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Curriculum Reform of College Students' Quality Cultivation Oriented to the Needs of Manufacturing Industry

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Abstract: *Manufacturing is a critical component of the national economy, and its development has put forward higher requirements for the comprehensive quality of engineering talents in universities. As an important public basic course in universities, the curriculum of college English generally only focuses on language learning and humanities education, neglecting the cultivation of professional English ability for a long time. Based on this situation, this article focuses on methods of effectively introducing ESP (English for Specific Purposes) into college English teaching, attempting to construct a new model of college English teaching, to achieve good support for social and economic development.*

Keywords: *College English teaching; Specialized English Ability Development; ESP Teaching Reform*

1. Introduction

Manufacturing is an important component of the national economy. Taking Guangdong Province as an example in China, since 2023, the government has focused on the primary task of high-quality development, laid out advanced and high-tech manufacturing industries, and strived to move towards the high-end of the value chain. In the first quarter, the industrial economy continued to invest in the "new track", and emerging industries have become an important driving force for industrial growth in Guangdong Province. The added value of advanced manufacturing accounts for 55% of the added value of industrial enterprises above designated size in the province (China Business Herald, March 22, 2023).

The development of manufacturing industry has put forward higher requirements for the comprehensive quality of university engineering talents; As an important public basic course in universities, the curriculum of college English generally only focuses on language learning and humanities education, neglecting the cultivation of professional English ability for a long time. ESP (English for Specific Purposes) teaching aims to combine English and non English majors, learn majors in English, emphasize the professional application ability of English in specific contexts, and truly improve students' professional foreign language ability. Therefore, actively exploring how to effectively introduce ESP teaching into college English teaching and constructing a new model of college English teaching is the only way for the reform of college English teaching in the new engineering era.

2. Literature review

Firstly, there are different opinions in the academic community regarding the definition of foreign language proficiency. Han and Chang[1] believe that the foreign language proficiency of the United States mainly consists of two dimensions: language knowledge and language skills. The foreign language proficiency standards of Europe and Canada are based on the theory of communicative language competence, while in China, the description of foreign language proficiency of students at different levels is mainly based on listening, speaking, reading, writing, and translation, divided into different levels, and there is no unified standard for reference. Dai [2] advocates that foreign language proficiency includes three levels: abstract declarative knowledge system, skills in applying pragmatic knowledge, and practical language use. Liu and Luan[3] proposed that the foreign language abilities of

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top-notch innovative talents include language proficiency, multicultural communication ability, academic foreign language ability, innovative thinking awareness and ability.

Secondly, in terms of cultivating foreign language proficiency, there are currently three main teaching theories and methods. The first is constructivist theory, proposed by Swiss philosopher and psychologist J. Piaget in the 1960s, emphasizing that students are the subject of knowledge learning and cognition. The constructivist learning design concept can be applied to various aspects of college English multimedia teaching, online self-directed learning, teaching design, etc. It provides personalized and diversified practice and exploration for conventional classroom teaching, creates an ideal learning environment, enables students to achieve the best learning results, and cultivates their self-learning ability and comprehensive English application ability[4]. The second is the Content Based Instruction (CBI) teaching method, which emphasizes the combination of content and language, and the acquisition of relevant knowledge and language skills in the process of learning content. Content based college English teaching can move towards general education and academic English education. Each school should plan and allocate teaching resources reasonably according to its own characteristics, and develop personalized teaching syllabi for general or academic English courses, considering factors such as school type, student level, and student needs[5]. The third is the CDIO engineering education model. The CDIO engineering education model, established by four universities including the Massachusetts Institute of Technology, cultivates students to conceptualize, design, implement, and operate complex and high-value industrial products, processes, and systems in a modern team environment. This engineering education method emphasizes project-based teaching and cultivates compound talents with strong practical abilities and team spirit[6]. Teachers can design text learning as projects, and students can participate in designing project completion plans under the guidance of teachers. They can discuss and set their own implementation plans in English, and use English online courses as interactive platforms to learn and train various comprehensive abilities while completing tasks.

In addition, scholars have made beneficial explorations in the training mode of foreign language ability for engineering talents. For example, Zhou and Zhu[7] believe that a new collaborative education model of "new engineering + foreign language" should be adopted to cultivate compound engineering and technological talents; Li, Zhang and Peng[8] explored how to effectively develop interdisciplinary abilities of science and engineering students in universities using English as a medium; Huang[9] believes that from the perspective of the new situation of talent demand, the foreign language ability of international engineering talents should include three dimensions: foreign language communication, cross-cultural thinking, and foreign language application in engineering disciplines.

In summary, although existing research can provide reference, research on the cultivation of foreign language abilities for engineering and technology talents in the industry is still in its infancy and faces many problems. Firstly, the existing teaching theories and methods are diverse and complex. It remains to be further discussed which method is more suitable for cultivating foreign language abilities of engineering and technological talents in the current new situation. Secondly, current research still focuses on the teaching of language knowledge and skills, neglecting the education of professional competence. To cultivate high-quality composite "new engineering" talents with international competitiveness, in addition to developing their language abilities, emphasis should also be placed on the education of professional skills and cross-cultural communication abilities, so as to fully absorb the essence of professional discipline knowledge at the global level and keep up with the development of the international new economy. Thirdly, there are numerous literature discussing directions and systems, but few discussing specific implementation plans, and a lack of effective operational guidance. With the emergence of the new generation of information technology industry and some new majors such as artificial intelligence and robotics, the curriculum system, teaching mode, and teaching resources for industrial talent cultivation still need to be reformed and improved.

3. ESP Implementation Plan

On the basis of the existing university English teaching system, we will promote teaching reform from multiple aspects such as teaching objectives, teaching content, teaching methods, and teaching modes, and form a new language teaching system that balances general literacy and professional literacy.

The basic content includes redefining teaching objectives, re planning teaching content, transforming teaching methods, and designing diversified teaching modes. The details are as follows:

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Firstly, divide the teaching objectives into different dimensions. According to the application level, teaching objectives can be divided into instrumental objectives and humanistic objectives. According to universality, they can be divided into general English objectives and specialized English objectives.

The instrumental objectives are the exclusive objectives of the course, which do not overlap with the objectives of other courses and can reflect the inherent value of the course. Humanistic goals are shared objectives with other courses. The implementation of the general English goal in the instrumental objectives needs to be designed in conjunction with the general requirements of the country for the talent abilities of college students, while the implementation of the specialized English goal needs to be designed in conjunction with the industry requirements that students will engage in in in the future; The achievement of humanistic goals can be approached from multiple aspects, including the selection of textbooks, understanding and application of language materials, and the arrangement of teaching activities.

Secondly, the teaching content should be designed in blocks, with General English focusing on cultural exchange and Specialized English emphasizing academic exchange. The General English section can focus on offering courses to enhance Chinese university students' ability to use English for cultural exchange between China and foreign countries, with a particular emphasis on cultivating cross-cultural communication skills. The course content can be offered from two dimensions: synchronic and diachronic comparison. The synchronic comparison dimension focuses on topics related to China and foreign situations, social situations, political situations, as well as current affairs and hot issues at home and abroad, such as comparing political systems, economic systems, legal systems, and education systems between China and foreign countries; The ways of communication between countries, interpersonal communication, family relationships, hierarchical relationships, and the relationship between humans and nature; Time concept, money concept, marriage concept, integrity concept, etc; It can also be about current events and social hot topics. The topics involved in the comparison between China and foreign countries over time focus on the history, traditional ideas, and culture of China and foreign countries, such as comparing traditional festivals, traditional philosophical ideas, traditional educational concepts, etc. The design content can also be based on major historical events. Through the study of these different courses, college students can develop preliminary abilities to correctly understand and analyze Western civilization in English, as well as to interpret Chinese culture, describe the image of China, and explain the characteristics of the Chinese system. Specialized English mainly cultivates the preliminary ability to complete the following tasks: first, listening to English academic lectures; second, read academic literature; Third, writing academic articles in English; fourth, oral presentations and discussions on academic activities. It is necessary to combine the characteristics of students' majors and conduct specialized design based on sufficient communication with professional teaching teachers.

Again, in terms of teaching methods, a flexible approach is adopted that combines learning with learning, learning with application, and learning with application. Traditional foreign language teaching advocates a teaching philosophy centered on the text, where teachers and students aim to master the vocabulary and grammar in the text, understand difficult sentences, and analyze the main idea of paragraphs. The teaching steps are to first learn the language, encyclopedia knowledge, and arrangement of discourse structure, and then consider future use. This teaching method of separating learning from application and disconnecting input from output is one of the important reasons for the low quality of English teaching in Chinese universities. The "output driven hypothesis" proposed by Wen Qiufang (2013) based on the concept of "integration of learning and application" can effectively correct the errors of traditional teaching. Its core idea is to enable students to "do things" in English, learn new materials and absorb new information in the process of doing things, and apply while learning, so that there is no gap, no boundary, and zero distance between learning and application (input and output). To achieve this effect, the teaching of any English course should start with requiring students to complete a task with real communicative value (general or specialized English task), and then have students learn new materials around the completion of this task. Students can directly feel their progress and the joy of success from these externalized achievements, while also improving their ability to do things in English.

Finally, the teaching mode should be diversified and personalized. If the abilities of college freshmen in various subjects are examined, English proficiency may be one of the subjects with the greatest differences; Therefore, it is not suitable to adopt a unified teaching mode for student groups with huge differences. According to the English proficiency and expectations of new students, they can be roughly divided into four categories: low-level low goals, low-level high goals, high-level low goals, and high-level high goals. Teachers can adjust teaching modes for different types of students, such as

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focusing on cultivating general abilities for low goal students and using traditional teaching methods to provide greater assistance for low-level students; Adopt small class and intensive teaching for high-level and high goal students, and increase the content of specialized English in the curriculum. Adopt large class teaching with low class density for other students. Of course, implementing diversified teaching models requires consideration of the feasibility of practical conditions and obtaining permission from the school.

4. Conclusion

This article proposes a path for general courses to align with professional requirements based on the current situation of college English teaching, providing reference for curriculum innovation aimed at meeting social needs and cultivating manufacturing talents; From the perspective of language teaching, the project provides a new way out for the survival and development of college English courses, as well as ideas for improving other foundational courses.

One of the main obstacles to ESP teaching reform is the wide variety of engineering majors. Can ESP teaching achieve full coverage of all engineering majors? The solution to this problem can be divided into two parts:

Firstly, ESP programs from different majors can also have common parts. Taking ESP, which is mainly aimed at academic purposes, as an example, almost all professional ESP includes the cultivation of twelve academic core skills, including "description and definition, evidence application, classification, viewpoint connection, description process, comparison and contrast, facts and viewpoints, argumentation, and causal relationships". The teaching structure of this part of ESP can be targeted at all engineering majors, but the materials used in different majors are different (isomorphic and heterogeneous);

Secondly, each major has its own special needs, and ESP teaching for this part of the content does need to be specifically designed, which cannot be applied across different majors. However, if the major is narrowed down to a large category such as engineering majors, there may be some similar design thinking and implementation methods in the ESP teaching design of this part. Therefore, the results obtained from ESP practice for one or two specific majors in the project may form an implementation framework applicable to most engineering majors through abstraction and overview, achieving full coverage of methodology for all engineering majors. Of course, for a specific profession, it still needs to be based on professional needs, and English course teachers and professional teachers work together to complete ESP teaching design.

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