

Original Paper

Study on Case-based Bilingual Teaching Model of International Engineering Contracting Course—Take Qingdao City University as an Example

Kefei Zhang¹, Qixiang Miao¹, Chunxiao Wang¹ & Qiaohui Zhang¹

¹ Qingdao City University, Qingdao, China

* Kefei Zhang, E-mail: zh_kefei@163.com

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Abstract

Under the background of the “Belt and Road” initiative, China’s international status in the field of international engineering is also increasing, and the industry’s demand for international engineering professionals and their professional requirements are gradually increasing. As a key professional course related to international engineering, international project contracting should keep pace with The Times in teaching content and teaching methods under such a background. Taking Qingdao City University as an example, based on the analysis of the problems existing in the traditional international engineering contract teaching, this paper proposes a new model of case-based bilingual teaching for international engineering contract teaching through the investigation of students’ professional foundation and English level, combined with the current development needs of the industry. This course is reformed from three aspects: the setting of case base, the optimization of bilingual teaching mode and the flexible assessment method. Finally, through the investigation of the students, the practical effect of the reform plan is tested.

Keywords

International Project Contracting, Bilingual Teaching, Case-based Teaching, Teaching reform

1. Introduction

With the continuous promotion of high-quality Belt and Road cooperation strategy, remarkable progress has been made in infrastructure connectivity in various fields such as railways, highways, shipping and energy. The 14th Five-Year Plan clearly states that we should rely on the advantages of China’s ultra-large market to promote international cooperation through which mutual benefit and

win-win results can be obtained. Besides, with the steady development of the Belt and Road cooperation, a community with a shared future for mankind is being built. In this context, China's construction enterprises, energy enterprises and enterprises from other industries actively go abroad to participate in the construction of international engineering projects, and carry out new multilateral cooperation. According to the statistics of the Ministry of Commerce, in 2022, Chinese enterprises in the countries along the "Belt and Road" signed 5,514 new contracts for foreign contracted projects, the new contract value of 871.84-billion-yuan, accounting for 51.2% of the new contract value of China's foreign contracted projects in the same period; The turnover was 571.31-billion-yuan, accounting for 54.8% of the total in the same period (Ministry of Commerce of the People's Republic of China, 2023; Li & Yang, 2021, p. 4).

Due to the rapid increase of international project contracting business, the demand for international project management talents in China is also increasingly strong, which puts forward higher requirements for the quality of training engineering management professionals in colleges and universities. Students should not only have a broad international vision, but also have the ability of cross-regional site management and a stronger awareness of international cooperation and exchange.

As an important specialized course for engineering management, International Project Contracting basically covers the knowledge that need to be applied in the process of international project contracting. Through the study of this course, the purpose is to enable students to master solid basic knowledge and theory, cultivate students' international vision and competitiveness, solve practical problems in international project contracting, and improve the ability of international project management.

2. Introduction of the International Engineering Contracting Course and the Relationship of the Relevant Course System

2.1 Introduction of the International Engineering Contracting Course

International Engineering Contracting is an elective course in the first semester of the junior year of the undergraduate major of Engineering Management and Engineering Cost in the College of Civil Engineering, Qingdao City University. This course integrates the content of several professional courses such as introduction to engineering management, engineering project management, engineering project bidding, engineering cost, civil engineering construction, construction laws and regulations, etc. It is a comprehensive course with the international engineering market and international engineering projects as the main research object. It puts forward higher requirements for students' knowledge integration ability, international vision, problem analysis ability and English level. Therefore, the traditional single Chinese teaching method is not suitable for this course.

2.2 Relationship of the Relevant Course System

As a comprehensive course in the field of engineering management, taking the training program of Engineering management major of Qingdao City University as an example, the content of international engineering contracting course (with the book *International Engineering Management* published by Southeast University Press as the main reference textbook) and its relationship with the curriculum system of other professional courses are shown in Figure 1 (Yuan, Deng, Li et al., 2022, pp. 221-224; Li, 2019). The wide range of course content and complex course structure make it more important to change and innovate the teaching form of this course.

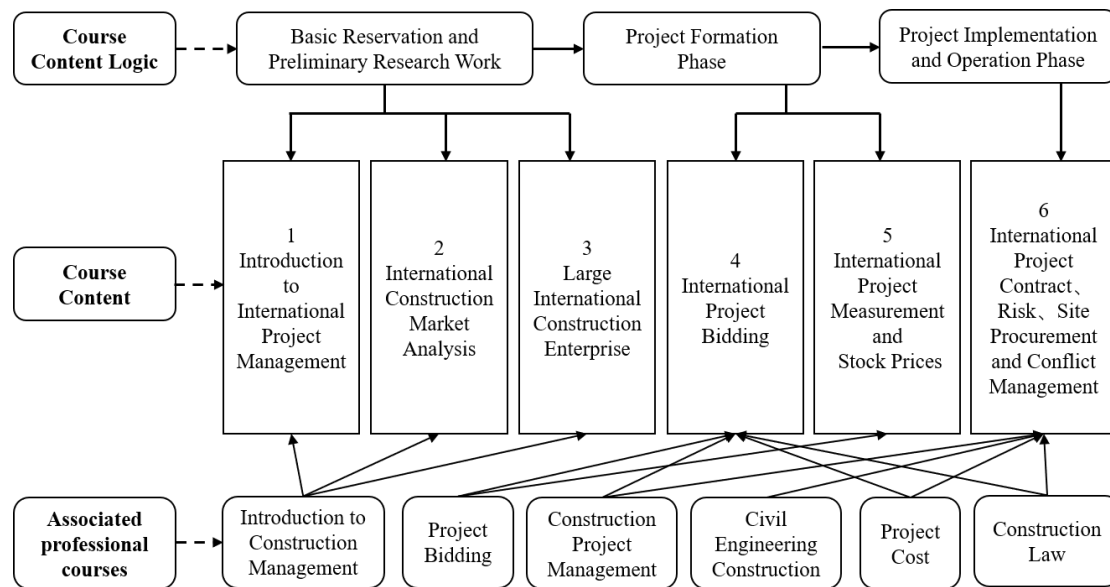


Figure 1. International Engineering Contracting Curriculum Architecture Diagram

3. Traditional Teaching Mode and Problems of International Engineering Contracting Course

3.1 Traditional Teaching and Examination Forms

Before the reform and innovation of the international engineering contracting course, the traditional teaching form was mainly lecture-oriented, and the teaching of theoretical knowledge was mainly. The assessment takes the form of attendance and final test, and less involves classroom performance, group discussion and homework.

3.2 Problems in the Traditional Teaching and Examination Forms

(1) Students are not motivated to learn. With teachers as the main body in traditional teaching methods, students passively accept knowledge and lack opportunities to interact with teachers. At the same time, there are many professional contents related to international project contracting, which involve a wide range of subjects and are rather boring, and students' thirst for knowledge is difficult to be stimulated. At the same time, the assessment is mainly based on the final test, which cannot mobilize the

enthusiasm of students to participate in class learning.

(2) The teaching quality is low. Traditional teaching methods teach a lot of professional content in a short time, which cannot take into account the quality, but will reduce the teaching effect, making it difficult for students to absorb and understand in a limited time. The form of assessment also rarely involves the content such as the usual performance, resulting in students only focusing on the final exam and results, but ignoring the daily learning harvest.

(3) It cannot effectively broaden students' international vision. Students lack the background knowledge of relevant international engineering projects, and traditional teaching methods often lack the introduction and analysis of actual cases. As a result, students cannot deeply understand the practical problems of international engineering contracting, and it is difficult to cultivate their ability to independently analyze issues related to international engineering management.

(4) There are obstacles to bilingual teaching. Bilingual teaching is one of the best teaching methods to understand the frontier of the subject, especially the international engineering contracting course, which helps to keep up with the latest developments of international engineering and cultivate students' international consciousness (Liu, Sheng, Zhang et al., 2023, pp. 438-440).

However, there are some difficulties in bilingual teaching at present. Firstly, the international engineering contracting course requires a lot of professional terms and background knowledge, and the bilingual teaching materials and teaching resources in China are relatively few, which brings certain difficulties to the teaching. Secondly, students are afraid of bilingual courses, psychologically exclude English communication, and are more unfamiliar with international engineering contracting professional English, so they are more reluctant to communicate in English. Finally, it is a challenge for teachers to balance the use of two languages in the classroom. Teachers need to choose appropriate teaching methods according to the language level and learning needs of students. At the same time, the arrangement of course content may be limited, and the difficulty of in-depth explanation of some content will increase.

4. Implementation of Case-Based Bilingual Teaching Model in International Project Contracting Course

4.1 Reset of Teaching Objectives

The premise of teaching mode reform is to determine what kind of learning goal to achieve through the study of this course. The traditional goal setting of "mastering, getting familiar with and understanding" is too abstract and fails to accurately measure the achievement of learning goals. Therefore, in combination with the needs of professionals in the development of the industry, this course restructures the teaching goals (detailed goals are shown in Table 1), which are divided into knowledge goals, ability goals and emotional goals. On the basis of completing the basic knowledge goals, students' ability to engage in international engineering-related work, problem solving ability,

dialectical thinking ability and English communication ability, and strengthen students' sense of responsibility, globalization awareness, law-abiding awareness and environmental protection awareness can all be improved so as to lay a solid professional foundation on the premise of correct thinking.

In addition, in order to better measure the achievement of teaching goals, especially knowledge goals (ability goals and emotional goals need to be measured through practice), the goal-setting mode of "phrasal verb + knowledge point" is adopted. Taking K1 knowledge goal as an example, the traditional teaching goal setting will describe it as "familiar with the basic forms of the international engineering market", while the reset teaching goal will describe it as "able to describe the basic forms of the international engineering market in my own words combined with the current development situation and my own understanding". This template is used to rewrite all knowledge objectives during the development of the syllabus and the teaching process.

Table 1. Detailed Objectives of International Engineering Contracting Courses

International project contracting curriculum target system		
K-Knowledge Goals	A-Ability Goals	E-Emotion Goals
K1 The basic situation of the international engineering market	A1 The ability to analyze the international engineering market, the development mode and strategy of international engineering contracting enterprises	E1 China's engineering should take the globalization consciousness of international development
K2 Different regional engineering market access system		
K3 International project bidding mode and process		E2 Sense of a community of shared future for mankind featuring fair competition and win-win cooperation
K4 International Project Contract management		
K5 International Engineering project risk and management program	A2 Entering the target market according to the actual situation, choosing the right bidding strategy, and carrying out the project contract management, risk management, site management, cooperation and conflict management capabilities	E3 strives to enhance its awareness of learning advanced engineering technology and management methods worldwide and contributing to the development of China's international engineering
K6 International engineering insurance and guarantee system in different regions		
K7 How to carry out on-site management of international engineering projects		E4 Awareness of abiding by laws and regulations and implementing projects according to law

K8 Methods to carry out international engineering cooperation and conflict management	A3 Ability of professional English communication and dialectical thinking	E5 Awareness of environmental protection, low-carbon and sustainable development of the engineering industry
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4.2 Construction of Case Base and Reform of Case Teaching Mode

Combined with the characteristics of “practicality + comprehensiveness” of this course and the previous teaching experience of our school and other schools, the teaching mode of “theoretical knowledge learning + case analysis” is more conducive to improving students’ low interest in learning and boring class. In addition, case analysis can help students deepen their understanding of theoretical knowledge while training their ability of independent thinking and problem analysis. However, the problem of traditional case learning is that the knowledge points involved in cases are too simple and scattered, and only when the teaching content is carried out in a specific content, the teacher will give examples, which is not conducive to the formation of students’ knowledge system, and it is not possible to form a complete cognition of practical projects through the combination of case learning and theoretical knowledge. Therefore, through the form of “classic cases throughout + key issues with key examples”, this course reconstructed the course case teaching method and case base based on the development strategy of the “Belt and Road” and the key international engineering projects that China participates in along the route. The backbone cases are mainly successful cases (such as the project case of China-Pakistan Economic Corridor), while the cases corresponding to the key problems are mainly failure cases, so as to strengthen students’ cognition of the problems and improve their attention and emphasis on the key problems, as shown in Figure 2.

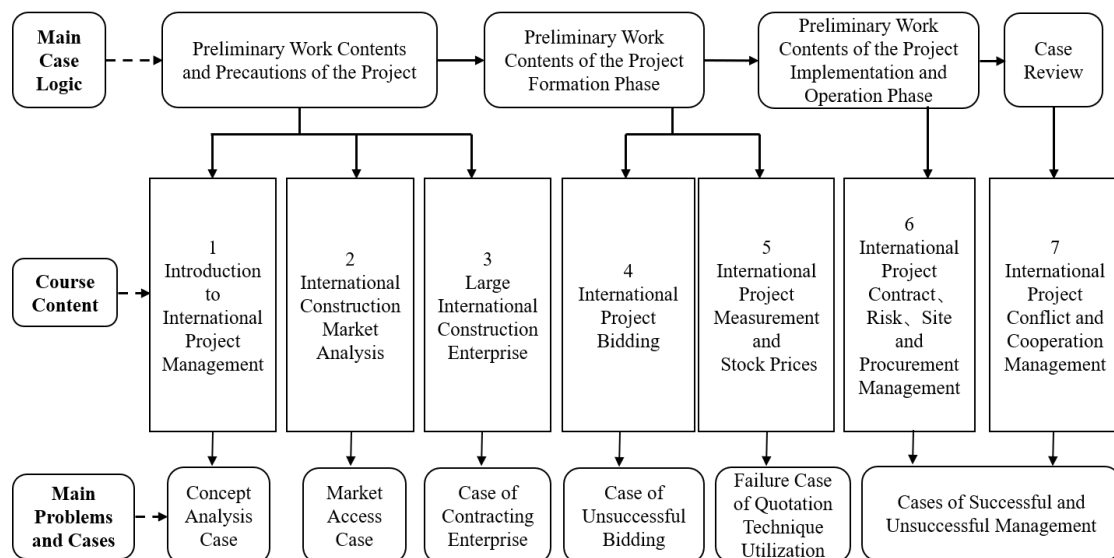


Figure 2. International Engineering Contracting Course Case Base Structure

4.3 The Transformation of Bilingual Teaching Mode

Take Southeast University, which offers the course of international engineering management, for example. Since the course was set up in the 1990s, the course of international Engineering management in Southeast University has developed into a deliberative course taught in pure English (Li, 2019). However, based on the professional foundation and English level of our students, the teaching mode and experience of Southeast University can only be used as a reference. The reform of bilingual teaching mode of this course should be mainly based on learning situation.

4.3.1 International Engineering Contract Teaching Students English Foundation Survey

Taking the class taught in the first semester of 2023-2024 academic year (junior college students) as an example, it is found through the questionnaire issued (as shown in Figure 3) that 72% of the students failed to pass the English proficiency test before learning this course, 17% of the students passed the English level 4 and 4% passed the English level 6. 7% of students have taken the IELTS or TOEFL test (but scores are not counted). According to the survey results, it can be judged that the students do not have the English level to participate in the professional courses taught in English, so the bilingual teaching mode should be selected according to the basic situation of the students.

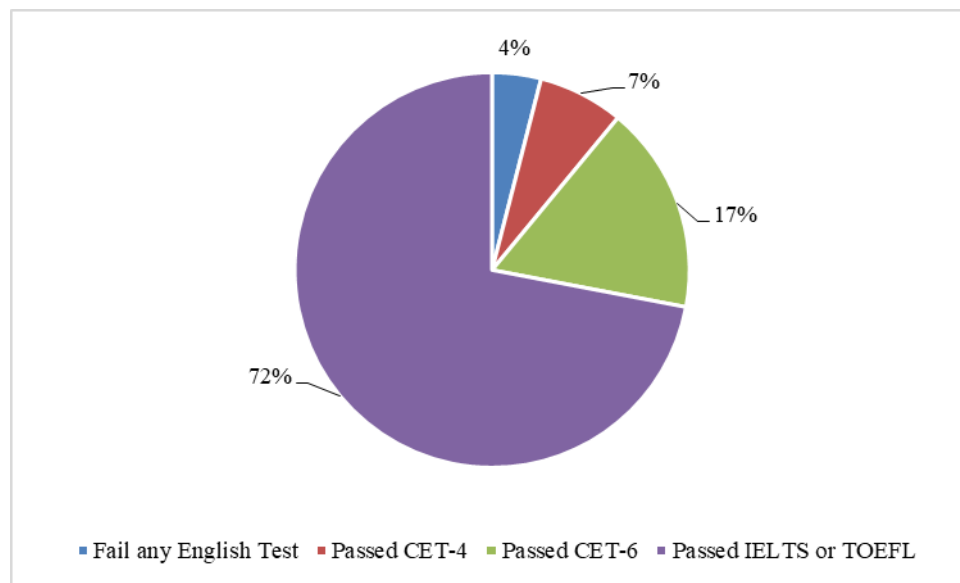


Figure 3. Survey on English Basis of Students Taught in International Engineering Contracting Course

4.3.2 Bilingual Teaching Method and Mode Selection

(1) The proportion of teaching in English

The commonly used bilingual teaching modes mainly include ① transitional mode, ② maintenance mode and ③ immersion mode (Yuan, Li, Deng et al., 2013, pp. 102-108). The transitional teaching mode is mainly in Chinese, the maintenance teaching mode has a similar proportion of English and Chinese, and the immersion teaching mode is most mainly in English. According to the survey of students' English level and opinions on the proportion of English in teaching (see Figure 4), this course chooses the mode of bilingual teaching for simple knowledge points and familiar knowledge points, and transitional bilingual teaching for difficult knowledge points.

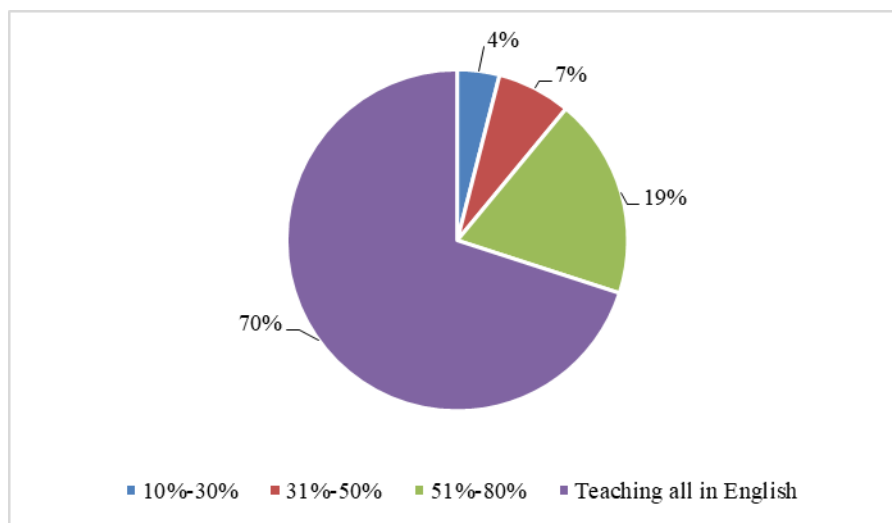


Figure 4. Survey on Students' Acceptance of the Percentage of Teaching in English

(2) English teaching content selection

According to the survey of students' demand for content taught in English, the top four items are: ① Proper nouns (68%); ② Classic international engineering cases (51%); ③ Foreign market access rules (45%); ④ Content related to international engineering measurement and valuation (43%). At the same time, combined with the teaching content (see 2.2) and course characteristics, in addition to the above four parts, engineering business negotiation etiquette is also used as the English teaching content of this course.

(3) Teaching in English quality assurance

In order to ensure the quality of English teaching of this course, the methods of "learning theoretical knowledge in both Chinese and English + English questioning and dialogue" and "learning English discussion in English + English questioning in case study" are adopted to strengthen students' English learning effect and English communication ability.

4.4 Implementation of Flexible Assessment Mechanism

The content of the international engineering contracting course (abbreviated as 1-10, the corresponding relationship is shown in Figure 1) corresponds to the assessment method, and the realization of the course objectives is shown in Figure 5. The five assessment methods mainly assess the realization of knowledge goals and ability goals, and ultimately are used to quantify the course learning and teaching results. The realization of emotional goals (curriculum ideological and political goals) runs through every stage of the whole course and every form of assessment, and the improvement of students' ideological and moral qualities should be taken into account in each stage of the realization of knowledge goals and ability goals.

Knowledge Module	1	2	3	4	5	6
Classroom Performance (10%)	✓	✓	✓	✓	✓	✓
Group Discussion (20%)					✓✓	✓✓
Regular Assignment (10%)			✓✓			✓✓
Professional English (10%)	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Final Exam (50%)						

Teaching Goal ✓ Knowledge Goal ✓ Ability Goal — Emotion Goal

Figure 5. International Project Contracting Assessment Mechanism and Curriculum Goal Realization System

5. The Implementation Effect Evaluation of Case-Based Bilingual Teaching Model

The students' overall satisfaction with this course and the teaching cases are shown in Figure 6 and 7, with the satisfaction rate reaching 100%. As for the acceptance of the difficulty of the course (as shown in Figure 8), 15% of the students said that the difficulty of the course could be further improved, 83% of the students thought that the difficulty was moderate, but 2% of the students said that the course was difficult and the difficulty of the course could be appropriately reduced. In addition, the survey results of students' acceptance of English teaching show that 19% of students can only understand a small part of the content in English teaching, 68% of students can understand most of the content, but there are difficulties in understanding rare words, and 13% of students with a good foundation can fully follow the progress of English teaching.

In general, the case-based bilingual teaching reform of the course of International Engineering Contract has been successful from several aspects, such as the rationality of methods, models and assessment methods, students' acceptance and satisfaction, and the completion of teaching objectives. However, it is still necessary to carry out dynamic reform of teaching content and teaching methods according to the development and requirements of the industry and the characteristics of each class of students.

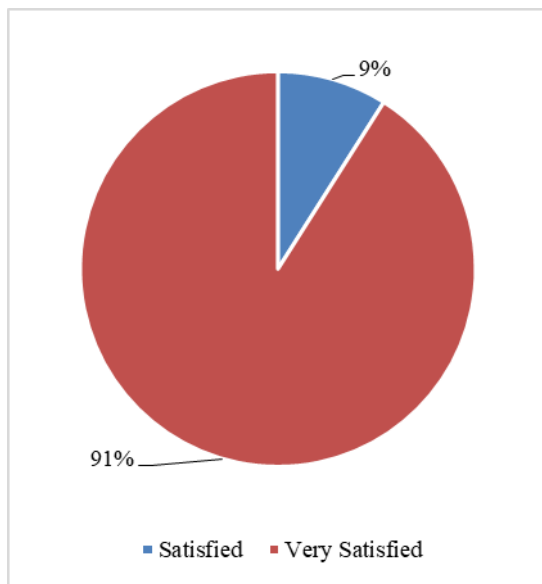


Figure 6. Survey of Students' Overall Satisfaction with Their Courses

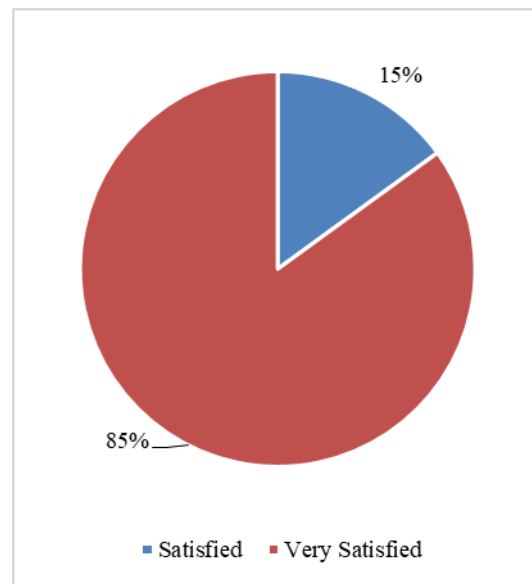


Figure 7. Investigation on Student' Satisfaction with Case Teaching Method

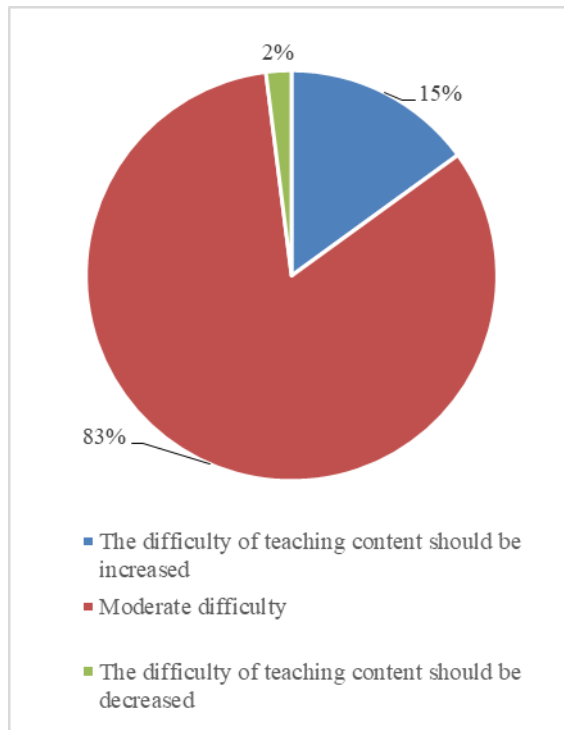


Figure 8. Survey of Students' Acceptance of the Difficulty of the Course Content

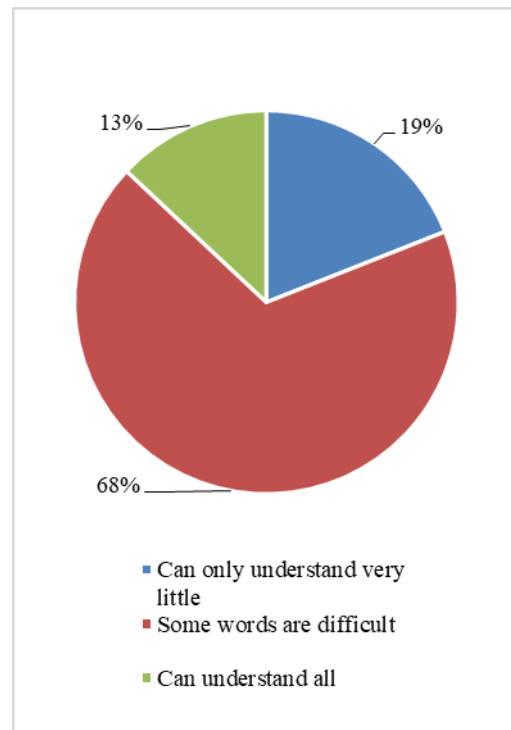


Figure 9. Survey of Acceptability of Teaching in English

6. Summary and Reflection

This teaching reform has carried out different degrees of innovation from the application of teaching methods, the update of teaching mode, the improvement of teaching content and other aspects, and evaluated the effect of this teaching reform through the questionnaire survey of students. It can be seen that students not only consolidate and integrate professional knowledge, but also have a preliminary understanding of the market situation, enterprise situation and project management practice related to international engineering. At the same time, their English communication ability has also been improved. However, according to the survey results mentioned above, some students still have the problem of poor course acceptance and inability to keep up with the bilingual teaching progress. In the future teaching, teachers should try their best to take into account every student and ensure the professional and English learning effect of every student by improving teaching methods and constantly perfecting teaching materials. It lays a good foundation for students to engage in international engineering related work in the future.

References

- Lei, Z. Y., Jiang, L. P., & Chen, W. (2020). Reform of the teaching mode of “International Engineering Procurement and Contract Management” based on the training of applied talents. *Science and Education Guide*, 2020(15), 3.
- Li, Q. M. (2019). *International Engineering Management*. Nanjing: Southeast University Press.
- Li, Y., & Yang, H. Y. (2021). Construction of International Engineering talent training curriculum System under the “Belt and Road” Initiative. *Education and Teaching Forum*, 2021(8), 4.
- Liu, T. T., Sheng, J., Zhang, J. et al. (2023). Research on mixed teaching mode of bilingual curriculum for international engineering contracting. *Construction Economics*, 44(S01), 438-440.
- Ministry of Commerce of the People’s Republic of China. (2023). *Investment cooperation with countries along the Belt and Road in 2022*.
- Yuan, J. F., Deng, X. P., Li, Q. M. et al. (2022). Exploration and practice of discussion-based teaching mode of international Engineering Management course. *University Education*, 2022(08), 221-224.
- Yuan, J. F., Li, Q. M., Deng, X. P. et al. (2013). Bilingual Teaching reform of International Engineering Management Courses oriented by Ability Training. *Higher Architectural Education*, 22(01), 102-108.