

Discussion on Bilingual Teaching Reform of Electrical and Electronic Experiment Course

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Abstract: Bilingual teaching is a hot issue in the current reform of higher education and teaching. In recent years, many colleges and universities actively offer bilingual courses. At the same time, Electrotechnics and electronics experiment is a basic experimental course of Engineering specialty, which plays a vital role in students' future engineering practice and scientific research ability [1]. Before learning this kind of curriculum, the freshman school year established a certain degree of English ability and professional knowledge base through the study of College English and college physics, which provided a strong premise and guarantee for the bilingual teaching of the experiment and facilitated the improvement of teaching effect. Of course, bilingual teaching is also a challenge to teachers' comprehensive quality.

1. Introduction

1.1 Necessity of Bilingual Teaching

Bilingual teaching is a special teaching activity, which requires teachers to carry out professional knowledge teaching in a relaxed and pleasant language environment on the basis of scientific research [2]. Taking the major of electrical engineering and automation (Sino-foreign cooperation in running schools) of our university as an example, the German side corresponds to the major of electrical engineering, which implements the 3+1 training mode. In the process of learning college English, students seldom come into contact with professional vocabulary, while during the course of learning professional courses, they will encounter a large number of professional materials in English, many of the latest reference materials are also in English. Therefore, in the course of curriculum design and professional project development, students will need a lot of professional English reading, but also bring many difficulties to use.

1.2 Current Situation of Experimental Courses in Our School under Bilingual Teaching Mode

Since 2017, our university has carried out bilingual teaching of basic theory courses of electrical engineering and its automation (Sino-foreign cooperative running school) specialty. However, the corresponding experimental courses are taught in traditional Chinese, so that students can not adapt to foreign curriculum design at all. It is impossible to combine theory with practice effectively. The reasons for this phenomenon are as follows: firstly, the differences between theoretical teaching and experimental teaching are not well taken into account in curriculum design; secondly, the lack of bilingual teachers in experimental teaching. Third, most students fail to adapt to the bilingual teaching of experimental courses, without experience, the premise that traditional Chinese teaching will be more effective, there is still a certain fear of bilingual teaching. Of course, it is not excluded that a few students support the bilingual teaching of experimental courses. They feel that they can better improve their English level and train their listening and speaking abilities.

In this context, on the one hand, we must have confidence and determination in promoting or even deepening this new teaching method, on the other hand, we should also be aware of some problems that may or must exist in the process [5]. For example: (a) Whether the bilingual

experimental course only aims at the students majoring in electrical engineering and automation (Sino-foreign cooperative running school); (b) Once the class is composed, how to urge the students to stick to the course of one semester instead of dropping out in midway; (c) how to set up the course sustainably, and After one or two sessions, due to the poor teaching effect, we have to face the dilemma of cancellation. Of course, it is not easy to successfully set up a new type of course. There are still many difficulties and challenges to be faced. The above lists are three practical problems that need to be solved urgently under the current bilingual teaching mode, which will be discussed in detail below.

2. Course Design of Bilingual Teaching in Electrical and Electronic Experiments

First of all, we should make it clear that the bilingual experimental course of electrics and electronics is motivated by the application of English language, so that students can learn a lot of English information in the process of learning professional knowledge, so as to achieve the goal of effectively cultivating students' English application ability [4], and at the same time enable students to have the corresponding level of electronic circuit design. Therefore, we must follow the principle of "people-oriented, teaching according to aptitude and gradual progress", take the experimental content as the core, adopt practical English materials and language as the teaching content, and pay attention to students' cognitive and emotional factors in the classroom, so as to achieve integration and trade-offs that vary from person to person and from time to time, so as to be effective. Promote teaching reform [5]. Past experience tells us that scientific selection of feasible teaching methods and means is the fundamental guarantee for the sustainable development of bilingual teaching in experimental courses.

2.1 Optimizing Class Organization Structure

At present, the experimental teaching classes in our school are composed of one lecturer, two tutors and two administrative classes. Such teaching organization is undoubtedly of worrying effect for bilingual teaching. Therefore, we should make optimum adjustments: small class teaching, that is, a single administrative class, should be adopted to carry out experimental teaching tasks, reduce teaching teachers, that is, one lecture and one guidance, save teachers' strength, and maximize the realization of the "student-centered" teaching strategy.

2.2 Perfecting the Course Design of Experimental Teaching

In order to dispel the students' fear of difficulties and increase their confidence in their English ability, at the beginning of this course, it is advisable to use simple and easy-to-understand English sentences to describe them, and to ensure the correct pronunciation of the professional vocabulary involved. When necessary, appropriate amount of Chinese is inserted to assist the explanation. After students have adapted to the rhythm of English teaching, they can gradually increase the complexity of English sentences, and they need to observe the students' reactions at any time in order to increase or decrease the difficulty flexibly and ensure the teaching effect.

(1) Improving the teaching plan

Students are required to preview experimental teaching tasks ahead of time in combination with theoretical bilingual courses, complete the basic knowledge of the experimental report book (required to be filled in English), and review and summarize in time after class. At the same time, it is necessary for the lecturer to list the English vocabulary that may be involved in the next experimental class at the end of each lesson, as well as the relevant English tips on the experimental instruments for students to remember and learn.

(2) Adjusting the Arrangement of Classroom Teaching

The students are divided into groups according to the five-person system. They are encouraged to speak actively in class, to communicate and think in English, and to be graded according to the performance of each group in class. As a result, students' participation is emphasized. The bilingual teaching courseware and textbooks are adopted, that is, in the process of teaching, English is the

main language, Chinese is the supplement, and the similarities and differences between eastern and Western cultures and ways of thinking are integrated, which can be expressed in two languages. In the process of experiment analysis, decomposition explanation was adopted. The proportion of English explanation in the whole experiment class gradually increased from 30% to 60% and 70%. It was adjusted step by step and flexibly. At the same time, appropriate Chinese was inserted to assist explanation when necessary.

The experimental report requires students to complete in English. On the one hand, it can train students' English writing ability, on the other hand, it can also deepen the memory of English vocabulary learned in class.

2.3 Strengthen the guidance of experimental process

In order to further consolidate and ensure the teaching effect and sustainability of bilingual experimental course, considering the limited classroom time, the tutor should actively cooperate with the main lecturer to guide the students to complete the experimental operation efficiently. At the same time, the equipment used in the course should be checked well in advance to prevent the phenomenon that the damage of the equipment affects the experimental results. And improve the quality of teaching.

In addition, the study of this course can also extend beyond the classroom, that is, after-school counseling. Teachers can communicate with students through the network education platform of the Electrotechnics and electronics experiment center, such as sending or receiving professional learning materials, answering students' questions in time and so on, so as to maximize teaching according to their aptitude, consolidate classroom teaching results and promote students' autonomous learning.

2.4 Reforming the Assessment System

The current assessment system adopted by our school is as follows: the total score = the usual score (classroom performance)*60%+the experimental score (student report)*40%. It is suggested that the existing assessment methods should be changed, flexible oral examination, reply and other diversified methods should be added, and the quality of students' speech and their active participation in the classroom should also be included in the final performance evaluation. Specific implementation of the adjustable score composition and proportion: the total score = peacetime score * 70% + final examination score * 30%.

Among them, the usual performance is composed of attendance times, class participation and quality, completion and submission of experimental reports, late and early departure, etc. In the final examination, it is suggested that the open-book format should be adopted, with English as the main answer, and the oral examination should be added appropriately. The main purpose of the examination is to examine the students' English application ability and experimental knowledge. The part of thinking questions can be added appropriately to facilitate the opening of examination scores.

2.5 Encouraging Exchanges Abroad

In the way of "Go Out, Come In", our university has many talent exchange and cooperation projects with Heidelberg University of Applied Technology, North Hessen University of Applied Technology and Anhalt University of Applied Technology in Germany. Both sides often send foreign students and professors to visit and teach or leave their children. Increasing the opportunities for students to contact with foreign teachers is very helpful for improving teaching effect and increasing interest in learning. To some extent, it also strengthens the teaching staff of English majors and plays a great role in promoting the sustainable development of all-English experimental teaching

3. Conclusion

This paper discusses the practice and exploration of the reform of bilingual teaching in electrical and electronic experimental courses. This teaching mode is based on specialized experimental

courses and basic English ability. It combines the characteristics of bilingual small class teaching to make students relaxed and happy outside. Actively participate in classroom teaching in the language environment, while training students' engineering practice ability, improve the ability of English application. Of course, if we really want to promote bilingual experimental teaching, we need good cooperation among schools, teachers and students. Teachers of bilingual experimental courses also put forward higher requirements. While improving their professional foundation and English level, they should also pay attention to the enrichment and improvement of their connotation and accomplishment, and fully assume the responsibility and obligation of guiding, helping, caring for and achieving students.

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