Exploration and Significance of Fundamentals of Mechanical Manufacturing Technology

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Abstract. With more and more enterprises to introduce foreign advanced technology and equipment, in order to adapt to the development of modern enterprises, the entrepreneur urgently need a large number of mechanical bilingual talents, it is very important for the school students to implement professional bilingual education. This paper takes the bilingual education of "Fundamentals of Mechanical Manufacturing Technology" as an example, analyzed the necessity of bilingual education in this course and the problems in practice. From the perspective of bilingual education objectives, teaching system, selected teaching materials, teaching methods and teaching effect, proposed the "Fundamentals of Mechanical Manufacturing Technology" bilingual reform thoughts, through practical application, the teaching effect significantly has been improved.

Introduction

With the development of science and technology, the rapid development of advanced manufacturing equipment and technology at home and abroad, increasing opportunities for international technical exchanges, and rapidly absorbing advanced manufacturing technology and design concepts have become an important task of undergraduate teaching at present. Therefore, training a group of international talents not only understand the professional knowledge and scientific research and international communication in a foreign language education become a trend in today's mechanical subject. Throughout the world, any one of the most powerful countries, all have a well-developed manufacturing industry. However, the advanced manufacturing technology in the hands of foreign developed countries. Such as foreign developed countries on the arc cam processing error control of the technical information blockade, making the foreign arc cam processing errors less literature. However, the domestic research on this aspect started relatively later. Although some research results were obtained, most of them focused on the analysis of individual machining errors, and lacked the research on the comprehensive processing error. Therefore, in order to make our students understand the latest research in the field of disciplines, cultivate innovative ability, enhance international communication skills and increase the competitiveness of the need for bilingual education.

The Necessity of Bilingual Education in the Course of "Fundamentals of Mechanical Manufacturing Technology"

Bilingual education is taught by teachers in English mainly in English [1]. The students can quickly get more professional knowledge and skills, and learn professional knowledge of English. In the classroom, not only the students listen to the teacher's lectures in English, but also the teachers and students interact in English in class. Bilingual education in the course of “Fundamentals of Mechanical Manufacturing Technology” is helpful to train a large number of talents with high innovation ability and to meet the needs of economic and social development. Bilingual education has greatly changed the teaching of specialized subjects. It makes subject knowledge closely follows
the trend of the world and integrates the practical application of foreign languages, which makes students both professionals and bilingual talents. They can both in the form of mother tongue and foreign language in the application of professional knowledge for international exchanges and cooperation. This is consistent with the goal of training bilingual talents. In addition, bilingual education makes the traditional way of education go out of “examination oriented education” [2], Which not only pays attention to the improvement of students' comprehensive ability, training a large number of international vision and rapidly integration into the international market environment for bilingual talents, but also to cultivate a comprehensive quality of the individual aspects of the students.

Practice of Bilingual Education of "Fundamentals of Mechanical Manufacturing Technology" Course

Section Headings Selection of Textbook

Bilingual education is the same as before, and the selection of teaching materials is very important [3]. The teaching material is the basis of education. If we want to do well in bilingual teaching, we must have proper English textbooks for students. When choosing textbooks, we should pay attention to the scientific nature, advanced nature, normative and cutting-edge of teaching materials. Meanwhile, it has a comprehensive teaching knowledge system. However, the original English textbooks and China's syllabus and teaching system vary widely, not suitable for China's university stage of teaching. At present, the English level of college students in our country is quite different. Most students' English proficiency is not enough to understand the contents and system of English original textbooks. Therefore, we can’t copy the original textbook or simply copy, need to consider the students' acceptance ability, teaching factors, knowledge value and the relationship between knowledge and ability, and then comprehensive tailoring, reasonable choice, optimize the teaching content. Secondly, it requires English vocabulary easy to understand, both to focus on the knowledge of the system, but also reflects the cutting-edge and advanced nature.

The Choice of Students

Nowadays, the ordinary higher engineering colleges, students' English level is not balanced. If the implementation of all students "one size fits all" that is tantamount to plucking up a crop to help it grow. English teaching not only requires students to have a strong listening, speaking, reading and writing skills, and the ability to accept must be relatively strong. First to the CET four or CET six as the selection criteria, but through the College English Test of the CET four or CET six students do not represent their ability to accept some. In order to prevent students in the use of Chinese teaching is also difficult to grasp and understand the course of knowledge, but blindly using bilingual teaching, so that the difficulty of learning to increase the drawbacks, we use the principle of voluntary registration and merit selection. Our college “Fundamentals of Mechanical Manufacturing Technology” basic course commenced in the second year of the university semester, the college sophomore college students are divided into two parts of teaching, a part of the bilingual teaching class, the other part is still taught in Chinese. And two part of the students use the same syllabus and synchronize. Practice has proved that this method is a useful attempt to reflect the people-oriented teaching ideas [4], students reflect the effect is very good.

Teaching Means

In order to understand the effect of bilingual education, we will be bilingual classes and non-bilingual classes were synchronized at the end of the test, and bilingual classes conducted a questionnaire survey, the results shown in Figure 1.

It can be seen from the above figure that the effective teaching methods and methods play a decisive role in the teaching quality of bilingual teaching. Therefore, a variety of teaching methods are used to stimulate students' motivation to study the course of" Fundamentals of Mechanical
Manufacturing Technology " [5]. The diversity of teaching is summarized as follows: first, we use bilingual mixed teaching. Instead of using English as a professor in the classroom, Chinese is taught in parts that some students find difficult to understand and difficult to understand, this interspersed teaching model can prevent students from misunderstanding. But, the part of the knowledge of the Chinese part of the classroom occupies a small part, all the focus or in English teaching. Followed by the use of blackboard + PPT, blindly the book will make students feel the classroom learning tedious, at the same time, the simple PPT teaching can’t make the students remember deeply. The use of blackboard + PPT teaching model not only allows students to be able to clearly produce sensory awareness while also convenient for students to take notes and understanding. In addition, students will be divided into a number of learning groups for discussion and discussion in English and randomly selected one of the members to discuss the results of the presentation, which will increase the students in the classroom learning atmosphere and improve the students speaking skills.

![Influential Factors of Bilingual Teaching](image)

Figure 1. Influencing factors of bilingual education.

**The Teaching and Training Requirements**

For a teacher is a man who transmits the way, imparts learning, and dispels doubts. Bilingual education can be carried out smoothly, teachers play a crucial role. Professional knowledge of bilingual teachers should not only good, but also have good language ability. First, if the school can obtain financial support through the employment of foreign bilingual teachers, foreign teachers do to assist teaching to learn teaching philosophy by the school bilingual teachers, teaching ideas and teaching methods to improve the level of bilingual teaching in our school. Secondly, teachers who have excellent English teaching skills are assigned to the relevant courses in the countries with good bilingual teaching experience. The other way, the selection of returned doctorate teachers with teaching experience as bilingual teaching task. At the same time, we periodically employ bilingual teaching of relevant professional experts organized training courses for teachers to explain and make a report, and thus enhance the bilingual teaching level of teachers.

**Scientific Management**

College to strengthen management, enhance the effective incentive policy. In the aspect of teachers, improve teachers' bilingual teaching workload and subsidies, bonuses, appointment of professional and technical positions, training and training to tilt. In the aspect of students, the term graduate scholarship, and give students credit incentive and assessment in the bilingual teaching of tilt. At the same time, the establishment of bilingual incentive and assessment in the bilingual teaching of tilt. The evaluation includes two aspects: (1) In order to improve the level of bilingual teachers, timely understanding of student learning, the teacher pointed out at the end of each month and the professor shortage and improvement of students' evaluation of teacher. (2) The teachers basis the degree of student 's active participation every month, complete homework, literature reading ability to evaluate the degree of acceptance about students, and then make the teaching work and the adjustment of the search for the teaching ideas and teaching methods better.
Teaching Effect

Bilingual education has been implemented in our hospital for ten years, whether in the students, parents or enterprises have received unanimous praise. Bilingual education achievements come from schools, teachers and students together, our bilingual education and bilingual education of non-using the same content, different language the same papers selected from 2014 to 2016 assessment results, the results are shown in Figure 2:

![Figure 2. Average student achievement.](image)

From the results, non bilingual classes test scores was significantly lower than the bilingual classes test scores. The teaching practice shows that there is ground to carry out bilingual education to students, not only conducive to improve the quality of teaching, but also help to improve English reading ability, writing ability and comprehensive quality of students, truly individualized.

Summary

"Fundamentals of Mechanical Manufacturing Technology" course is one of the main courses for the major of Mechanical Engineering. The development of bilingual education embodies the idea of quality education, our party's "three oriented" education policy. In the process of bilingual education, there are still many problems worth discussing. For example, how to handle the relationship between the subject and the content of English language learning, how to arrange the proportion of conduct bilingual teacher training, how to carry out quality education in bilingual education. These problems must be explored and solved in the practice of bilingual education according to the characteristics of CNC technology and the characteristics of students.

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