proficiency to their international engagement. Students who spoke English more fluently were more eager to participate in Internationalisation courses and programmes, thereby gaining greater international experiences, acquiring more relevant knowledge, and becoming more globally oriented. Conversely, students with low English proficiency often felt inferior and lacked confidence in cross-cultural communication, reducing their opportunities to interact with others and enhance their IC. A student majoring in Education confirmed,

> I wouldn't want to express my opinion in a class if I can't speak or listen to English well. As a result, I wouldn't be able to advance my language abilities. But if it's bilingual, that might encourage me to join in the discussion and communication, which will be enjoyable. (S6)

Instead, participants suggested that a bilingual environment would be a good way to facilitate students' learning outcomes by having them speak both Chinese and English. This could help future IaH practices in China, particularly for internationalisation courses and programmes that need a lot of discussion, and AI could help students who struggle with language overcome their fear of class discussions and anxiety. This might respond to the previously posed question about what an internationalisation curriculum looks like in China's HE system. As Beelen and Jones (2015) claimed, merely offering a programme in English is insufficient for it to be considered an internationalised curriculum (p. 64). Therefore, educators will have more time to focus on the intercultural dimension. While the findings provide significant empirical insights into the influencing factors of students' IC and the experiences of students and faculties within the context of an elite university in China's Yangtze River Delta. Building on these results, the following discussion critically engages with existing theories and literature on IC development, aiming to (1) contextualise the findings within broader theoretical frameworks, (2) identify potential divergences or extensions to current understandings, and (3) explore the implications for fostering IC in similar HE contexts.

Discussion and conclusion

In an increasingly globalised world, HEIs face growing pressure to educate globally competent students (Liu et al., 2020). Utilising a mixed-methods approach, this study examined key institutional and individual factors influencing undergraduates' IC development within a relatively under-explored context. Previous research suggests that the skill component of intercultural competence (Deardorff, 2006) and global competence (Hunter et al., 2006) is the most challenging to develop due to the complex and dynamic contexts involved (Hofmeyr, 2023; Liu et al. 2020). Interestingly, the quantitative analyses in this study revealed a different pattern, with participants demonstrating higher ratings in skill development and lower ratings in attitudes. Interviews with students highlighted the skill-driven and monocultural characteristics of the internationalisation courses they engaged in, which likely hindered their opportunities to 'became more open and respectful of people from other cultures' (Hofmeyr, 2023, p.379). This finding is partly attributable to the limited presence of international students in classrooms, a common issue in universities located in the Global South or non-English-speaking countries. Additionally, students perceive these courses as temporary substitutes rather than integral parts of the university's development strategy.

This result indicates the complexity of the task facing the case university in developing students' intercultural awareness in a less internationalised setting, as 'attitude' refers to the recognition of the non-universality, the willingness to step out of one's own cultural box and experience life as 'the other', openness to new experiences, and a non-judgmental attitude towards cultural differences (Hunter, 2004). This underscores the importance of thoughtfully integrating internationalisation courses into the curriculum to create a more robust and effective internationalisation framework. The study also demonstrated that both the attitudinal and experiential aspects of student engagement in the internationalisation module significantly impact their self-assessed IC. Moreover, a mediation effect was identified, whereby personal experience influenced students' engagement attitudes. This is likely because individuals who participated in the university's internationalisation courses or programmes often had prior study abroad or travel experience or higher English proficiency (Hofmeyr, 2023; Sercu, 2023; Hunter et al., 2006), leading them to adopt a more open and active attitude towards formal internationalisation curricula. Therefore, a key area for further exploration is how to cultivate the 'attitudinal dimension' of IC among students in the global South, particularly in settings characterised by constrained internationalisation resources and high proportions of local students.

Consistent with research conducted in the developed world, this study found that students benefit more effectively from formal IaH initiatives coordinated between universities and faculty members (Hofmeyr, 2023; Sercu, 2023; Soria and Troisi, 2014). This reinforces the viability and legitimacy of IaH as an efficacious approach to cross-border mobility, traditionally seen as essential for cultivating global and intercultural competence (Peifer et al., 2023; Soria & Troisi, 2014). However, the extent and

quality of these initiatives can vary significantly depending on specific contexts and circumstances. While the resources and quality of the internationalisation initiatives significantly predicted students' self-reported IC development, the mediating effect of individual internationalisation experiences on these influences was found to be insignificant. Interview data revealed key issues such as the narrow range of internationalisation courses and programmes, constraints in course delivery and faculty support, and the misconception that internationalisation amounts merely to English-medium instruction. These factors restricted students' access to diverse internationalisation experiences and undermined the potential of faculties, especially those with international expertise, to design and deliver high-quality international education. All of this results in a significant mismatch between instructors' practices and students' authentic needs for the development of critical thinking and intercultural competence. The qualitative analysis further highlighted institutional challenges imposed on faculties, who often operate within constrained resource environments, resulting in a sense of helplessness and reduced capacity to create engaging and productive educational experiences. This concern was widely echoed by student participants.

In general, China appears to have benefited from the pandemic response through more creative local practices and the implementation of new IaH initiatives, such as the increase in required internationalisation curricula and programmes as reported in this study. However, despite attracting substantial international talent, the dilemma for leading Chinese universities may be due to the lack of a systematic and well-planned international agenda rather than a shortage of competent faculty members. In the long term, this could exacerbate inequalities in knowledge and talent production between the Global North and the Global South. Therefore, universities in China and other emerging economies should prioritise the systematic integration and support required to translate internationalisation strategies into enhanced educational quality. By providing sufficient funding for IaH programmes and establishing a structured internationalisation framework, institutions can better prepare their students for the demands of a dynamic and challenging globalising world.

Finally, it is critical to note that whilst the sample size under study was adequate for exploratory analysis, the focus on one institutional case remains inadequate to provide generalizable insights into the diverse ways in which IaH is conceptualized and planed out in different institutional contexts across the global South. Additionally, in selecting variables that have immediate relevance to the research purpose, we may have overlooked other potentially influential factors such as family socioeconomic status, academic discipline, and English proficiency measured by standardized tests. Subgroup differences along these lines warrant further investigation in future research. In light of the divergent views on classroom dynamics among student and faculty participants, incorporating field observation might be a more productive means to examining variations in students' self-assessed IC across the dimensions of skills, knowledge, and attitudes. Lastly, given the growing use of generative AI in HE, instructors delivering internationalized curricula – particularly in resource-constrained or under-supported contexts – may leverage these tools to foster more inclusive and multicultural learning environments as well as to mitigate challenges posed by disparities in students' English proficiency. This can in turn open up new avenues for future research on innovative IaH strategies and pathways for cultivating competent individuals prepared for global crisis and challenges.

Data availability

No datasets were generated or analysed during the current study.

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Author contributions

HW, LZ, and CD. designed the entire study. LZ and XS wrote the main manuscript text. LZ and CD collected data and prepared tables and figures. LZ, HW, and XS made several versions of the modifications. All authors participated in the data analysis and reviewed the manuscript.

Competing interests

The authors declare no competing interests.

Ethical approval

This study only involved low-risk surveys and interviews. All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. According to the Medical Ethics Committee of the Department of Psychological and Behavioural Sciences at Zhejiang University, an automatic exemption was applied at the start of the research (May 5th, 2023). The committee oversees university-wide ethical review for research related to psychology and education. This is allowed under Article 32 of the Measures for the Ethical Review of Life Sciences and Medical Research Involving Human Beings, which were jointly issued by China's National Health Commission, the Ministry of Education, the Ministry of Science and Technology, and the State Administration of Traditional Chinese Medicine (https://www.gov.cn/zhengce/zhengceku/2023-02/28/content_5743658.htm).

Informed consent

For this study, informed consent was obtained in a manner appropriate to the research method. Interviews: Oral consent was obtained from each participant prior to the interviews, which were conducted between 8 and 20 May 2023. The consent process was recorded as part of the audio recording of the conversation. These recordings were stored securely to ensure the confidentiality of the participants. Surveys: Written consent was obtained via the cover page of the questionnaire, which participants were asked to review before completing the survey. The survey was administered on-site between 8 and 12 May 2023 via an electronic questionnaire platform. The digital questionnaire results and participants' feedback on consent were stored securely to ensure confidentiality. Both the oral and written consent forms clearly outlined participants' rights, including the right to withdraw from the study at any time without penalty. They also detailed the guarantee of anonymity, the reasons for conducting the research, the scope and intended use of the data collected, and the assurance that the data would only be used for academic publication purposes. All measures adhered to ethical standards to protect the privacy and integrity of participants.

Additional information

Correspondence and requests for materials should be addressed to Hantian Wu.

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