

A Scoping Review of the Internationalization of Curricula in Hard Disciplines from Chinese Perspectives

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Abstract: The scoping review examines the internationalization of curricula in hard disciplines from Chinese perspectives. The review highlights the understanding and implementation of Internationalization of Curriculum (IoC) in Chinese higher education. The understanding of IoC among the selected articles includes internationalization of teaching methods, internationalization of content, and teaching in English. The implementation of IoC focuses on assessment, teacher resources and students, teaching materials, and teaching methods. Diversified assessment and evaluation systems are emphasized, along with the importance of qualified teachers with international experiences and English proficiency. The use of textbooks in English and the integration of online resources are discussed as essential components of an international curriculum. Pedagogical changes, such as student-centred approaches and the incorporation of cross-cultural dimensions, are also explored. Overall, the review provides insights into the current state and challenges of implementing IoC in Chinese higher education.

Keywords: Higher education, Internationalization of Curriculum, Scoping review

1. Introduction

The Internationalization of Higher Education (IoHE) is undergoing a profound transformation in its characteristics and paradigms after years of development. IoHE has been facing the challenge of how to promote its development in depth in practice. In the process of promoting IoHE, countries are gradually realizing that the beneficiaries of internationalization should be all students, and the content of internationalization has changed from focusing on cross-border mobility to focusing on the internationalization of curriculum reforms. The emergence of Internationalization of Curriculum (IoC) is a response to the transition period of IoHE.

In China, different higher education institutions developed their IoC with various purposes of attracting more international students, improving its internationalization on campus, meeting the requirements of “Double First-Class University” or to align with strategies of “Belt and Road Initiative”. In addition, practices and understandings of IoC vary greatly from university to university, with some requiring internationalised curricula to be a very systematic curriculum, understood and implemented primarily in terms of the internationalisation and cutting-edge of the content, while some HEIs focus only on the internationalisation of the teaching faculty, i.e. requiring that the teaching faculty be exclusively or overwhelmingly expatriate specialists^[1]. Nevertheless, IoC practices at faculty level in “hard disciplines” within higher education are more challenging^[2-5]. On top of that, there is often a gap or discrepancy between the institutional plans on IoC at macro level and implementation of these plans by academics on the ground^[5].

Furthermore, IoC practices at faculty level in “hard disciplines” within higher education are more challenging^[2-5]. The actual implementation of IoC happens in the process of teaching and learning engagement^[5]. The author therefore intends to explore the recent studies on IoC in hard disciplines to mapping the development and focuses, and to summarizing the understanding, implementation and challenges of IoC practices at faculty level within higher education institutions.

2. Methodology

The author has followed the meta-analysis protocol for systematic reviews developed by Moher,

Shamseer, Clarke, Gherzi, Liberati, Petticrew, Shekelle, Stewart and Group ^[6]. Due to limited time and resources, the reviewed publications are chosen between 2013 and 2022. Data bases of CNKI and Wangfang are used given these two are the mostly used databases in Chinese and also the most available database resources to the author.

2.1. Identifying relevant studies

The research was carried out through the following 4 steps of identification, screening, eligibility, and included. The inclusion and exclusion criteria of selecting articles are listed in the Table 1 below.

(1) Search term identification: the author identified searching keywords within each focused area of the research.

(2) Searching via databases: using identified searching keywords to create Boolean string in searching across databases.

(3) Screening: according to the inclusion and exclusion criteria to firstly screen the searched results in titles, abstracts and keywords. The further data screening will be carried out in full text of searched articles.

(4) Analysis: the key findings of all the articles met inclusion criteria were analysed against the key theme emerging within each focused research aspects.

2.2. Study selection

Given the focus of this study is on the Chinese perspective and practice of IoC, the author decided to limit the scope of the research to articles in Chinese. The author is aware the limitation of such selection and yet wish the future work will search in other languages.

In the initial searching, the total number of articles is 1232 via database searching with keywords of IoC aspect in title, abstract or keywords within peer-reviewed journal articles. In the following screening phase, 679 articles remained against exclusion criteria. After reading each publication's titles and abstracts, 215 articles have been recorded into Excel. After reviewing the full text of the articles to fine-tune our data according to our inclusion criteria, 71 articles finally included in the study for analysis.

To keep efficiency and track of the screening, Noteexpress and Excel have been used in the study. All references and abstracts have been loaded into Noteexpress.

Table 1: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Full articles related to IoC	Articles irrelevant to the scope of the review
Chinese written papers	Duplicated papers
Papers published from 2013-2022	Only focus on English teaching and learning
Higher education	Not focus on hard disciplines

3. Findings and Discussion

The included 71 articles have been coded against relevant information, including general themes discussed in each article, key elements emerged in the practice of IoC used across related articles, internationalization implementation aspects, challenges occurred during IoC practices, key themes discussed in theoretical discussion. The coding process is a circled process rather than a linear one. The final coding was refined through reading included 71 articles process. The major findings have been summarized and emergent themes and sub-themes have been identified through the process of coding. In the end, cross-cutting themes have been revealed, summarized, and discussed in this section.

In terms of different focus of studies, the reviewed articles could be categorized in the following four categories, i.e., The understanding of IoC, the implementation of IoC, Challenges of IoC implementation and Online teaching and learning. In addition, the following 9 themes have been emerged from the final selected articles, which are: English, The features of IoC, Online teaching and learning, Management and finance, Internationalization at home, COVID affects, Internationalization of teaching, Internationalization of faculty, and Students, which can be summarized in 3 categories in the table 2 below.

Table 2: The summary of emerged themes

Themes	Sub-themes
The understanding of IoC	
The implementation of IoC	Assessment Teacher resources and students The content of IoC Teaching Methods
The challenges of IoC implementation	Challenges caused by international students and Chinese students learning together Difficulties of IoC implementation based on disciplines Lecture in English

3.1. The Understanding of IoC

The understanding of IoC among selected articles falls into 3 aspects. In the first understanding, IoC equals to internationalization of teaching methods and internationalization of content. In other words, IoC is shifting from lecturing dominated method to the discussion prevailing method as well as shifting to renowned teaching materials from universities abroad. The changes of pedagogy lead to helping students developing critical skills which are often lacking in the cohort of Chinese students in their academic writings. In the second understanding, this study finds out that the understanding of IoC has much related to the academic specialization background. The teachers in English discipline have incorporated cross-culture dimensions into the teaching while teachers in STEM disciplines believe that the knowledge of advanced technology in the world is expanding internationalization vision of students. The second understanding has reflected the previous findings of Feng ^[5] that the low engagement of IoC of faculty in STEM disciplines. The third understanding has related to teaching in English. There is a specific term referring to teaching in English across the reviewed articles, which is Full English Teaching (FET). The definition of FET proposed by Zhan ^[7] is as following: the FET refers to the use of English for the whole course in the foundation and compulsory courses, including textbooks in English, courseware in English, lecturing in English and teacher-student in class communication in English, assignments in English, and examinations in English.

Integrating the above three understandings of IoC, Xu, Liu and Chen ^[8] provide the definition of IoC, i.e. The aim of the programme is to develop students' international outlook, perspectives, and skills through the development of teaching materials and the teaching of foreign languages in a variety of ways, guided by an international perspective and the integration of international and intercultural knowledge and concepts into the curriculum. They further pointed out that such program should be cut-edge, open and shared.

3.2. The Implementation of IoC

There are 4 aspects of IoC implementation from reviewed articles, which are assessment, teacher resources and students, teaching materials and teaching methods.

In terms of assesment, All the reviewed articles express their agreement in “Diversified assessment and evaluation system” focusing on comprehensive assessment of students' learning process and learning outcomes ^[9-15]. For example, Northwestern Polytechnical University has set up a "diversified assessment and evaluation system" to carry out a multidimensional and comprehensive assessment of students' theoretical foundation, language expression and communication and cooperation ability, as well as their learning attitudes, etc^[16].

In the aspect of “teacher resources and students”, teacher resources ususally have 3 sources based on the reviewed studies. One is consisting Chinese teachers who have international learning or teaching experiences, or have qualified English ability or have training experiences at universities abroad with strong teaching ability and experiences ^[10-15] while the other includes expats as well as Chinese teachers ^[17]. The third one is employed expats working in China ^[18, 19]. According to this review most of cases the first source is priority. Among 71 articles, only three articles revealed that the internationalization of curriculum programme is led by expats. Liu, Wan and Sun ^[20] has proposed “international teaching team” theory based on their practice of second sources. In addition, teachers' English proficiency, knowledge and professionalism, and the compatibility of all-English textbooks with Chinese textbooks are also important factors affecting the quality of teaching.

Regarding the teaching materials, there are 61% studies discussed about textbook construction among the reviewed articles. Those studies have addressed significance of using textbooks in English and claimed that the use of authoritative teaching materials in English is an important tool in the development of an international curriculum [9, 10, 14, 15, 21-24]. Nevertheless, among these studies discussed about textbook construction, 56% integrating original textbooks in English with their own teaching materials given it is more suitable for the requirements of syllabus^[10, 14]. In addition, these studies also conclude that online resources including information of websites and MOOCs as a part of teaching materials enrich the teaching content to keep pace with international education.

Pedagogy changes is another focus of the reviewed articles. The follow ideas are mostly discussed in the studies, i.e. student centre, the teaching philosophy/concept, the teaching aim, the goals of teaching, class management, lecturing language, the composition of students, the number of students in class, teaching in the class, discussion in the class and time of lesson. The following figure demonstrates the distribution of emerging ideas.

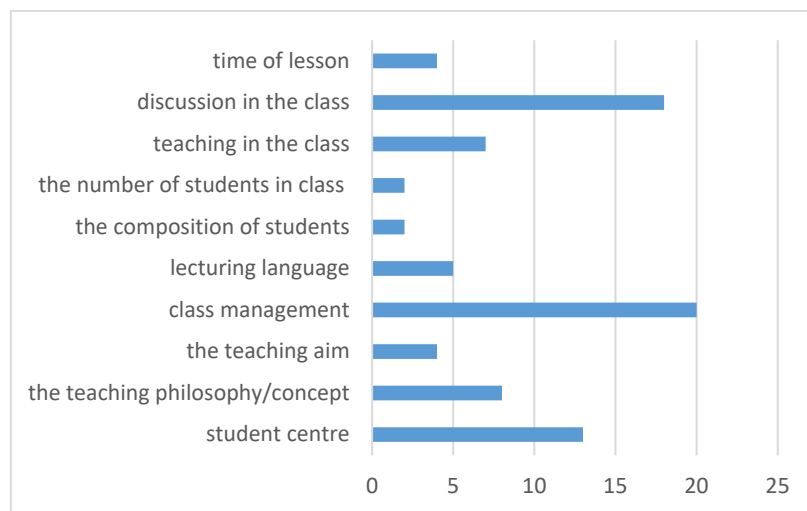


Figure 1: The distribution of emerging ideas on pedagogy.

Among these 10 emerging ideas, the top 3 ideas are class management, discussion in the class, and student centre (Figure 1). The faculty discovered that the international students will relate the current learning content with their experiences or cognition in their own country or existing knowledge, which will lead to the unsynchronised learning process with Chinese students [9, 18]. On top of that, reviewed articles indicated that the faculty realised that the lecture-based teaching methods are quite different from the discussion-based teaching methods used in Western studies. The faculty therefore have made a lot of attempts as well as reflections to improve teaching methods. Jiang, Ni, Li, Zhao, and Zhang (2022) has claimed the differences and features of these two teaching methods, which are Lecture method is "a teaching method in which the teacher teaches the content of the course to the students as the main form", "is one of the most effective teaching methods", "has the ability to impart knowledge quickly, and is more effective in systematically and rationally sorting out and summarising the knowledge", and the independent teaching method "takes the students as the main body, and combines with the research-based learning to effectively stimulate the students' potential for independent research and learning (Jiang et al., 2022).

To overcome this unsynchronised learning and teaching results, more in class discussion, seminars, group discussion, oral presentation and course reprojects, etc, have been added to the class teaching. In addition, the faculty of reviewed articles has created various teaching methods and theories, such as "Research oriented teaching theory" in Zhao's study [25]. In terms of teaching method, the faculty used case study and inspirational teaching which is often used in the universities abroad. [21].

Although in the reviewed articles most faculty attempt to use multiple teaching methods, the case study from Nanjing Hangtian University indicated that there was a shift towards the traditional model of teaching and learning while the teaching and learning process progressed [26]. Wang [26] explained the reasons from the perspectives of home students, international students and the faculty based on the survey across students and faculty. The preference of home students is traditional teaching methods given their weakness in English while lacking in comprehension of learning has become obstacles to new teaching methods for international students. The most internationalisation courses at postgraduate level are

theoretical and cutting-edge, therefore there is demanding for teachers and they will shift back to traditional teaching methods ultimately.

3.3. The Challenges and Difficulties

There are 3 aspects of IoC implementation from reviewed articles, which are challenges caused by international students and Chinese students learning together, differences of IoC implementation based on disciplines and lecture in English.

Regarding challenges caused by international students and Chinese students learning together, the main problems are the barriers to interaction in the teaching process and the limitations of language and specialisation; secondly, the problem of integrating multimedia teaching and traditional teaching; and most importantly, the Chinese students who attend classes at the same time as the international students focus on the language issue while the international students are more concerned about the specialisation itself. Du, Xu, Guo and Li ^[16] pointed out that given the large differences between course learners in terms of background, prior knowledge, motivation and learning methods, exotic students are unable to maintain a normal learning pace due to their weak foundation, while native students often have language barriers in internationalised teaching and learning, and the teaching content fails to meet the learning needs.

Different disciplines have different connotations and extensions, and thinking based on a narrow disciplinary orientation can have a negative impact on the construction and implementation of internationalisation strategies. First of all, in terms of the normative thinking of teachers within their disciplines, they tend to think within their own narrow disciplinary contexts in the curriculum, and are less likely to encourage students to explore and experiment with multiculturalism across different specialised programmes - even though the latter is an important way of developing students' internationalisation qualities. The latter, however, is an important means of internationalisation^[27]. Zhang^[27] shared the idea of Clifford who pointed out that for subjects such as maths and natural sciences, knowledge of the principles, concepts and cognitive patterns of the subjects are similar from country to country or region to region, and so teachers of these subjects generally have different approaches to teaching students from different cultural backgrounds. As a result, teachers of these subjects generally do not have sufficient knowledge of the different teaching strategies for students from different cultural backgrounds. However, some humanities and social sciences disciplines, where the content of study varies according to country, region, ethnic group or culture, place greater emphasis on cross-cultural internationalisation strategies.

The development of an all-English curriculum for postgraduate students is not only about the introduction of original English textbooks and an all-English teaching environment, but more importantly, about the development of a faculty capable of teaching in all-English and the implementation of reforms in advanced education and teaching methods^[28, 29]. Although teachers implementing the IOC have realised that internationalisation of the curriculum is not the same as teaching English, in practice, the "by-products" of an all-English curriculum are far greater than the expected "output of the main product"^[30]. The important goal of internationalisation of the teaching of professional courses is to enable students to make full use of the advanced educational resources abroad, to receive the current international first-class professional knowledge and education, and to come into contact with the international frontiers and disciplinary innovations of the specialties, whereas the improvement of English proficiency and the understanding of the knowledge of Western cultures are only a kind of by-product in the internationalisation of the teaching of the professional courses^[30].

4. Conclusion

Based on the scoping review conducted on the existing studies, this research has presented the understanding, implementation practices and challenges of the IoC in higher education institutions in China in recent 10 years. The critical review provided the practical methods of implementation IoC at faculty level. Findings from the literature have identified challenges caused by international students, the nature of different disciplines and English. The critical analysis of the available literature extended the evaluation of the understanding of IoC amid faculty. The third understanding has related to teaching in English.

There are for three main themes developed from this review, and literature was clustered based on these themes, which are (1) The understanding of IoC, (2) The implementation of IoC and (3) Challenges

of IoC implementation. The first theme mainly highlighted the understanding of IoC. The understanding of IoC among selected articles falls into 3 aspects. In the first understanding, IoC equals to internationalization of teaching methods and internationalization of content. In the second understanding, this study finds out that the understanding of IoC has much related to the academic specialization background.

In the subsequent theme, the highlight has been drawn to the implementation of IoC. The development of IoC at HEIs in China has 3 phases, in the first phase is bilingual teaching and learning, the second is full English teaching and final phase is IoC. At present, the focus of the researches on the IoC in China has shifted from theoretical studies to the specific models and implementation strategies. The implementation focuses on IoC content, teaching methods, assessment model and teacher resources.

The next theme concluded on challenges of IoC implementation which highlighted 3 aspects of challenges caused by international students and Chinese students learning together, differences of IoC implementation based on disciplines and the English language challenge. Analyzing learners' learning needs. Teachers make adjustments to the teaching content according to their individual fields of study and expertise, in order to meet the diversity of learning needs and maximize the utilization of teaching resources and human resources, while taking into account the differences between Chinese and foreign students.

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