



Internationalization of the Petroleum Engineering Curriculum ——The Practice of a Case Study University in China

Jinyu Feng

Information Department, Library, China University of Petroleum-Beijing, China
jinyufeng@cup.edu.cn

Abstract: The literature on the internationalization of curricula is rich, yet research on how a curriculum within scientific and engineering disciplines is internationalized at the faculty level is limited. This study intended to describe the process of internationalizing curricula, identify approaches undertaken by the faculty, and explore challenges confronted by the faculty. A case study and semi-structured interviews were conducted. The findings of this study will provide higher education internationalization management and professionals practical guidance into the internationalization of curricula activities.

Keywords: *Internationalization of curriculum, higher education, petroleum engineering*

1 INTRODUCTION

There was more emphasis on what internationalization is than how it worked inside the classroom in a particular discipline. On top of that, there is often a gap or discrepancy between the institutional plans on the Internationalization of Curriculum (IoC) at the macro level and the implementation of these plans by academics. At the faculty level, Jones (2018) asserted that hard disciplines (scientific and engineering) present a different challenge to more standard approaches given hard disciplines based on norms, theories, or concepts shared worldwide.

This study was conducted in Petroleum Engineering College at China University of Petroleum-Beijing (CUPB), a key higher education institution with a worldwide reputation for its petroleum engineering discipline. Given that internationalization is one of the essential strategies of CUPB, there are various policies and activities to encourage and accelerate internationalization on campus. Petroleum Engineering College is the first trial college conducting internationalizing curricula since 2017. This research mainly focuses on exploring academic daily practices and challenges of IoC in the context of Chinese higher education.

2 LITERATURE REVIEW

2.1 Defining Internationalization of Curriculum

Scholars recognize that curriculum internationalization is a multidimensional concept that can be defined and approached in several ways.

Regarding realizing the potential of internationalization of higher education, the importance of IoC has always been stressed (Leask 2013, Cheng, Adekola et al. 2018; Wang 2018, Wit & Jones 2022). Focusing on the nature of IoC to enhance teaching and learning after all, Leask develops her understanding of IoC and defines it as:

"Internationalization of the curriculum is the incorporation of international, intercultural and/or global dimensions into the content of the curriculum as well as the learning outcomes, assessment tasks, teaching approaches and support services of a program of study" (Leask 2015, p.9).

There is the internationalization of the formal curriculum and the internationalization of the informal curriculum. This study focuses on the formal internationalized curriculum with a planned syllabus and learning outcomes.

2.2 The Approaches and Process of Internationalization of Curriculum

Throughout the literature, scholars provided various approaches to internationalizing curriculum, including a top-down approach, such as institutional strategies, international partnerships, governmental internationalization policies, and a bottom-up approach, such as pedagogies in the classroom and integrating internationalization during the teaching process.

Given that the focus of this study is at the disciplinary level, bottom-up approaches will be illustrated in this section. Different strategies of teaching have been raised in the practice of IoC. Edwards, Crosling, Petrovic-Lazarovic, and O'Neill (2003) developed a typology of curriculum internationalization, i.e., international awareness (Level 1), international competence (Level 2), and international expertise (Level 3), consisting of teaching strategy, teaching method, and outcome learning in each level. Reimann (2005) proposed two approaches to IoC: "the Integration Model" and "the Separation Model". The Integration Model "introduces a global perspective in the first-year curriculum (p.805)" while the Separation Model is to "create a separate introductory course which provides an overview of the world legal order...to make such a course mandatory (p.806)". Ghemawat (2008) summarized three approaches in business, i.e., insertion of a standalone international course, infusion of global competencies into an existing course, and integration insertion and infusion.

Bond (2003) has advocated the most commonly used approaches to IoC in Canada Higher Education Institutions (CHEI), i.e., (1) the add-on approach, (2) the curricular infusion approach, and (3) the transformation approach. The add-on approach refers to adding "content, concepts, themes, and perspectives...to the curriculum without changing its structure" (Banks, 2004, p.246), which has "...a narrow focus, limited participation, and limited impact" (Bond, 2003, p.7). The infusion approach refers to "infusing the curriculum with international content/activity" (Bond, 2003, p.7), which "focuses on the interdisciplinary nature of the IoC and provides opportunities for students to experience internationalization" (Williams & Victoria, 2008, p.24). Within the transformation approach, "the curriculum structure is changed to enable students to view concepts, issues, events and themes from the perspectives of diverse ethnic and cultural groups" (Banks, 2004, p.156).

In terms of the process of curriculum internationalization, the Figure1below is an overview of the curriculum internationalization process offered by Leask (2013). In this figure, the process of IoC is a closed loop with the circling of "Imagine, revise and plan, act, evaluate and review and reflect" five aspects.

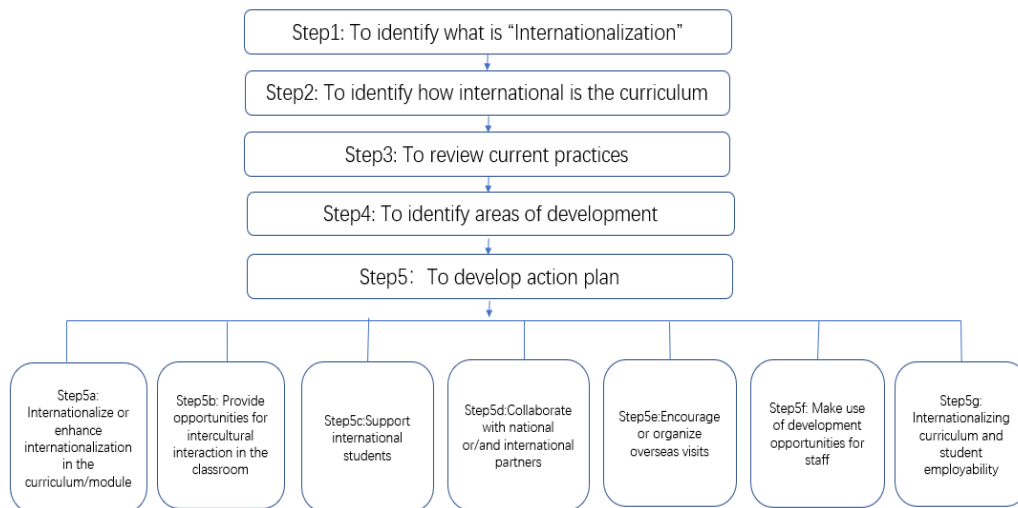


FIGURE1 PROCESS OF INTERNATIONALIZATION OF THE CURRICULUM

SOURCE: LEASK, 2013, P.107

While Leask (2013) has illustrated the flow of the IoC process, Fragouli (2020) offered more detailed steps of the IoC process in the following Figure 2.

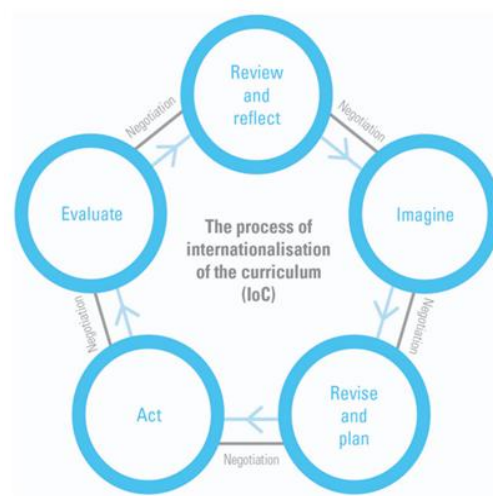


FIGURE2 STEPS OF INTERNATIONALIZING THE CURRICULUM

SOURCE: FRAGOULI, 2020

2.3 Internationalization of Curriculum within Hard Disciplines

Clifford found that 'hard pure' disciplines were more resistant to engaging in the discourse of internationalization (Elsbeth Jones, 2017). The literature reports that compared to lectures in soft or applied disciplines, lectures in hard disciplines tend to be less open, and they tend to be more focused on the content rather than the broader academic development of students (Ryan & Hellmundt, 2003).

In the current internationalized and competitive working environment, future graduates will be expected to communicate and collaborate across cultural and national boundaries daily. Our faculty are responsible for educating

and training our future generation. Therefore "encouraging participation by academic staff at disciplinary level is the key to success if we wish to internationalize learning outcomes, incorporate international content to offer global perspectives on the field of study, and adopt an inclusive approach to teaching and assessment practice" (Elspeth Jones, 2017, p.28).

A significant body of literature was developed about curriculum in a broader context. Nevertheless, there still needs to be more literature about IoC within hard disciplines in higher education.

3 METHODOLOGY

This study employed a case study approach to explore the practices of internationalization of curriculum implementation at the disciplinary level. A case study approach is proper for this study as it allows for an in-depth exploration of a particular case in its natural setting (Yin 2009) while the author is aware of the limitations of the case study (Louis, Keith et al. 2000) without intention to generalize the findings to all higher education institutions in China yet providing insights into the practices of internationalization of curriculum to the future work.

3.1 Data Collection

In this study, participants were selected using a purposive sampling strategy, including academics with consideration of gender, seniority, and working experiences. The researcher in Chinese conducted four semi-structured, face-to-face, in-depth individual interviews. The interviews were tape-recorded with the participants' consent and professionally transcribed.

Among these four teachers who are internationalized curricula developers, all of them have graduated from universities outside China with a Ph.D. degree. Their English ability is fluent and advanced. For coding and confidentiality, these four participants have been coded as T1-T4, referring to four teachers. Table 1 lists participants' coding names, roles, and gender.

TABLE 1 PARTICIPANT PROFILE

No.	CN	Role	Year of teaching/study	Gender
1	T1	Professor	11 years	Female
2	T2	Professor	10years	Male
3	T3	Associate Professor	7 years	Male
4	T4	Associate Professor	10 years	Male

4 FINDINGS AND DISCUSSION

The actual implementations of IoC will be illustrated and discussed in this section, including the process and approaches of internationalizing curriculum and challenges encountered in the IoC process.

4.1 The Process and Approaches of Internationalising Curriculum

The IoC at CUPB has evolved via three phases, as depicted in Figure 3. The first phase lasted five years. There was just an "international graduate student class" consisting of home post-graduate students, professors from CUPB international partner universities, and young teachers from CUPB working as teaching assistants to those professors.

The second phase has evolved from "a class" to ABET¹ (Accreditation Board for Engineering and Technology) accreditation² preparing courses consisting of undergraduate home students and independent working CUPB teachers who were teaching assistants to invited professors. The formal internationalized program "Undergraduate Programme for Petroleum Engineering" (UPPE) was developed in 2017 and consisted of home Chinese and international students and CUPB teachers.

The textbooks and instruction language in the class started from using English textbooks and lecturing in Chinese. Finally, it changed to using English in textbooks and in-class instruction.

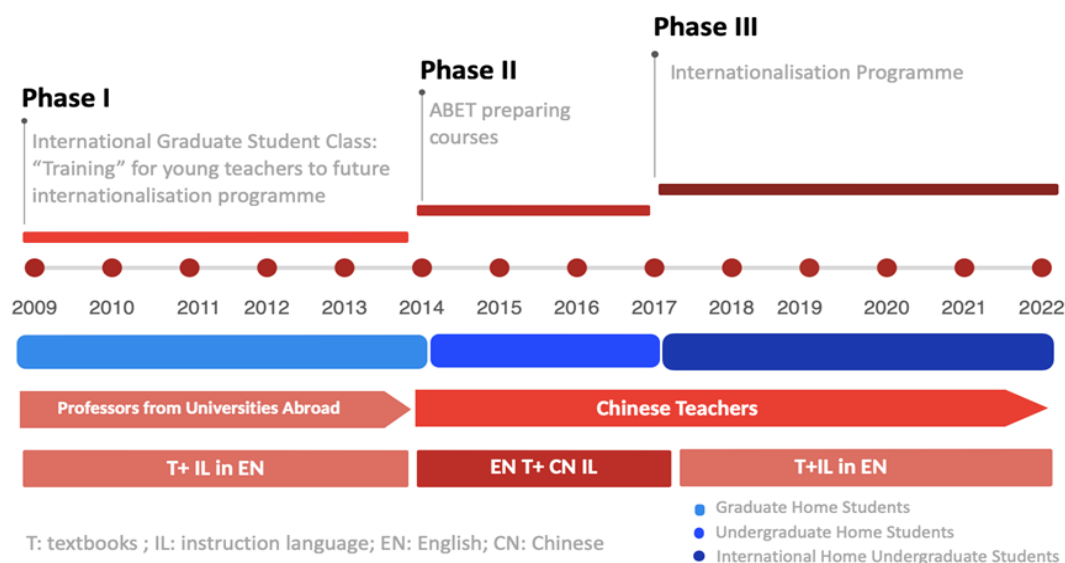


FIGURE 3. THE TIMELINE OF THE DEVELOPMENT OF IOC AT CUPB

While the development of IoC at CUPB has been depicted linearly in the above figure, the interviews with the faculty have echoed the work of Leask (2013) and Fragouli (2020) that the process of IoC has often involved discussion, reflections, and adaptations.

According to our interviewees, benchmarking or a framework is the first and primary step in internationalizing a curriculum. Participated faculty explained that their curriculum developing group used AAC guide, original Chinese version courses, and research on features of similar programs at overseas universities as their benchmarking to setting standards, determining the contents of the Petroleum Engineering curriculum, and embedding international learning into the syllabus.

All faculty participants recognized the significance of guidelines for developing a curriculum to a standard and highlighted the value of benchmarking to set standards for the curriculum from perspectives of internationalizing curriculum and internationalization of the institution as a whole.

"To my mind, the most important thing is benchmarking...we have to not only benchmark that is already established internationally to compare our program or institution in the global academic community in the future but also meet

¹ " ABET is a nonprofit, non-govenmental organization that accredits college and university programs in applied science, computing, engineering, and engineering technolgoy " (Shoop & Robinson, 2012, p. 1)

² " ABET accreditation, which is voluntary and achieved through a peer review process, provides assurance that a college or university program meets the quality standards established by the profession for which the program prepares its students. " (Shoop & Robinson, 2012, p. 1)

domestic standards so our program can survive or exist. I would not say the whole process is difficult, but it indeed took us a lot of time (T1)

"...UPPE has followed the AAC guide and, therefore, will be helpful in meeting with ABET in the future, which is the initial intention of our institution to develop such a programme. It will be a great leap for the internationalization of the curriculum. Besides, because of the success of UPPE, our college is working with our international office to explore opportunities to establish a joint Chinese-Foreign Cooperation School with one or two of our international partner universities, which will be a milestone for our institutional internationalization...." (T2)

After finding a proper benchmarking, the next step will be selecting textbooks, teachers, and students, which also play an essential role in this program. Regarding the selection of English curricula and textbooks in English, faculties explained that these textbooks are indeed excellent and classic ones benefiting will help students to accelerate their English and academic ability.

"The aim of our teaching is to excellent students...so if English textbooks can excellent them, then why not? We always choose to use the best textbooks for our students for sure" (T1)

"You know the abrupt shifting from signature Chinese textbooks written by these senior academics, to be honest, some of them are my teachers during my learning period...I mean, shifting from those classic Chinese textbooks to the new English ones is appalling, and I am worried about reflection from students. Nevertheless, they not only enjoy reading English textbooks and their academic performance is also pretty good...." (T3)

In our study, we have learned that English is one of the core teaching goals of this program, given that English has been a global lingua franca in academic communities and international working places. More discussion over English as a dominant langue in IoC will be discussed in the next section of "Challenges of Internationalisation of Curriculum".

One of the key successes of the internationalizing curriculum is teachers implementing IoC and facilitating students' transformation to become globally competitive. The selection of teachers for this program has met the following criteria (Qin, Yuan et al. 2019): receiving a Ph.D. from an overseas university, teaching experience and teaching assistant experience in an "international class".

In short, the criteria for selecting proper teachers for the program consisted of the educational background, teaching experience, and English-taught courses working experience. Teachers of this program have met criteria 1 and 2. Some of them have met criteria 3. In terms of "English-taught courses working experiences", Qin, Yuan et al. (2019) have commented that "international class" TA is like training for young faculty who have become essential shortlisted candidates for the program.

The selection of students has similar developing steps as the selection of teachers. In the first two phases, a cohort of students has been shortlisted to enroll in the "English-taught" Petroleum Engineering courses based on three exams taken by all students applying to this course. In sum, students have to meet the following four criteria in the first two phases: i.e., good English, problem-solving ability, willingness to take challenges, and collaboration spirit (Qin, Yuan, Wang, & Zhu, 2019). Later on, when IoC matured, a well-established program was open to all international and domestic students in parallel to conventional programs.

The actual implementation of IoC happens in teaching and learning engagement. The faculty may be frustrated with how to incorporate cross-cultural components into their daily teaching, and classes given courses within the hard discipline have rather specific learning objectives and outcomes, which the nature of the discipline has decided. In this case study, our participating faculty have demonstrated diverse ways of integrating internationalization components via their teaching. Based on the prior work of Bond (2003) and interviews of this research, the author has summarized four approaches of IoC in use in our participated faculty's teaching in the following Figure three.

The four approaches to IoC are (1) the curricula Englishization approach, (2) the add-on approach, (3) the curricular infusion approach, and (4) the transformation approach.

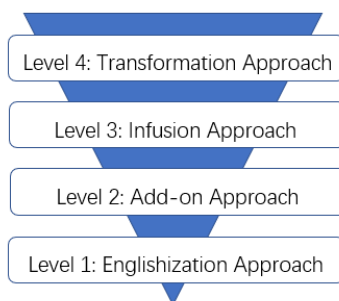


FIGURE 4. APPROACHES TO IOC INVERTED PYRAMID

The above triangle figure demonstrates the entry-level to advanced level of IoC from bottom to top. The Englishization approach is always the first step of IoC in non-English speaking countries. In this study, we have learned that English is one of the core teaching goals of this IoC program. In addition, during our interviews with faculty, the language of English was emphasized by all the participants, and 3 of them thought that internationalized curricula equal Englishization. Although scholars like Elspeth Jones (2022) argued that simply translating the curriculum from one language to another will not create an internationalized curriculum, the author would argue that the Englishization approach is an important, necessary, and effective step in the process of IoC, given English has been a global lingua franca in academic communities and international working places. The degree program in English is in high demand in non-Anglophone countries. All the participating faculty firmly agreed that the Englishization approach plays an essential role in IoC.

"...For some students, the biggest difference for me is the language. In this class, all the textbooks are in English, and the classroom lecturing language is also English. All the knowledge is the same as in other normal classes." (T4)

"Our team has spent loads of time in translating the textbook, reading materials, and all the other related stuff into English. For me, Englishization equals internationalization of curricula." (T2)

"English proficiency is the first merit for our team...we have to use English in the classroom in our textbook. I also always encourage our faculty and students to use English to communicate when they discuss questions in their daily life. Yet, I guess they wouldn't do that. (T1)

The add-on approach and infusion approaches are mostly used during IoC teaching. Our participating faculty provided several examples of using the add-on and infusion approach.

"...I find the discipline of my course (Petroleum Engineering) is deeply connected to the world. Sustainable energy and clean energy, especially in Europe, are prevailing. USA shale oil and gas caused controversy on environmental protection. Arabic countries are shifting their research and technology, so on and so forth ... I have infused that global knowledge and awareness from my joint international projects and sometimes from my international publication into my daily teaching." (T2)

"My theory is that knowledge cannot be taught, you know. You cannot just put cross-cultural components into your students. You have to engage and involve them in internationalized and cross-cultural activities that transform them into global citizens with international horizons and global competitive working capacity. Therefore, I have tried to

organize more group discussions during class and asked that one group have Chinese and non-Chinese students...." (Regarding the top level, i.e., the transformation approach, most of our participating faculty still determine if the students will be transformed after classes. Nevertheless, Elspeth Jones (2022) argued that a truly transformative approach to IoC must be firmly grounded in the local institutional and disciplinary contexts. All the faculty participants also noted that international perspectives integrated into the curriculum must be practical, acceptable, and relevant to the Chinese context.

"I felt having local context or even Chinese culture is very natural in my teaching...the textbook we are using is very much learning from textbooks abroad, so the techniques or technology used in hard disciplines are more westernized. When I teach, I will let students know what we or local Chinese engineers are doing and our methods when they come across similar challenges in Engineering." (T3)

"Although in scientific subjects, technologies are without borders. We are always learning from the West. Nevertheless, because the work of engineering is integrating technologies, local context as well as people. Therefore, what we have put into our curricula has to be practical for our students working in the future" bring in content and real-life examples to use in his classes." (T4)

In sum, our participants expressed their willingness and active engagement in internationalizing curriculum, including experiences linking the discipline to global topics, past learning experiences, and encouraging mixed nationality group discussion. Some participants also gave examples of their IoC approach, like including students in their joint international project, letting students know about their international co-publishing ideas, etc. Furthermore, regarding the transformation approach, participants highlighted the importance of preserving the Chinese context and "local context" or "institutional reality" in modifying international curricula content.

4.2 Challenges of Internationalization of Curriculum

The challenges from our participants in IoC in this study are mainly in the English language, pedagogy and expectations for learning, and pandemic impacts, which will all be explained in this section.

One of this IoC program's primary goals is improving students' English on campus. This study discovers that English is always challenging for teachers and students in this IoC program. In Qin et al. (2019) study, 70% of the program students would like the lecturers to use Chinese when the students find English is clear for them to understand certain subjects. On top of that, less than 20% of the faculty members support using both English and Chinese in the internationalized curricula. Our study reveals similar difficulties in English usage in the classroom. The impacts of lacking language skills on classroom discussions, exams, etc., have also been stated by our participants.

" I can use English all the time in the lecture, yet I found out our students cannot understand. If they cannot understand one certain point, I cannot move on to the next, so I have to switch to Chinese...I have discovered that the English level of one class is not the same. So, when I try to encourage group discussion in English... it always turned out to be silent" (T1)

"English is a limit to some students and will affect their final score...if all the exam questions are in Chinese and students can answer in Chinese, their score will be much better" (T4)

Besides needing more English skills, students are also reluctant to use English in class discussions or communication because of the ratio of international students in a classroom. There are around 30 students in one class and only 3-5 international students. In most cases, lectures are sometimes indecisive about using English in class.

In literature, scholars argue that language ability or in-class language does not directly transmit to the internationalization of curriculum if there is no mutual communication in the classroom. Our study illustrated this

argument that English instead became an obstacle to learning and emerging international community in class to some extent.

Another challenge our teachers confront is their pedagogy and expectations for learning caused by uneven academic learning levels and cultural differences between international and Chinese students. Pedagogical styles and expectations for learning approaches that differ from those to which the international students are accustomed in their own cultures may also be difficult (Williams & Victoria, 2008, p.9). In our interviews, those participants explained their difficulties in such matters. Some teachers even complained about the negative impacts of such a classroom environment on the teaching and learning results.

"Among our 30 students, 3-5 will be international students, and the rest will be Chinese students. The requirements of mathematics, physics and chemistry students are high. We have to use different teaching approaches to assist our students. For Chinese students with a solid foundation, I will let them know or discover the connection between fundamental theories and practices. For international students, I have to help them review those fundamental theories." (T3)

"The learning habits or classroom behaviours of international students differ from my expectations. While learning abroad, we worked hard to finish our studies and tried to get an A in exams. I found that international students on our campus lack such desire and motivation. It might be the differences between Asian education and Western." (T2)

The above direct quotations from our interviewees revealed that mixing international and home students to learn in one class is difficult for both students and teachers. Students' preferred learning styles and strategies are greatly determined by their social and cultural backgrounds. However, faculty members' ethnocentric values and cultural framework also impact how they judge students' learning styles and performance. Jones and Killick (2018) argued that "responding to the diversity of international students and responding to the diversity of home students are, in fact, not two agendas but one" (2007, p.110). Academics have to take this challenge to resolve conflicts in one classroom. Fragouli (2020) suggested that academic staff must employ varied and proper approaches to bring international and home students together, starting with small tasks to build their confidence to level up to class discussion gradually. All the efforts into uniting international and home students are worth it, given that "good practice in classroom management with international students is good practice for all students" (Fragouli, 2020).

There have been enormous changes in higher education regarding teaching and learning caused by COVID-19 in the past year, and it will last an unprecedented period. Since the campus of higher education institutions have to be shut during COVID close down as well as international borders, teaching and learning method have been transformed by online teaching and learning, which have become a prevailing method in the recent post-pandemic time. Nevertheless, faculty in this study have different views on online teaching and learning. Some are excited about emerging learning and teaching technology. On the other hand, some faculty were skeptical about the impact of digitalization.

"Actually, before COVID, digitalization in teaching has become more popular in recent years. In the world, there is MOOC. In China, we have not only the Chinese version of MOOC. We have Rain Classroom, Flipped Classroom, WeChat Classroom, etc. I believe that digitalization of classroom and teaching approach has been widely used during COVID and will become increasingly prevalent after COVID." (T2)

"Even though digitalization can bridge the physical distance between teacher and students... I think students learning online is less efficient than learning in the classroom, which is more engaging. When I am teaching in the classroom, I can easily tell whether I will speed up or slow down on certain knowledge because I can tell from their facial reaction to my teaching. Nevertheless, students will only use their digital id to be online. Sometimes, when I am teaching, it is like I am talking to myself." (T1)

Except for common topics of pedagogy changes and efficient learning brought about by the pandemic, there is almost a severe impact on this case study of IoC, i.e., sharp dropping of international students' numbers and even more difficulties in online teaching caused by time zone differences. Pandemic impacts have constrained most international students of this case study university, so they maintain distant learning in their home country, which leads to few international students in IoC classrooms on campus. On top of that, international students, home students, and lecturers must find a proper time for teaching to overcome difficulties caused by time zone differences. With the efforts of teachers and students and supports from institutional administrations, the IoC programme is able to keep enrolling new international and home students.

5 CONCLUSION AND IMPLICATION

This case study has reviewed the practice of IoC at the faculty level of one university in China. The process of IoC in this study is identified as continuous and dynamic rather than a linear process involving discussion and adaptations of the faculty. This study also summarized the approaches of IoC used by faculty during their daily teaching, i.e. (1) the curricula, the Englishization approach, (2) the add-on approach, (3) the curricular infusion approach, and (4) the transformation approach. Among these four approaches, the study's findings indicate that the Englishization approach is important during IoC, given its dominant role in academic communication and the international working environment. Add-on and infusion approaches are mostly used to integrate internationalization elements into the curriculum and teaching. The transformation approach has to be integrated with local culture.

This study found challenges of IoC confronted faculty during their daily teaching practice, i.e., English language, pedagogy and expectations for learning, and pandemic impact. This study discovers that English is always challenging for teachers and students in this IoC program. In this study, faculty participants provided negative and positive remarks on international students' influence on teaching and classroom dynamics. Diversity of culture and learning brought by international students has triggered more inclusive teaching methods. On the other hand, conflicts of pedagogy and expectations for learning are great challenges for both teachers and international students.

The IoC program of this study has encountered difficulties of the campus being closed, teaching and learning is transformed to online, and the dropped number of international students caused by the pandemic. The faculty of this study has expressed that COVID has dramatically changed the higher education internationalization landscape. A new model of international collaboration in higher education will be unfolded underpinned by the quickly advancing communication technology and changing the mindset of learners influenced by the pandemic, which will require educators to improve and reshape curriculum to adapt to the new landscape of HE internationalization.

In conclusion, the critical elements of implementing the internationalized curriculum are students and faculty who will make the practice happen and succeed via their engagement in learning and teaching. The findings of this study will point to gaps in the previous literature and will align theories with practice. A possible future study could investigate changes in IoC influenced by the pandemic.

REFERENCES

- [1] Banks, J. A. (2004). *Approaches to multicultural curriculum reform*. Hoboken: John Wiley & Sons, Inc.
- [2] Bond, S. (2003). *Untapped Resources: Internationalization of the Curriculum and Classroom Experience: A Selected Literature Review*. CBIE Research Millennium Series No. 7: ERIC.
- [3] Edwards, R., Crosling, G., Petrovic-Lazarovic, S., & O'Neill, P. (2003). Internationalisation of business education: Meaning and implementation. *J Higher Education Research Development*, 22(2), 183-192.
- [4] Fragouli, E. (2020). Internationalizing the Curriculum. *International Journal of Higher Education Management*, 06(02). doi:10.24052/ijhem/v06n02/art-2
- [5] Ghemawat, P. (2008). The globalization of business education: through the lens of semiglobalization. *Journal of Management Development*, 27(4), 391-414.
- [6] Jones, E. (2017). Internationalisation of the curriculum: Challenges, misconceptions and the role of disciplines. In H. Casper-Hehne & T. Reiiffenrath (Eds.), *Internationalisierung der Curricula an Hochschulen: Konzepte, Initiativen, Maßnahmen* (pp. 21-39). Bielefeld: W. Bertelsmann Verlag.
- [7] Jones, E. (2018). Internationalising curricula in STEM disciplines: Why, what and how? In A. M. N. P. Ittel, A. (Ed.), *Internationalisierung der Curricula in den MINT-Fächern: Konzepte, Initiativen, Maßnahmen* (pp. 9-23). Bielefeld: W. Bertelsmann Verlag.
- [8] Jones, E. (2022). Problematizing the idea of curriculum 'internationalization'. *Journal of International Students*, 12(1), i-v.
- [9] Leask, B. (2013). Internationalizing the curriculum in the disciplines—Imagining new possibilities. *Journal of Studies in International Education*, 17(2), 103-118.
- [10] Qin, W., Yuan, Y., Wang, F., & Zhu, Z. (2019). *Transforming traditional Chinese-taught petroleum Eng courses into Eng-taught PE courses to meet ABET standards*. Paper presented at the SPE Annual Technical Conference and Exhibition, Calgary, Alberta, Canada.
- [11] Reimann, M. W. (2005). Two approaches to internationalizing the curriculum: some comments. 24, 805.
- [12] Ryan, J., & Hellmundt, S. (2003). *Excellence through diversity: Internationalisation of curriculum and pedagogy*. Paper presented at the 17th IDP Australian International Education Conference.
- [13] Shoop, B. L., & Robinson, K. B. (2012, Aug 12-13). *ABET Accreditation and Optics and Photonics Engineering: An Association Whose Time Has Come*. Paper presented at the Conference on Optics Education and Outreach II, San Diego, CA.
- [14] Williams, S., & Victoria, B. (2008). *Internationalization of the curriculum: A remedy for international students' academic adjustment difficulties*. Memorial University of Newfoundland,