

# A Practice of CBI in ESP Teaching — Taking the Course of English for Engineering for Example<sup>1</sup>

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**Abstract:** It is vital for ESP to break through traditional grammar translation methods, and to achieve the goal of integrating professional teaching contents with language teaching objectives. CBI is a teaching mode that organically combines the teaching contents of subject knowledge with language teaching. Through the teaching practice of Course of English for Engineering in the school and the questionnaire survey of 83 engineering students, the author of this paper found that the theme teaching mode of the CBI teaching concept can not only mobilize students' enthusiasm for learning professional English and improve students' English application ability, but also help students consolidate their professional knowledge. CBI theme-based model can be regarded as a practical teaching mode.

**Keywords:** CBI; Theme-based model; ESP; English for Engineering; Teaching practice

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## 1. Introduction

The release of the Declaration on the Construction of New Liberal Arts in November 2020 marks that China has formally put the construction of new liberal arts on the agenda. The Declaration on the Construction of New Liberal Arts clearly proposes to cultivate liberal arts talents in the new era who shoulder the responsibility of national rejuvenation: “vigorously cultivate new talents with international vision and competitiveness”, “cultivate students' ability of integrating knowledge from different disciplines and their ability to put the knowledge into practice”, “aim at training future social scientists”, “focusing on cultivating applied liberal arts talents”, etc. This reflects the educational concept of the unity of educating people and talents in higher education in the new era<sup>[1]</sup>. Against this backdrop, colleges and universities have the responsibility for training a group of talents who are not only competent in their own majors, but are also able to communicate, either in oral or written form of English, in their professional fields. It is imperative to greatly promote the exploration of teaching practice of English for Special Purposes (ESP).

## 2. Literature Review

ESP (English for Specific Purposes), a kind of language teaching to meet the students' needs of learning, work and researching<sup>[2]</sup> (Hutchinson and Waters, 1987), refers to business English, scientific English, legal English and engineering English in general. Since the 1960s, ESP has roughly gone through four stages in the West. The first stage mainly focused on register analysis, centering on the sentence structures, which was followed by the second stage of discourse analysis, a study of discourse and rhetorical devices; and then the stage of target situation analysis and the stage of skills and strategies<sup>[3]</sup>. In 1996,

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### <sup>1</sup> Fund projects:

(1) The general project of the “Fourteenth Five -Year Plan” of Gansu Education Science in 2021: “Research on the Reform and Practice of ESP English Teaching Mode in Local Applied Undergraduate Colleges under the Background of ‘New Engineering’” (Project No. : GS [2021] GHB1892)

(2) The Undergraduate Teaching Research and Reform Project of Lanzhou City University: “Research on the Reform and Practice of College English Teaching Mode in Applied Universities under the Background of New Liberal Arts Construction” (Project No. : 2020-jy-38)

ESP Theory and Practice, by Cheng Shilu's, was published, marking the beginning of domestic ESP research. The researchers focused on the application of ESP in different educational fields in China and put forward teaching methods suitable for ESP in China. At the beginning of the 21st century, with the comprehensive launch of college English teaching reform, Chinese researchers have paid close attention to the research on ESP, including both the theoretical research on ESP and the research on the application of ESP in China, in order to find the ingredients suitable for the development of college English in China. In recent years, with the promotion of the "the Belt and Road" and cultivating new talents with international, intelligent and overlapping characteristics based on the construction of "new engineering", ESP, as a course combining subject contents with English language, has attracted more and more attention in the field of English language teaching and research in China. However, as it started late and is still far from being mature, ESP teaching has not been fully applied in college English teaching practice<sup>[4]</sup>. At present, grammar translation teaching method is still adopted in most existing ESP courses, including vocabulary, sentence study and paragraph translation etc. Different from the traditional EGP teaching, ESP teaching emphasizes the connection between language teaching and specific subjects, which is inherently consistent with the "contents" emphasized in CBI (here, "contents" refer to the topics that students need or are interested in or a subject that students are learning).

Content-based Instruction (CBI for short), which is based on subject contents, refers to the teaching activities carried out in the second language (or foreign language) teaching by taking into the account of the contents that students are eager to learn and the information that they want to acquire<sup>[5]</sup>. In 1965, CBI came into being in the immersive language learning in Montreal, Canada. Now, CBI has received extensive attention in developed countries, and has been tested and promoted in Britain, the United States, Australia and other countries. It is regarded as an effective foreign language teaching method, and most of researchers pay equal attention to the study of CBI and that of ESP. Stryker and Leaver (1997) pointed out that content-based foreign language teaching has the following distinctive features: taking subject knowledge as the core, using real language materials in the teaching process, learning new information, and curriculum setting that fulfill the needs of different student groups. The common teaching modes of content-based teaching include the following four types, namely, theme-based approach, sheltered-content courses, adjunct courses, and language for special purposes. CBI is seen as one of the most effective methods of teaching English as a foreign language or a second language in many foreign universities and widely applied in ESP courses. Some research in China also shows that the best way to teach ESP is to combine English with real contents<sup>[6]</sup>. As an English teacher in an application-oriented undergraduate university, the author of this paper is aimed to study the application of theme-based approach in engineering English teaching by raising the questions: 1) How to design the course with theme-based approach? 2) How about the teaching practice effect by applying the theme-based approach? 3) What can be learned from the study?

### **3. An Example of ESP Course Design Based on Theme-based Approach**

The course practice objects selected in this paper are sophomore from two classes in the university where the author of this paper works, and they are majoring in mechanical engineering. There are 83 students in total who have studied EGP (English for General Purpose) for one and a half years. This paper takes the course of English Engineering as a practice course, and the textbook selected is Engineering English, the ESP course series by Shanghai Foreign Language Education Press. The specific practice plan is as follows:

Each theme unit of the engineering English course contains four topics, which mainly focus on specific skill goals and language goals. The selected contents are the communicative topics in the real engineering work environment. Through classroom teaching practice and research, the author of this paper has summarized the "BAP" principle applicable to engineering English in CBI classroom. Among them, B stands for "Basic concept", A for "applications" (specific applications), and P for "problem-solving". In the classroom practice, the teacher will help students carry out various forms of training in language skills such as listening, speaking, reading, writing, and translating by centering on specific topics. In addition, we will enable students to acquire knowledge and information of their own majors through English as a medium to further consolidate their professional knowledge.

The following teaching process is designed on the topic of "The Space Elevator" in English Engineering by following the principle of "BAP":

#### **3.1 Understanding the unit theme and basic concepts through online preview**

Through the arrangement of real-life tasks, students are driven to explore knowledge independently and learn about the unit theme. Taking "The Space Elevator" as the theme, students preview relevant high-frequency professional vocabulary related to the theme, such as "offshore base station", "propulsion system", "geostationary orbit", etc. through online engineering

English course constructed by the teachers in the university. In the meantime, student will be able to learn about the basic structures and working principles of spaceships and the history of China's space exploration through the online course.

### **3.2 Reading authentic materials and learning about the applications of technology**

In class, students work in groups to map out the structure of the spaceship according to what have learned in online class and introduce their own in English to other groups. The teacher and other group leaders score them together and finally select the group with the best performance. In this way, students are fully mobilized to participate in classroom activities with enthusiasm, thus more active classroom atmosphere. In the following section, students will be asked to read the text titled "Space elevators: preparing for takeoff" in 10 minutes. Then, questions about the text are raised by the teacher for students to discuss, namely, who put forward the concept of a space elevator, and why? what could a space elevator be used for? and what technical challenges would it face? Students will be asked to present their answers in class and the teacher will offer help if necessary. After students have had a basic understanding of the text, the teacher will summarize the specific applications of the space elevator as follows: for one thing, the space elevator may replace rockets in the future due to the serious environmental pollution caused by them; for another, it will be used to transfer satellites, spaceships, astronauts, and supplies needed by astronauts to the space station. Then, in the detailed reading of the text, the teacher will combine the text content with different types of exercises to help students master certain language skills, such as vocabulary, sentence patterns and reading and writing skills. It turns out that it is easier for students to figure out answers to the exercises, saving them from passive learning process.

### **3.3 Recreating the authentic scene by using English listening and speaking materials**

The listening and speaking activities of engineering English are based on the authentic discussions about techniques. As to the space elevator, they mainly focus on the problems concerning the building of spaceships in current times, including the selection of construction sites, the altitude, cable materials and power sources. For students, all these are new and challenging. In the teaching practice, the teacher helps students get familiar with professional vocabulary and phrases, such as strength to weight ratio, carbon nanotube, self-contained energy source, solar power, payloads etc. in pre-listening. In addition, lists of transitional phrases will be given as reminders for students and then questions will be asked to help students predict what the speakers are talking about: 1) What challenges do engineers face? 2) What are the possible solutions? 3) How does the speaker think about using a self-contained energy source? Then, in the while-listening phase, students will be asked to find the answers to the above questions from the text and check their predictions. Finally, in the post-listening phase, the teacher not only will help students check the answers, but they will also ask them to retell what have heard. Afterwards, students will be invited to work with their team members by imitating the problems and solutions faced by the engineers in the listening. What's more, the students will be encouraged to think about some more creative ways to solve the problems. This will not only realize the goal of training students' English oral ability, but it will also have the students' learning of professional knowledge strengthened.

### **3.4 Achieving the goal of learning by doing through unit project presentation**

At the end of the classroom teaching focusing on the topic of "the space elevator", the teacher helps the students to review the key and difficult points of this unit. Later, students are divided into several groups and named as the Space Elevator Research Team to carry out a project. The team members are assigned to collect materials after class, propose solutions to the anchoring system and propulsion system of the space elevator and present their own solutions in the next class. So far, students have finished learning "the space elevator". Through different learning activities, students have acquired some knowledge related to their major. At the same time, through the practice of the topic "the space elevator", students have learned to use English to express their professional knowledge. On the contrary, students also achieve the goal of exercising the English language skills by means of learning professional knowledge. By training English language skills on the topic of professional knowledge, the balance between training language skills and acquiring professional knowledge can be achieved, which is also the connotation of CBI.

## **4. The Analysis of the Effect of Themed-based Approach Teaching Practice under CBI Teaching Concept**

After a semester's teaching practice, the author of this paper conducted a questionnaire survey on 83 sophomores of mechanical engineering major, and received 80 valid questionnaires. They all filled in the questionnaire very carefully. The main dimensions of the questionnaire design include: 1) learning objectives of engineering English; 2) The relationship between engineering English and professional courses; 3) The relationship between engineering English and English learning in general;

4) Overall satisfaction with engineering English teaching. There were 25 questions designed in total. The survey shows that 91.26% of the students believe that theme-based teaching mode learning can help them to clarify the learning objectives of engineering English. This demonstrates that the theme-based teaching mode under CBI concept is based on the authentic contents and tasks of the subject, integrating language learning into the learning of subject knowledge. And it is in line with the laws of natural language acquisition, helps students improve their language expression ability, and on the other hand, correspondingly improve their thinking character, cultural character and learning ability. "Through the theme-based teaching mode, my professional vocabulary has increased and my ability to express in English has been enhanced", 90.64% of the students point out, a demonstration that this teaching mode not only highlights the students' learning of basic language knowledge, but also takes the professional tasks as the main line, integrating the classroom activities of conversation, role-play, small group discussion, project discussion and presentation. Under such circumstance, what counts is the desirable results of students' completion of work tasks with English as the language carrier. That "theme-based teaching mode has higher requirements on my language ability and highlights its applicability" accounts for 94.67%, which indicates that students generally believe that through interactive learning, negotiation of meaning, collecting information and taking an active role in meaning construction, students' ability to communicate and solve problems in English in the "working" situation has been enhanced. "I am generally satisfied with the theme teaching mode adopted in Engineering English", 85.35% of the students suppose, meaning that the students are generally satisfied with the teaching of this semester and the teaching effect is good.

## 5. Conclusion

After a semester's teaching practice and a questionnaire survey conducted at the end of the semester, the author this paper finds that the theme-based teaching mode under the CBI teaching concept can not only improve students' enthusiasm and application ability in learning engineering English, but it can also help students achieve the dual goals of language learning and professional knowledge consolidation. CBI teaching philosophy has the following apparent advantages: being adhere to the student-centered approach by centering on students' language and professional knowledge goals, encouraging students to participate in classroom activities and cultivating students' ability to solve practical problems as well as teamwork spirit and collective sense of honor. However, there also arise some problems in the teaching practice. The questionnaire shows that for students with poor language ability, they admit that the engineering English course is more difficult, their language expression ability is limited, and their enthusiasm is easy to be frustrated. At the same time, ESP teaching sets high requirements for teachers. English teachers not only need to interpret reading, listening and speaking materials on each theme in the textbook, but they also need to consult a large number of materials, collect pictures, videos or text materials related to the theme, visualize abstract theories, help students understand the concepts and meanings of professional knowledge, strengthen the learning of professional knowledge, and improve the ability to use English language. In addition, the ESP teaching practice under the CBI teaching concept requires English teachers to actively obtain opportunities and information to develop themselves through various ways. Only in this way can they gradually enrich professional practice experience, enhance the attractiveness of the classroom, develop in the direction of "a foreign language plus specialty", and constantly improve their professional quality.

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