Exploration and Practice of Teaching in English for New Energy

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Abstract. English for new energy is a compulsory course for new energy science and technology majors. This paper analyzed the main problems in teaching characteristics and process of English for new energy course in agricultural universities. Meanwhile, combined with teaching practice, the teaching reform of English for new energy was explored based on the teaching objectives, teaching contents, teaching patterns and evaluation methods.

Introduction

With the continuous development of new energy in China, the education ministry added a new energy science and engineering major in 2011, in order to fill the gap of technical professionals and research team. This major is also listed as a strategic emerging industry related major. With the development of the times, the requirements for the new energy professionals have also been challenged. New energy professionals not only need to master the professional knowledge, but also need to have a higher level of English. Specialized English is the transition from the stage of basic college English to professional applications. The purpose of specialized English is to enlarge students' vocabulary, to improve the speed and understanding accuracy for students when reading English literatures, and to enable students to write articles in English and use English for international academic communications.

However, unlike basic college English, the specialized English is not linked to students' degree and graduation. Accordingly colleges and universities do not know enough about the setting and significance of specialized English courses, and students do not pay enough attention to the study of specialized English. Meanwhile, the teaching contents are difficult, and the teaching methods are boring and lack of attraction [1]. Due to the above problems, the establishment of specialized English course is worrying, and its popularity and effectiveness is not satisfactory.

In this paper, some typical phenomena and problems in the teaching process are deeply discussed. Combined with teaching practice, the teaching reform of English for new energy was explored based on the teaching objectives, teaching contents, teaching patterns and evaluation methods. The aim is to improve the teaching quality of specialized English, to let students learn something, and to make full use of the effect of specialized English education in talents training.

Problems in the Teaching of Specialized English

Weakness of Students' Basic English Skills.

The specialized English course is generally arranged in the third and fourth stage. The undergraduate students have the foundation of English learning during the first two years and some of them have passed the College English Test Band Four and Band Six (CET-4, CET-6), however a large number of students only focus on the examination skills and do not have a strong ability to read, write and speak English. For the application of English, especially in the field of professional applications, the ability of students is weak. The students' basic English level is low, which increases the difficulty of
further study of specialized English, and it is easy to provoke a reaction against the specialized English learning. During the teaching process, we find that some students are lack of vocabulary and their translation levels are in the primary stage. Especially for the complex sentences, the analytical and understanding ability of students are generally poor. Even if they can barely translate the sentences, the expressions do not fit the Chinese habits. A lot of students who have learned specialized English still cannot quickly read and accurately understand the professional English literatures, when they enter the stage of graduation thesis. It should be noted that many students cannot write a standardized English abstract in their graduation theses.

**Lack of High-Quality Specialized English Materials.**

The teaching material is the concrete embodiment of the syllabus. Whether the content of the teaching material is suitable or not, whether the content can keep pace with the times and keep track of the latest research results or not, can directly determine the teaching quality of specialized English [2]. At present, there is still a lack of high-quality English materials for new energy science and engineering which is a new and multi-disciplinary major. Therefore, it is difficult to meet the needs of new energy industries for high quality graduates nowadays.

**Single Teaching Methods and Means.**

Specialized English involves a lot of professional knowledge, vocabulary, long and difficult sentences. The content of specialized English is relatively boring, and the teaching hours are very short. The general teaching method for specialized English is to read the texts, and then translate combining with the professional knowledge explanation. Although this method can achieve the general purpose for specialized English teaching, the learning process is boring and students are not interested in the contents under such a depressing classroom atmosphere. Single and backward teaching methods directly lead to the decrease of students’ interests in learning specialized English, which seriously affects the teaching effect.

![Diagram of Teaching Objectives](image)

**Figure 1. Teaching objectives of English for new energy.**

**Exploration and Practice of Teaching Reform**

**Optimization of Teaching Objectives.**

According to the characteristics of agricultural colleges and universities and the future of graduates, the teaching of English for new energy should be based on the acquisition and application of English knowledge and the effective exchange of information. Specifically, the course is aimed to make students learn vocabularies related to new energy and environmental majors, expressions and
sentences translation skills. The course focuses on fostering the ability to read scientific literature correctly and rapidly, and improving academic writing and translation ability. It lays a firm foundation for students to understand the dynamic frontier of professional development, to learn advanced technology and to use English freely in communication in specialized areas. The teaching objectives of English for new energy at different levels are shown in Fig. 1.

**Integration and Innovation of Teaching Contents.**

The quality of teaching materials is an important guarantee for teaching quality. The content of teaching materials should be systematic and consistent with professional knowledge, and the materials should be updated regularly which is consistent with subject development. Currently, the teaching materials related to new energy science and engineering are limited [3]. Many textbooks selected materials randomly, lack of focus. In the actual teaching, we cannot follow the prescribed order and completely copy the contents. We need to grasp the key contents and highlight the characteristics, taking into account the actual situation of universities.

In our practical training, the course consists of 36 hours, and the teaching contents are mainly divided into 4 parts, as shown in Fig. 2. Among them, the introduction of new energy resources accounted for the largest proportion (22 class hours, 61%). This part is mainly based on the ‘New Energy in English’ published by the chemical industry press, which briefly introduces a variety of new energy sources such as solar energy, wind energy, geothermal energy, ocean energy, biomass energy, tidal energy, hydrogen energy, nuclear fusion energy, etc. A small proportion of environmental engineering knowledge is also included (4 class hours, 11%), including introduction for water and waste treatment. Additionally, in order to improve the ability of students to read English literature and write thesis, we add the introduction of scientific English (6 class hours, 17%) and scientific paper writing (4 class hours, 11%). This part focuses on the writing and reading of English units, symbols, formulas, and the structure of English scientific papers, thesis title design and abstract writing.

![Figure 2. Time allocation of English teaching.](image)

**Innovation of Teaching Patterns.**

The teaching methods should be changed from simple teacher teaching to the teaching mode of "taking students as the main body and teachers as the guidance". This interaction model can not only form a harmonious teacher-student and student-student interaction, but also strengthen the interaction between people and environment, which could produce teaching resonance and improve teaching effect [4]. The teacher-student interaction mode can be realized by combination of teaching and practice, classroom discussion, scene teaching and so on.
For example, students prepare the text and words in advance, read paragraph sentences in class, and teachers are responsible for correcting pronunciation. For simple paragraphs, students are required to translate by themselves. The teachers explain the long difficult sentences and novel words, common sentence patterns and format of specialized English. This not only urges the students to study after school, but also increases the classroom interaction and mobilizes the enthusiasm of students. For instance, in the teaching practice, we mainly adopt the methods of combining theory study with practice training (Fig. 3). For theory study, special topics related to new energy resources and environmental engineering are introduced based on teaching materials. For practical training, we summarize the writing characteristics of different styles of scientific papers, and allow students to practice after class, so as to improve their writing skills and ability to access the literature. Students are also encouraged to give a presentation related to new energy in class, which can improve their academic communication skills.

Moreover, the teachers should make full use of modern teaching conditions, such as the Internet, multimedia teaching platform, and a variety of professional teaching equipment. By using images, animations and sound effects, the working principle and process which are difficult to understand can be presented clearly in front of students. Accordingly, abstract problems can be materialized, and complex problems can be simplified, in order to improve teaching efficiency.

**Diversified Evaluation Methods.**

The routine examination results are divided into two parts, one part is the average performance, accounting for 20-30%; the other part is the final exam score, accounting for 80-70%. This assessment emphasizes the final examination to test the mastery of knowledge. However, some students think that this kind of evaluation method cannot objectively measure their mastery of knowledge. They believe that it is just a reflection of the individual assault learning and short-term memory ability, which cannot truly reflect their actual situation. Therefore, it is necessary to explore a variety of evaluation methods to comprehensively assess students' achievement. For example, we can reduce the proportion of final exam score (50%), and increase the proportion of average score (50%) which include classroom questions (30%), attendance (10%), and small tests (10%), etc.

**Summary**

The teaching of English for New energy is a systematic project, which needs to be explored and applied in the long term teaching. At present, the teaching effect of English for New energy is barely satisfactory, which really needs the reform and innovation. Teaching administrators and professional teachers should have the courage to break the traditional mode, to completely change the teaching mode for the purpose of dealing with the test. It is necessary to establish a new teaching system,
which is based on the social demand and the ability training, to cultivate high-quality and practical talents for the society.

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References


