

# Science and Engineering Undergraduates' Attitudes and Perceptions of English-Mediated Instruction – A Case Study in A Chongqing International Cooperative Program

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*This research sought to investigate the perspective of science and engineering students at Chongqing universities towards English-medium instruction (EMI) delivered by foreign instructors. The participants were 156 undergraduate students who studied at a Sino-Foreign Cooperative Education Programme in Chongqing University of Technology (CQUT). In this study, data was collected through interviews and questionnaires. The research indicates that most students have a high regard for English-medium instruction and have found that taking Science and Engineering classes instructed by foreign teachers in English has been beneficial in terms of enhancing their English language skills and developing their understanding of the subject. Nevertheless, some students with limited English proficiency encountered difficulties understanding specialized knowledge. They found that full English instruction from foreign teachers did not improve their English language skills. Therefore, this study suggested that China's Sino-foreign Cooperation Programmes should consider the divergences in students' English proficiency and vocational objectives and offer differentiated instruction, mentoring, and professional English language training.*

*Keywords: EMI, English-medium instruction, higher education, Sino-foreign Cooperation Programmes, foreign educators*

## INTRODUCTION

The worldwide surge in the internationalization of higher education has caused universities in non-English speaking countries to see a growing prevalence of English as a language of instruction (referred to as EMI) for academic subjects such as Engineering, Business Studies, and Medicine. (Chen & Peng, 2018; Dearden, 2014; Macaro & Han, 2019). Consequently, China has made no exception to the fast-growing international trend of EMI, aiming to meet the demands of globalization and provide a supply of skilled professionals with advanced foreign language capabilities and specialized knowledge. (Dimova, & Kling, 2020)

The growing popularity of EMI has been seen as a necessary approach to acquiring cutting-edge information and bolster national capability in intellectual creativity and production, the execution of EMI in Chinese higher education has yet to be accepted without reservation. (Yuan, 2019) Students' English language proficiency and the lecturer's ability to teach in English have been reported as two main barriers to EMI implementation's success and effectiveness. (Macaro, Curle, Pun, An & Dearden, 2017) On the one hand, the students often encounter difficulty applying their professional knowledge in English, such as understanding lectures, reading textbooks, engaging in classroom conversations, and completing assignments and exam tasks. (Macaro, 2017) Even though many EMI instructors attempt to use translation, code-mixing (CM) or code-switching (CS) to aid the EMI students' understanding of the lectures, there are still reported difficulties with application. The adoption of CS or CM in EMI classrooms is normally disagreeable for those students with better English language proficiency as it may jeopardize their improvement in linguistic competence. (Hua, 2020) As one of the primary objectives of taking EMI programs or EMI courses is to improve students' English language competence while learning content delivered in English. (Doiz & Lasagabaster, 2020) The inconsistency of shifting to English Medium Instruction (EMI) from the students' first language (L1) is not in line with the original goals of the EMI program. CS or CM is just a short-term tactic to figure out the EMI learner's comprehension problems rather than fundamentally improve the effectiveness of EMI practices. Conversely, there are numerous obstacles and hardships related to teaching methodology to offer courses in English as a medium of instruction, especially due to the lack of proper training of English-medium instructors. Most EMI teachers often feel ill-prepared and under-supported when teaching content knowledge in English. Universities asked many EMI teachers to adopt EMI simply because of their overseas experiences and relatively high English oral proficiency. (Yuan, 2020) The divergence between the expected results of taking an EMI course and the actual results attained provoked a reluctance from both instructors and students to continue with EMI courses. (Hua, 2020) Therefore, there is an urgent need to optimize the quality of EMI provisions to meet the diverse needs of students and facilitate their learning through EMI. The complexity of the situation has been exacerbated by the introduction of the Sino-Foreign Cooperation Programme in Higher Education, which allows for using English as a Medium of Instruction. (Han, 2023). The emergence of many collaborative international institutions in non-English speaking nations is seen as the most recent wave of worldwide universities. (Knight, 2015) It was officially reported that until 2021, there have been 1067 Chinese-foreign cooperatively-run schools and programs at the undergraduate level and more than 300,000 undergraduate students studying in Sino-foreign joint programs in China. (MOE, 2021) In the city of Chongqing, China, 21 international programs and Sino-foreign cooperative institutions are required to adopt EMI in various degrees. The Sino-foreign cooperation program involves foreign instructors or "monolingual teachers" providing instruction in content subjects to Chinese students in English. An et al. (2019) stated that the term "monolingual teacher" is used to describe those instructors who are unable to communicate in the native language of students in EMI classrooms. Thus, monolingual English teachers in an EMI context can be seen as native English-speaking teachers or non-Chinese-speaking foreign teachers. This environment provides a distinct EMI context in which CS/CM is not present in the classroom, and the lack of fluency in the language of bilingual instructors no longer obstructs the learning of EMI students.

As this is a novel approach to EMI implementation in China, limited research has been conducted on it thus far. This investigation endeavors to bridge the void and investigate the outlooks and opinions of Science and Engineering undergraduates on the English Medium Instruction (EMI) tactics of foreign educators in the international program. The study's author drew conclusions that can be used to guide the Sino-Foreign Cooperative Education Programme towards incorporating English as a Medium of Instruction. With such purpose, this research will figure out the following questions:

***Q1:** What are the attitudes of Science and Engineering undergraduates studying in Chongqing Liangjiang International Program towards learning content knowledge in English?*

***Q2:** What are Science and Engineering undergraduates' perceptions on EMI conducted by international/monolingual educators?*

*Sub Q1: What are the benefits and challenges perceived by Science and Engineering undergraduates studying in Chongqing Liangjiang International Program on the EMI practice of international/monolingual educators?*

*Sub Q2: How to facilitate Science and Engineering undergraduates to better adapt to their study in EMI context?*

## **LITERATURE REVIEW**

### **Popularity & Prosperity of EMI in China**

In response to globalization, English has become the lingua franca of education in the last several decades. In many contexts, teaching and learning academic subjects other than English, such as mathematics, engineering, and history, through the medium of English has become a global phenomenon. (Pun & Thomas, 2020; Yang, O’Sullivan, Irby, Chen & Lin, 2019) Although the promulgation of EMI in Chinese tertiary education in the early 2000s, Chinese universities, particularly prestigious institutions, have been given considerable backing from the government. EMI is viewed as an effective alternative to overcome the perceived problems of traditional English language teaching in Chinese higher institutions and simultaneously achieve positive returns regarding disciplinary learning and English proficiency. (Hu, 2019) It is found that there are an increasing number of universities that have integrated with international first-class subject courses and learned from the advanced teaching methodology and experience from the Western countries. Apart from the strong policy support mentioned above, some research also showed the potentially positive outcomes derived from EMI programs. For example, Qiu et al. (2017) claimed that implementing and promoting EMI can expand college students’ global versions, improve their communication skills, and enhance their international competitiveness. Li (2020) also put forward similar opinions, believing the construction of an English-medium curriculum can meet the challenges of internationalization, accelerate the cultivation of international talents, strengthen international cooperation and exchanges in education, and provide strong support for the development of education reform. In China, EMI is mainly promoted and implemented in Sino-foreign joint programs, which are cooperative projects by Chinese and foreign educational institutes. According to the official report of the Ministry of Education, until 2021, there are 1067 Chinese-foreign cooperatively-run schools and programs at the undergraduate level. More than 300,000 undergraduate students are studying in China’s Sino-foreign joint programs. (MOE, 2021) In Chongqing, China, for example, 21 international programs and Sino-foreign cooperative institutions are required to adopt EMI in various degrees. For example, 70% of the core courses must be taught in English according to The Talent Training Scheme of the International Program in Chongqing University of Posts and Telecommunications (CUPT) requirements. In the Chongqing Liangjiang International College of the Chongqing University of Technology (CQUT), all major and 50% of general courses must be taught in English.

### **Challenges & Problems of EMI in China**

Along with the popularity of the implementation of EMI in China, the ongoing research suggests some perceived thorny problems with EMI in China at the tertiary level. Chen and Peng (2018) mentioned students’ low language proficiency is the key factor limiting their interactions and learning in EMI classes. For this reason, teachers have to transfer to Chinese when teaching complex concepts. Chen and Peng (2018) also pointed out some other challenges and difficulties for teachers, such as the lack of adequate support from the management level and the big class size. Researchers are mainly concerned with content teachers’ self-efficacy and English competence regarding the problems derived from teachers. For example, Yang (2019) conducted a case study in a 10-year EMI medical program in China to investigate the challenges of implementing an EMI program. The research participants comprised 188 students who have received EMI instruction for nine years, 74 educators from different medical fields, and 3 faculty staff members who took part in executing the EMI program. Data were collected from the questionnaire survey, group discussions and students’ test scores. In Yang’s study (2019), the result showed that The EMI

instruction in the classroom was met with disapproval from both teachers and students, as the teacher found it difficult to explain the subject matter in English, often opting to use Chinese instead for communication with the students. Yang et al. (2019) attributed this to teachers' style, education concepts and English language proficiency.

Meanwhile, Yang also claimed that students' lack of medical knowledge was an important factor resulting in poor classroom interaction. 97% of students showed that some EMI classes had taught less than expected, thus necessitating additional self-study outside of class. Li (2020) also holds a similar view, believing that the unsatisfactory EMI teaching effectiveness is attributed chiefly to the low English proficiency of the EMI teachers who are not native English speakers. This is why many EMI teachers fail to clearly deliver subject knowledge to undermine the student's interest in participating in the in-class activity with enthusiasm. Yuan (2019) examined the principal impediments university EMI instructors confront in China. He gathered information from various sources, such as questionnaires and interviews, filed notes, and offered his thoughtful assessment of the challenges faced by EMI educators in China. According to Yuan (2019), many EMI teachers in China who are Non-native English speakers suffer from emotional, pedagogical, and social barriers. First, they usually show unease and anxiety toward using English in classroom teaching. Such negative feelings are mainly attributed to their lack of confidence in their English competence, which naturally diminishes the teachers' self-efficacy in teaching disciplinary content through EMI. The EMI teachers' apprehension of revealing their lack of knowledge in English to their students was the cause of their strong reluctance towards English. (Yuan, 2019) Besides the diffidence about EMI teaching, Yuan claims another emotional barrier of EMI teachers derived from their stereotyped views that EMI might threaten the local knowledge and culture in the Chinese context.

### **Teaching Strategies Accommodating EMI Teaching in China**

Students who lack a good command of English often struggle to remain engaged in the course material and are hesitant to participate in class discussions, as evidenced by the EMI teachers' prior experiences teaching the subject. One important reason is that it is difficult for students to acquire subject concepts without hands-on activities. To figure out this problem, some instructors add more in-class activities to improve students' engagement and facilitate their lecture comprehension. (Chuang, 2015) According to Chuang (2015), there are some helpful teaching methods to help the student's lecture comprehension. Firstly, slow down the speech when conveying complex ideas. In this case, the student is offered more time to translate and make sense of the lecture contents. During the lecture session, the instructor must listen to the students' reactions and adjust their speech accordingly. If the lecturer perceives the student is unable to answer the queries and has a perplexed look, they should speak the phrase more slowly to assist the student in understanding the lecture more easily. Secondly, code-switching to Chinese is another teaching strategy for NNESTs to know whether the students understand the concept meaning so that they can adjust the teaching procedures appropriately. Similarly, Ghobain (2015) also put forward that trans-language is a fruitful Pedagogy to motivate the students' learning in EMI classrooms. He contended that participating in EMI classes could heighten students' stress levels due to the language difficulties and obstacles they might encounter. Therefore, a translation strategy can scaffold the student's learning. However, translanguaging cannot be adopted by monolingual teachers or foreign teachers who cannot communicate with the students in Chinese. It is thus essential to examine the opinions of EMI graduates regarding their experiences of learning the content course in a total English environment.

## **RESEARCH DESIGN**

### **The Case Institution and Its EMI Provision**

The study selected Chongqing Liangjiang KAIST International Program, which jointly established by Chongqing University of Technology and its foreign university partner, Korea Advanced Institute of Science and Technology (KAIST) as a case study (referred to as Case Institution). As one of the most reputable engineering schools in Korea, KAIST was the first school to adopt a sweeping EMI policy to require all classes to be taught in English among Korean tertiary institutions. One decade ago, the rates of

EMI classes among the undergraduate classes accounted for more than 90% at KAIST. (Kim et al., 2016) Therefore, KAIST has extensive experience of using English as an instruction in academic subject teaching. The Chongqing Liangjiang KAIST International program at the Case Institution has adopted the teaching methods of its international partner university, KAIST, which involve English textbooks, materials, MOI, and teaching styles. The subject courses are taught directly by KAIST professors with extensive overseas experience and highly knowledgeable in their respective fields. The Case Institution mandates the use of English as the language of instruction and communication in classrooms for both instructors and students.

## **Participants**

Students participated in the study from the Case Institution. The group comprised 200 senior students with four years of experience taking English subject courses. In order to prepare the program students to better adapt to the full-English immersion environment, they have to achieve an English score of 110 out of 150 in the National College Entrance Examination. Some of them have also passed the College English Test Band 6 (CET6), a national English test administered by the Department of Higher Education of the Ministry of Education of China to test the English proficiency of university students. In other words, all the students have an intermediate level of English proficiency. All the participants were informed about the purpose of the study and offered clear instructions.

## **Instruments**

### *Questionnaire Survey*

The online questionnaire survey was composed of two sections. The first segment discussed the demographic information of the students, and the second portion comprised of 20 five-point Likert scale items that were focused on the students' perspectives regarding international educators' implementation and the educational process in a completely EMI class. Before the questionnaire was distributed, the questionnaire was sent to three experts who have worked in EMI programme for more than 8 years to the validity. Items used in the survey were formerly validated scales with Cronbach's Alpha reliability values of 0.7 to 0.8. As this study has limited foreign instructors who implement full English teaching in EMI classrooms, some scale items were developed by the authors. All questionnaires were administered in English. Unless otherwise indicated, all participants were given on a five-point Likert scale, ranging from 1 for completely disagree to 5 for strongly agree. The Cronbach's alpha for the 29 questions was 0.732, indicating that the reliability of the questionnaire is acceptable.

### *Semi-Structure Interview*

For in-depth information, semi-structured interviews were conducted with volunteer students from the subjects who participated in the online questionnaire survey. On average, each interview lasted around 10 minutes. All the interviews will be conducted in a location selected by the participants to increase their level of comfort and openness with the researcher.

## **Data Collection & Data Analysis**

This study aims to investigate the perceptions of graduated undergraduate students studying in an international program at Chongqing University toward EMI, the challenges they face, and the strategies they use to overcome these challenges. An explanatory sequential mixed method design was used to address the research questions in which the quantitative data and analysis were conducted, followed by qualitative data collection and analysis. (Creswell, 2010). In the first phase, respondents were asked to fill out a survey comprising 30 questions to explore their perceptions of the required science and engineering content courses taught by foreign educators in an EMI classroom. And then, the researcher conducted semi-structured interviews to gather individual perceptions to better understand the phenomenon. Such a format could provide more chances to develop an equilibrium relationship between the interviewer and interviewee. They are offered more room to negotiate, discuss and expand the interviewee's responses. (Mann, 2016)

In terms of the quantitative data analysis, after the numerical coding was completed, the survey data from the study was initially transferred to Microsoft Excel and then to SPSSPro, and the answers given to the questions in the scale were shown in the form of frequency distributions, with the corresponding mean and standard deviation values. In contrast, a thematic analysis was conducted on transcribed semi-structured interviews to uncover codes and themes. The participants' responses were classified according to the identified themes, with the most frequent responses being placed in the appropriate category.

### Results and Discussions

A total of 156 questionnaires were collected. Of the respondents, 62.8% (n=98) were male and 37.2% (n=58) were female. 78.8% (n = 123) of the students had no English language training experiences before enrolling in the EMI programme. According to the data of students' self-assessment of English proficiency, although more than one in eight students reported feeling inadequate in their verbal communication and lexical abilities, the majority of students in the program consider their English language abilities to be satisfactory or higher (Table 1).

**TABLE 1**  
**PARTICIPANTS' ENGLISH PROFICIENCY ON THE BASIS OF THEIR OWN EVALUATIONS (THE TOTAL NUMBER OF RESPONSES [TNR] = 156)**

Language Skills	Excellent	Good	Moderate	Poor	Very poor
listening	13.46%	28.85%	34.62%	15.38%	7.69%
reading	21.15%	44.23%	26.92%	5.77%	1.92%
speaking	9.62%	34.62%	28.85%	21.15%	5.77%
writing	7.69%	34.62%	50%	3.85%	3.85%
grammar	9.62%	32.69%	42.31%	7.69%	7.69%
vocabulary	11.54%	32.69%	40.38%	13.46%	1.92%

### *What Are Science and Engineering Undergraduates' Opinions of Learning Content Knowledge in English?*

The results of the survey on the students' opinions regarding EMI programs and courses, including the frequency distributions, item means, and standard deviation values, were illustrated in Table 2.

**TABLE 2**  
**GENERAL ATTITUDES TOWARDS EMI PROGRAMS OR COURSES**

Item	Strong agree		Agree		Average		Disagree		Strong Disagree		Mean	Standard Deviation Value
	N	%	N	%	N	%	N	%	N	%		
Item 1	48	30.77	57	36.54	33	21.15	9	5.77	9	5.77	3.81	1.11
Item 2	51	32.69	60	38.46	21	13.46	15	9.62	9	5.77	3.83	1.16
Item 3	54	34.62	78	50.00	6	3.85	9	5.77	9	5.77	4.02	1.07
Item 4	81	51.92	63	40.38	6	3.85	0	0.00	6	3.85	4.37	0.88
Item 5	48	30.77	45	28.85	39	25.00	12	7.69	12	7.69	3.67	1.21
Item 6	57	36.54	51	32.69	33	21.15	6	3.85	9	5.77	3.90	1.12
Item 7	54	34.62	63	40.38	24	15.38	6	3.85	9	5.77	3.94	1.09

For the item 1- "English language instruction is essential for achieving professional success", a vast majority of students (nearly 70%) recognize the benefits of EMI programs. The data obtained from item 2 and item 3 indicated that most students think that being taught content course in full English language can improve their cultural awareness, thus making them more open to the idea of multiculturalism. The

students' responses to items 4, 6, and 7 demonstrated that full English language instruction is highly advantageous for the advancement of students. Specifically, over 90% of participants believed that taking English language classes is a beneficial preparation for further studies abroad after graduation. Almost 70% of the students believe that studying in the EMI program will give them an edge when applying for jobs and will be advantageous for their academic pursuits.

In the semi-structured interview, the students are asked to specifically explain the reason of applying to the current EMI programs/courses, the previous expectation when enrolling in the EMI programs/courses, and perceived benefits and difficulties after taking the EMI course conducted by foreign educators. The analysis of semi-structured interview data allowed us to gain a fuller picture of students' attitudes towards full English language instruction implemented by foreign teachers and to illustrate some of the findings of the quantitative study. Most students had great expectations for the EMI course to improve their language and content knowledge. The following extracts from the interview show some of the students' reasons for enrolling in the EMI courses:

Student 1: "Receiving full English language instruction can help improve our English proficiency effectively as we need to think and communicate in English during the learning process. Especially for those who are planning to study abroad, full English language teaching can help them gain an international education, understand and adapt to different cultures and education systems, and prepare them for their future international studies. So, receiving full English language instruction can provide an advantage in academic and professional development; that's why I am eager to apply for the current EMI programs."

Student 2: "I believe the full-English teaching environment will help to improve my English and allow me to adapt to the language environment in advance, which will help me to study abroad in the future."

Student 3: "In a full-English immersion environment, I have more chances to practice the English language and thus improve my English language skills and build a global perspective. And I think enrolling in EMI program will allow me more chance to communicate with people from different countries and prepare me for international job opportunities in the future."

Overall, the data from the questionnaire suggest that students have a positive opinion of EMI programs or courses, which is consistent with the results from the semi-structured interview.

#### *Science and Engineering Undergraduates' Perceptions of EMI Conducted by International or Monolingual English Language Educators*

As depicted in table 3, the responses to foreign instructors' teaching exclusively in English were not uniform. Despite the fact that most of the students had a favorable view of the foreign teachers' educational background, approximately 12% of students had a highly unfavorable impression of the course's structure, material, instructors' pronunciation, and classroom arrangement, with a notable level of discontentment.

As one interviewee indicated that "The professor's dialect made some of his words difficult to understand. And I struggled to comprehend many aspects of the material due to my lack of strong English skills." Other remarks mirrored these statements: "The lecture delivered by the foreign professors had a thick accent, making it hard for me to comprehend, and with my limited knowledge of the language, I could hardly make out any of the lectures." Nevertheless, most of the students revealed that they had a good grasp of the material taught by the foreign professors(item15), actively participated in the exercises presented by the foreign professors, and accomplished the tasks assigned both in and out of the classroom(item16). Two Out of the students interviewed, just one reported that the EMI courses taught by foreign instructors did not satisfy their expectations. At the same time, the remainder expressed that their expectations had been met or surpassed. The majority of students that were interviewed were in favor of having foreign educators

teach professional courses in full English language. Still, only one participant suggested that a Chinese educator would be more suitable. Some responses of the interviewees like these:

Student 1: “I believe it is beneficial for foreign educators to lead specialized courses as they are well-versed in the particular domain and possess a distinctive understanding of specialized information. Much of the instruction I receive goes beyond what is found in textbooks, allowing me to gain a more comprehensive understanding of my area of expertise from varied perspectives.”

Student 2: “I am firmly convinced that the EMI courses taught by international instructors are ideal for the success of EMI courses as they bring a global outlook and varied backgrounds to the classroom, which can greatly enhance my learning experience. And their expertise in the field could also help to elevate the quality of the lectures.”

Of course, a few learners indicated that their command of the English language is inadequate to converse fluently with foreign teachers (item18). Some students also stated in interviews: “I don’t engage with my foreign teachers very much in or out of class due to my lack of speaking proficiency and often feeling too anxious to start a conversation.” In addition, the results of the survey indicated that foreign teachers are not adequately attentive to their learning requirements and do not furnish enough aid and guidance (item17). Yet the interviews revealed that the students had a unified opinion concerning the foreign teachers’ lectures and teaching methods. Comments included sentiments like these:

Student 1: “The foreign professors utilize the visuals to elucidate their wisdom, and they modulate the instruction rate or reiterate the lesson to help us comprehend the material more thoroughly.”

Student 2: “Foreign instructors were able to break down complex topics into simple terms with tangible illustrations, and were available to address queries after the lesson.”

**TABLE 3**  
**FREQUENCY ANALYSIS OF SCALE ITEMS ABOUT GENERAL PERCEPTIONS ON FULL ENGLISH LANGUAGE TEACHING BY INTERNATIONAL EDUCATORS**

Item	Strong agree		Agree		Average		Disagree		Strong Disagree		Mean	Standard Deviation Value
	N	%	N	%	N	%	N	%	N	%		
Item 8	36	23.08	75	48.08	15	9.62	18	11.54	12	7.69	3.67	1.18
Item 9	81	51.92	54	34.62	12	7.69	3	1.92	6	3.85	4.29	0.97
Item 10	45	28.85	69	44.23	24	15.38	6	3.85	12	7.69	3.83	1.13
Item 11	39	25.00	57	36.54	36	23.08	15	9.62	9	5.77	3.65	1.13
Item 12	39	25.00	75	48.08	24	15.38	3	1.92	15	9.62	3.77	1.14
Item 13	24	15.38	72	46.15	42	26.92	6	3.85	12	7.69	3.58	1.05
Item 14	39	25.00	72	46.15	39	25.00	0	0.00	6	3.85	3.88	0.92
Item 15	39	25.00	75	48.08	24	15.38	9	5.77	9	5.77	3.81	1.06
Item 16	42	26.92	90	57.69	15	9.62	0	0.00	9	5.77	4.00	0.94
Item 17	30	19.23	69	44.23	33	21.15	9	5.77	15	9.62	3.58	1.15
Item 18	42	26.92	66	42.31	33	21.15	3	1.92	12	7.69	3.79	1.10
Item 19	36	23.08	84	53.85	27	17.31	3	1.92	6	3.85	3.90	0.91



Table 3 indicated that most students found that the EMI program with a foreign instructor was advantageous in gaining a better understanding of terminology. (item23) Yet approximately 20% of students still do not view EMI courses led by foreign educators as advantageous to their professional development. (item 20, item 21, and item 22). According to Table 5, the majority of students have noted an improvement in their English listening skills and a more comprehensive understanding of academic terminology since having EMI courses taught by foreign teachers (item 24 and item 29), while over a fifth of students believed that lessons in English given by foreign instructors did not assist in enhancing their English reading, grammar and speaking abilities (item 25, item 27 and item 28).

**The interviews also yielded consistent results:**

Student 1: “I have seen a marked improvement in my listening skills and an expansion of my lexicon due to having the EMI course taught by foreign instructors.”

Student 2: “My command of English has increased dramatically, especially when comprehending the technical vocabulary. In addition, the intensive English classes taught by foreign educators enabled me to make significant progress in my weak listening skills.”

**TABLE 4  
FREQUENCY ANALYSIS OF SCALE ITEMS ABOUT STUDENTS’ PERCEPTIONS OF THE EFFECTIVENESS OF EMI CLASS INSTRUCTED BY FOREIGN EDUCATORS ON PROFESSIONAL KNOWLEDGE ACQUISITION**

Item	Strong agree		Agree		Average		Disagree		Strong Disagree		Mean	Standard Deviation Value
	N	%	N	%	N	%	N	%	N	%		
Item 20	33	21.15	63	40.38	33	21.15	12	7.69	15	9.62	3.56	1.19
Item 21	36	23.08	48	30.77	39	25.00	18	11.54	15	9.62	3.46	1.24
Item 22	33	21.15	54	34.62	42	26.92	12	7.69	15	9.62	3.50	1.19
Item 23	51	32.69	69	44.23	30	19.23	0	0.00	6	3.85	4.02	0.93

**TABLE 5  
FREQUENCY ANALYSIS OF SCALE ITEMS ABOUT STUDENTS’ PERCEPTIONS OF THE EFFECTIVENESS OF EMI CLASS INSTRUCTED BY FOREIGN EDUCATORS ON ENGLISH PROFICIENCY**

Item	Strong agree		Agree		Average		Disagree		Strong Disagree		Mean	Standard Deviation Value
	N	%	N	%	N	%	N	%	N	%		
Item 24	60	38.46	66	42.31	12	7.69	9	5.77	9	5.77	4.02	1.10
Item 25	36	23.08	63	40.38	36	23.08	9	5.77	12	7.69	3.65	1.13
Item 26	57	36.54	63	40.38	21	13.46	3	1.92	12	7.69	3.96	1.13
Item 27	45	28.85	66	42.31	15	9.62	15	9.62	15	9.62	3.71	1.25
Item 28	36	23.08	69	44.23	24	15.38	15	9.62	12	7.69	3.65	1.16
Item 29	54	34.62	81	51.92	12	7.69	0	0.00	9	5.77	4.10	0.97

**CONCLUSION**

From these results, one may assume that if the university supplies the appropriate, supplementary teaching methods, students can gain a lot from the EMI program. Some interviewees expressed their views

on what assistance from foreign teachers and programs would benefit their success in EMI courses. If the Chinese and foreign educators collaborate effectively, the co-teaching approach can be highly beneficial in optimizing the implementation of EMI. As stated by the student in the interview: “We could rely on the Chinese teaching assistant to address any unanswered questions or knowledge gaps after class, if we were unable to completely understand the foreign teacher’s lectures during class.” Besides, some students find it advantageous to have a senior or postgraduate available to provide assistance and guidance after classes, which aids them in their transition to full English instruction by foreign educators.

The results of this study suggest that most students maintain a strong appreciation for EMI, and have found that taking Science and Engineering classes taught in English by foreign lecturers has improved their English proficiency and deepened their knowledge of the discipline. In particular, for those planning to go overseas for further education after graduating, taking the EMI classes taught by foreign instructors is a great way to become familiar with the language and culture of their destination, giving them the confidence and security to succeed in their new environment. Of course, the research also revealed that a few students with limited English proficiency found that full English instruction by foreign teachers was not as successful in enhancing their English language abilities and made it hard to understand specialized knowledge. Given this, we would like to propose suggestions for improving the EMI implementation in China’s Sino-foreign Cooperation Programmes.

To begin with, differentiated instructions can be offered to students with different English proficiency and diverse vocational aspirations. Specifically speaking, students with a good command of English and plans to study abroad after graduation can be taught exclusively in English by foreign teachers, while those who are not as proficient and have no plans to study abroad can be taught by Chinese teachers in a bilingual setting or be provided with supplementary Chinese teaching materials, as needed.

Additionally, EMI program students should receive more robust English language training. Despite the initial screening of National College Entrance Examination (NCEE) English scores for admission to the EMI program, disparities remain. Assessment of students’ English language abilities should be conducted periodically, such as every six months or years, and remedial instruction should be included in the English language curriculum for those who demonstrate poor language proficiency.

Finally, adequate instruction in and out of the EMI classroom is essential. First, foreign and Chinese educators need to work together. With this collaboration, EMI’s efficacy would be augmented to assist students in comprehending the main concepts and complexities of subject matter more thoroughly. Moreover, senior students should also provide meaningful assistance. Given their first-hand knowledge of the challenges of learning in an English-medium instruction program, senior students can provide invaluable guidance to freshmen or sophomore students based on the strategies and insights they have acquired.

## **LIMITATIONS OF THE STUDY AND SUGGESTIONS FOR FUTURE STUDIES**

This study has examined the states of EMI in a Sino-Foreign Cooperative Education Programme in one Chongqing university from students’ perspectives. The research study largely relied on students’ subjective assessments to evaluate the effect of EMI major courses taught by foreign educators on students’ English language proficiency and professional knowledge acquisition. Therefore, to gain a more comprehensive understanding of the EMI states, the viewpoints of foreign faculty and administrators should be taken into account. It will also be worthwhile to conduct a comparative analysis of EMI implementation between Chinese content instructors and foreign educators.

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