

# Teaching Strategies for Small-Size EMI Classes of Specialized Courses

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Manuscript received August 14, 2023; revised September 20, 2023; accepted October 23, 2023; published January 17, 2024

**Abstract**—With the internationalization of higher education, English Medium Instruction (EMI) courses have shown a global growth trend. However, many instructors of specialist subjects lack EMI training and effective teaching methods. Based on the authors' own teaching experience, this paper analyzes the factors that affect EMI classes, the characteristics of EMI class for specialized courses, and probes into the teaching strategies suitable for this kind of small-size classes.

**Keywords**—English Medium Instruction (EMI), higher education, internationalization, teaching methods, small-size classes

## I. INTRODUCTION

As early as 1999, the European Union issued the Bologna Declaration to discuss the establishment of the European Higher Education Area in 2010 and the improvement of the common higher education system, so as to realize the mutual recognition system of credit, schooling and academic qualifications in European countries, and to open a large number of English medium instruction courses in European universities [1]. The Mid-Term and Long-Term National Education Reform and Development Outline (2010–2020), officially published by China in 2010, proposed to carry out multi-level and wide-ranging education exchanges and cooperation to improve the level of educational internationalization in China after having studied the macro trend of international education development and analyzed the paths of educational development of developed countries [2]. In the past ten years, the “Belt and Road” policy has promoted a substantial increase in the number of foreign students coming to China [3]. Now China has become the most popular destination for studying in Asia [4].

Internationalization of education can bring the following advantages to China's higher education: a) It helps to attract international students and occupy the international education market. b) By introducing international instructors and reforming the education system, the level of education in China will be improved, thus reducing the gap between China's universities and world-class universities. c) Besides, it can integrate Chinese and foreign students, improve students' language, specialty and comprehensive ability [5]. d) Moreover, it can reduce a large number of “brain drain” and stimulate the intelligence to flow back to China.

There is not yet a fully unified definition of internationalization of higher education, and it is generally recognized that internationalization of higher education should include at least the following elements: internationalization of courses, international exchange of faculty and students, international cooperation in research

and education and international college culture [6], among which the internationalization courses is one of the priorities, for it can lead to upgrading of education, internationalization of faculty and students and also a diverse college culture. At present, the main teaching mode of international class is English Medium Instruction (EMI). According to Macaro *et al.*, EMI is the use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English [7]. In the last a few decades, EMI has shown a rapid growth in higher education worldwide, especially in Germany, the Netherlands, South Korea, Japan, and Hong Kong [8–10]. When evaluating the level of universities, whether the proportion of EMI courses in the total undergraduate courses is 5% to 10% has been taken as one of the evaluation criteria of top universities by the Ministry of Education of China [11].

However, among the 54 countries that have offered EMI courses, 83% believed that they lack instructors with the ability to offer EMI courses (the ability to offer EMI courses has not yet been defined, which is understood as language ability or qualification certificate in the literature). In addition, more than 70% of countries have no clear guidelines for EMI classroom teaching [8]. Therefore, it is necessary to provide guideline and EMI training courses for instructors.

Oxford EMI, as a training and consulting organization, has been running EMI training courses since 2016. The aim of these courses is to help universities to train teachers to equip them to run EMI courses. The authors of this paper have been engaged in EMI teaching mixed small-size classes with Chinese and international students and courses specially designed for international students. Based on our own teaching experience and what we have learnt from Oxford EMI training, the paper first analyzes the influential factors of EMI class; then, based on our investigation about the EMI courses in one key university in China, we analyze the characteristics of small-size EMI classes; finally, the teaching methods suitable for small-size EMI classes are discussed. The research is supposed to answer the following two questions:

- (1) What are the characteristics of EMI classes for specialized courses?
- (2) What teaching strategies can be used for small-size EMI classes of specialized courses?

## II. FACTORS AFFECTING ENGLISH MEDIUM INSTRUCTION (EMI) CLASSES

Factors that have an impact on EMI classes include

language, class type, class size, students' background, instructors' background, and students' attitude towards EMI classes.

A. Language

According to the definition of EMI, English, as the teaching language of the EMI class, is one of the main factors that affect EMI classes, which involves both the instructors' and the students' level of English [12].

Language can directly affect the communication between students and instructors, information transmission, and the learning of course content. When the instructors' or students' mother tongue is English (L2), it is beneficial to the EMI classes; when the instructors' or students' mother tongue is not English (L1), it is necessary to ensure that instructors' or students' English level meet certain requirements before opening or participating in EMI courses.

B. Class Type

EMI classes in China can be divided into different types, including EMI classes with only international students, mixed EMI classes with both international and Chinese students, EMI classes with only Chinese students (Sino-foreign joint education), bilingual classes with international students and Chinese students, and bilingual classes with only Chinese students. To achieve a good effect, instructors have to design their courses according to class types. For example, in the joint education class, it is required the Chinese students to have good English proficiency and a positive attitude towards learning in English, for most of their courses are taught in English by both Chinese and international instructors. But for the bilingual class, the language requirements are not as high as those of full English classes, but higher than ordinary Chinese classes.

Moreover, it is probably easier to establish an active atmosphere and arrange interactive activities in EMI classes with only international students or mixed EMI classes than in English or bilingual classes with only Chinese students, because international students are probably more active and bolder than Chinese students.

C. Class Size

In China, the size of EMI classes can vary greatly due to the subject of the courses. Taking the university of the authors for example, the scale of general education courses is relatively larger, may reaching 100 to 120 students while specialized classes is much smaller, ranging from a few to dozens. The size of the classroom will have a direct influence on the selection of teaching methods, especially the design of interactive activities. Small-scale class is convenient to implement various teaching methods, which usually improve the interactivity of the classroom and reach a better teaching effect.

D. Students' Background

Students' background also influences EMI classes. We need to consider students' mastery of specialized knowledge before they enter into the EMI classes, their origin regions and cultural background, their academic English level, and so on. Take the investigated university as example, the average level of basic specialized knowledge of students from East Asia and Europe is much better than that of students in the Middle East and Africa, while the average English level of Asian students is slightly weaker than that of other regions such as Europe.

E. Instructors' Background

Instructors' teaching experience, teaching skills and academic level can have a great impact on the effect of EMI classes. Instructors with rich experience, high academic level and the rich teaching skills usually can create better teaching and learning effect.

F. Students' Attitudes towards English Medium Instruction (EMI)

In addition, students' attitudes towards EMI will also have a certain impact on the class. If students hold a positive attitude towards EMI and believe they can learn specialized knowledge as well as improve their English proficiency and thus promote their international competitiveness, they may show strong motivation and achieve a good learning effect [13].

The factors discussed above are not independent but interact with each other. Their impact on the course effect and difficulty is shown in Fig. 1.

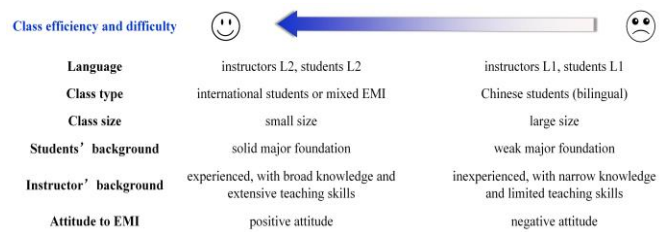


Fig. 1. Factors affecting the efficiency and difficulty of EMI classes.

III. CHARACTERISTICS OF ENGLISH MEDIUM INSTRUCTION (EMI) CLASSES FOR SPECIALIZED COURSES

Taking one of the key universities of China as example, we made an investigation about some representative EMI classes and interviewed some of the instructors. As EMI instructors ourselves, our own teaching experiences are also used to support the research.

The investigation was made to a convenience sample of six undergraduate specialized EMI courses in science, engineering and arts (see Table 1) from five schools. The characteristics of these courses are summarized as the following:

Table 1. Investigation of EMI classes for specialized courses

Course Name	School	Language	Course Type	Students Number		
				2020 spring	2021 autumn	2022 spring
Mathematical Physics Equation	School of Aeronautics	English	Mixed Chinese and international students	38	34	35
Aircraft Optimization Design	School of Astronautics	Bilingual	Chinese students	27	38	33
Aerodynamic Numerical Calculation Method	School of Astronautics	English	Mixed	7	4	6
Digital Signal Processing	School of Electronic Information	English	Mixed	23	15	17
Introduction to Intelligent Transportation System	School of Automation	English	Mixed	32	27	28
Spoken English for Academic Purposes	School of Foreign Studies	English	Mixed/Chinese students	38	34	39

*A. Poor Academic English*

Instructors of the investigated courses all claim that the students generally have a poor foundation in academic English, mainly reflected in their limited vocabulary of specific subjects. Therefore, the instructors have to explain important terms in class teaching and even repeat it many times to deepen the impression and understanding of students.

Besides academic English, the instructors also mentioned that the general English proficiency level of students (including the international students) is uneven. Some students have already passed IELTS with score between 7.0–8.0 before they take the EMI courses, while others probably haven’t passed CET-4 (a Chinese English proficiency test system considered to match 4.5–5.0 of IELTS if passed) yet.

*B. Various Students Composition*

Most of the investigated specialized courses are mixed classes with both international and Chinese students. But there are also classes that are composed of only international or Chinese students. Most of the mixed EMI classes have more Chinese students than international students. For example, one of the classes of English for Academic Purposes has only three international students and thirty-six Chinese students. The condition matches the fact that the total number of Chinese students is more than that of foreign students.

*C. Small-Size and Uneven Students Distribution*

Compared to the EMI class for general courses, the class size of EMI specialized courses is smaller and the number of students is uneven. Some courses have dozens of participants, while others have only a few. But the number of students in all such specialized courses is less than 40 (The investigated university defines small class courses as those with students of less than 40, which is based on the situation of China’s higher education).

As mentioned earlier, class size has an impact on the application of teaching methods: it is more convenient to move students, organize discussion, and get or give feedback in small-size classes. Therefore, EMI classes for specialized courses have an advantage over big-size classes in organizing

classroom activities and creating effective communication between teachers and students.

*D. Uneven Specialized Knowledge Levels*

Most instructors claimed that the specialized knowledge of many international students is much weaker than Chinese students. One of the instructors of engineering course said:

“If I strictly follow the teaching plan, it may let the international students lag behind; if I spend lots of time on helping the international students, it may make it impossible to complete the course within time and arouse discontent of other students.” (Statements of Instructor from the School of Astronautics)

This may be related to the source of international students of the investigated university. With the help of the “Silk Road” Chinese Government Scholarship issued since 2016, many international students from countries along the Belt and Road get opportunities to learn in universities in China [14]. But many of them are lack of education of their specialty and with weak foundation knowledge [15], thus causing an imbalance and teaching difficulty in the EMI classes. To solve this problem, it is recommended to follow the practice of Europe and the United States. Universities can offer international students preparatory classes to compensate for the lack of knowledge before higher education. Otherwise, learning the courses can lead to a snowball effect to the international students with weak knowledge foundation the more classes they take, the more incomprehensible content they accumulate.

Only the instructor of arts course from the School of Foreign Studies did not think that international students have weaker course-related knowledge than Chinese students. She said both the international and Chinese students lack academic training and course-related knowledge. Therefore, she adjusted the course to make it match with the level of students. This different view should be related to the disciplinary attributes of the course. The instructor also mentioned the performance of international students was quite polarized. Some of them were more active and willing to interact in English than Chinese students while others performed poorly and hard to communicate.

### E. Most Instructors are Chinese

Most instructors of these EMI courses are Chinese, whose native language is not English. And they generally have overseas study or working experience. However, their English proficiency is varied. Meanwhile, according to the statistics of the Teaching Research and Teacher Development Center of the university, although all the investigated instructors have participated in short-term teaching method training, most instructors in the university (about 90%) have not received such training in education or pedagogy. Therefore, it is necessary to provide language and pedagogy training to the EMI instructors and set standards that they need to meet. If the instructors can improve their language skills and teaching methods, they may achieve good teaching effects in the EMI classes.

## IV. TEACHING METHODS FOR SMALL-SIZE EMI SPECIALIZED CLASSES

Fig. 2 shows the modern teaching model, which mainly includes four links: The instructor teaches knowledge and gives students input (Inputs); Students receive, understand and absorb knowledge, and then give outputs (Outputs); Interaction mainly refers to the interaction between students (Interaction), through which students can learn from each other, and students also play the role of teachers; Effective feedback, that is, the interaction between instructors and students (Effective feedback), through which instructors can check students' understanding and mastery of knowledge. Interaction and effective feedback can promote students' passive learning. Such passive learning may be transformed into active learning after a period of time. Teaching methods are mainly applied in these four links to improve the effectiveness of each link. Based on this model and the characteristics of small-size EMI classes mentioned above, we suggest instructors adopt the following teaching strategies.

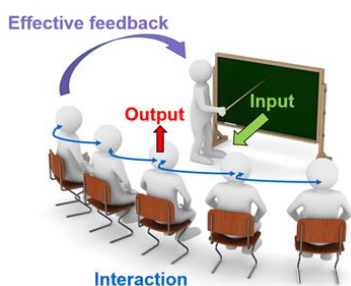


Fig. 2. Schematic diagram of modern teaching model.

### A. Improving the Effectiveness of Information Input

Using English as the medium, EMI courses may bring more challenges to students. Therefore, instructors should improve the effectiveness of information input to help students comprehend the course content. They can do it mainly from two aspects, modifying the use of language and making good preparation for teaching materials.

Since language has a great influence on the EMI classes in the process of teaching, instructors should pay attention to the use of language. Considering the students' level of English, instructors should try to use simple, commonly used English vocabulary. And for important terms, which are usually more

difficult to understand, there must be clear explanation and enough repetition. Instructors can use synonyms, simple words and sentences to facilitate the explanation and let students get familiar with the terms by auditory and visual means.

Accents are not that important in EMI classes as long as they do not affect comprehension. But instructors should pay attention to the chunking, tone, intonation, and stress of English, because these factors may affect students' understanding of the course content.

Besides, instructors should make good preparation for teaching materials, including teaching plan, PowerPoint slides or other teaching tools. When making teaching plan, instructors have to take into account students' knowledge foundation and their comprehension ability, establishing clear logical relationships between knowledge points, giving examples that students can easily understand, and gradually advance the course. Power Point slides should be clear and with diagrams, pictures and videos, which may make it easier for students to understand. For example, it is difficult to explain abstract content such as the propagation of waves or the formation of shock waves clearly in words alone, then the instructors can use pictures or videos to explain the concepts or even use models to give demonstration.

### B. Grouping Students and Letting them Complement Each Other

Group work plays a positive role in language classroom teaching as well as in EMI classes (see Fig. 3). It forces students to think and collaborate in groups and reduces the pressure of assignment on individual. Due to the language and comprehension challenge brought by EMI courses, instructors should pay special attention to group work and make good use of it.



Fig. 3. In-class group work (left: Students look for answers as group; Right: Group works on matching answers).

For mixed EMI classes with both Chinese and international students, to achieve better learning effect, instructors can make use of students' traits, designing class activities or assignments by grouping Chinese and international students together. This allows international students, who may be weak in subject and have difficulties in completing assignment to ask for help from their Chinese groupmates, and force Chinese students to use English to communicate with the international groupmates. This can be helpful in creating course atmosphere of mutual assistance and English communication.

For EMI classes with only international students or Chinese students, instructors need to get a clear picture of nationalities, personalities, knowledge and English level of students and group students based on these elements. For example, students are more extroverted can be grouped with

students who are more introverted; students with weak knowledge or English level may be grouped with those with better level; and students with the same nationality and cultural background should be separated. The principle is to fully blend the students so that they can learn from each other.

In addition, if it is in-class group work activity, the instructors themselves should move around to observe students' performance in group work, know how well students have mastered the knowledge, guide students or answer questions when students have difficulties.

### C. Adjusting Based on Students' Response

Initiate-Response-Feedback (IRF), is used to describe the process of class interaction between teachers and students. In EMI courses, this process should be modified as Initiative-Response-Feedback-Adjustment (IRFD).

Considering the academic and English level of students in most EMI courses in Chinese colleges, getting response is especially important for it can help instructors to check students' comprehension and adjust the content of the course or the pace of teaching.

Instructors may get students' response by observing students' movements and expressions (smiling, frowning, looking at the teacher, distracted, etc.), asking questions (open or closed), listening to students' discussion, giving assignments and tests (pop tests, games, etc.), or arranging after-class tutoring and Q&A (by e-mail, WeChat, QQ, WhatsApp, etc.).

It is worth noticing that when asking questions, there should be enough time for students to think or discuss before they give response. Instructors should be constantly aware of the fact that students of EMI courses learn the content with their second language. Therefore, they may need more time to assimilate and give proper response.

Modern educational technology should be used as aid in this process. For example, by using teaching software or APPs such as Kahoot (see Fig. 4) and Rain Class, instructors can set questions in advance, collect students' answers, and give feedback. This not only enables instructors check students' comprehension and thus help them anytime when needed, but also increase the interest of teaching.



Fig. 4. Using Kahoot to check students' comprehension.

In addition, instructors' feedback such as comments to students should be mainly positive and encouraging. Pointing out problems and mistakes in a tactful manner helps to establish positive attitudes of students and enhance their self-confidence.

Among the above three teaching strategies, improving the

effectiveness of information input is important and should be apply to all kinds of EMI courses. However, other two strategies are more suitable for small-size EMI classes. If there are too many students, it will be difficult for the instructors to group students with proper number and design activities, or constantly collecting response and giving feedback.

## V. CONCLUSION

This paper analyzes the factors influencing EMI classrooms, the characteristics of small-size EMI class for specialized courses, and discusses the teaching strategies suitable for such classes based on the investigation and the authors' teaching experience. The main ideas are summarized as follows.

(1) There are many types of EMI classes, and instructors should first analyze the factors influencing the classes, including the number, cultural background, knowledge and English level of students. Teachers should choose teaching methods flexibly according to the characteristics of EMI classes, so as to achieve the purpose of improving the teaching effect.

(2) Language is an important factor influencing EMI classroom, which will directly affect information transmission and content comprehension. Therefore, in EMI classes, instructors should improve the effectiveness of information input. EMI instructors need to pay attention to details, including the use of language, PowerPoint slides preparation, teaching examples, pictures and videos, and the use of teaching tools (laser pointer, color pencil, sticky notes, etc.). Details lead to success. All details combine together can help students understand the course content better and also make the classes more interesting.

(3) Group work is a powerful tool to create a mutual learning and teaching atmosphere in EMI classes. If instructors can group students well, they may help students to exert the superiority of entirety and turn their passive learning to active learning.

(4) It is important to continuously check students' comprehension and make adjustment in EMI classes. Instructors should observe, ask questions and establish a Q&A channel between EMI instructors and students. More patience and tolerance should be given to students of EMI classes. Positive and encouraging feedback to students can enhance their motivation of studying.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## AUTHOR CONTRIBUTIONS

Li conducted the research and analyzed the data; Gao and Li wrote the paper; Gao revised according to reviewer's comments; both authors had approved the final version.

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