



Reform of College English Teaching Content in Engineering Colleges against the Background of New Engineering Education

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ABSTRACT: In recent years, increasing attention has been paid to the development of new engineering education. College English, a compulsory course aimed at non-English majors in China's universities, bears great responsibilities in training high-quality innovative engineering talent with an international perspective. After an examination of the current College English teaching content and an analysis of college students' needs for English learning, the paper proposes three ways to reform the teaching content of College English in light of nurturing new engineering talent: integrating language and cultural knowledge with subject-specific knowledge, enhancing students' ability of applying English in their professional domains, and emphasizing both humanistic education and professional competence in College English teaching.

KEYWORDS: College English, New engineering education, Teaching content reform

I. INTRODUCTION

Since 2017, China has been intensifying the reform of engineering education with a focus on nurturing innovative high-level scientific and technological talents who are globally oriented and future-oriented. The new engineering education paradigm for cultivating science, technology, and industrial talent sets higher demands on students' comprehensive qualities. To be future strategic leaders and high-end pragmatic personnel requires strong cross-cultural communication skills and global competence (Hu Jiehui, 2023). Against the backdrop of new engineering education, students' English proficiency should extend beyond basic listening, speaking, reading, and writing skills to encompass professional knowledge-related English communication abilities as well as interdisciplinary application skills in English.

The development of new engineering education presents novel opportunities and challenges for College English to help cultivate new engineering talent. College English is a compulsory course open to students of almost all engineering disciplines, so it should proactively align with the requirements of new engineering education so as to contribute to national economic development and social progress. Based on an analysis of the current status quo regarding College English teaching content in engineering colleges along with students' English learning needs, this paper aims to explore ways to reform College English teaching content in the context of new engineering education so as to facilitate the cultivation of high-end pragmatic personnel.

II. ANALYSIS OF CURRENT COLLEGE ENGLISH TEACHING CONTENT

Currently, the teaching content of College English in engineering colleges primarily focuses on imparting fundamental English knowledge, such as grammar, vocabulary, reading comprehension, listening skills, etc., while the inclusion of engineering-related general knowledge is relatively limited. "College English teaching in the majority of Chinese universities revolves around general English instruction based on standardized proficiency levels. This type of instructional approach lacks alignment with professional training objectives and fails to cater to students' specific language needs for their respective fields of study, resulting in a weak integration of English into their overall education" (Cai Jigang, 2021). The conventional teaching content falls short in providing

linguistic support or services for engineering students' professional learning and research endeavors, which makes it hard to meet the demands imposed by contemporary engineering advancements for cultivating competent engineering professionals.

III. STUDENTS' NEEDS REGARDING COLLEGE ENGLISH TEACHING CONTENT

In order to comprehend students' needs about College English teaching content in engineering colleges, the authors conducted a questionnaire survey at their university which is engineering-oriented. The survey involved students from various academic years and professional backgrounds. A total of 132 valid questionnaires were collected. Analysis of the questionnaire data reveals that students' emerging demands for College English teaching encompass providing language services tailored to their professional learning needs, enhancing their English application proficiency in specific fields, and integrating humanistic knowledge with professional competence.

Integration of Professional Knowledge into English Learning to Improve Students' Research Ability

It is the historical mission of College English education in the new era to foster college students' proficiency in conducting scientific research within their respective professional domains using English as a medium (Cai Jigang, 2019). Currently, approximately 95% of nearly 9,000 top-tier scholarly journals (SCI) in natural and engineering disciplines worldwide are published in English. Inability to comprehend literature pertaining to one's major and access cutting-edge international knowledge therein renders any endeavor to nurture talent for scientific and technological innovation fruitless. Findings from the questionnaire survey reveal that 91.66% of respondents advocate for appropriate integration of subject-specific knowledge into College English teaching (Figure 1). This signifies students' eagerness to acquire more discipline-related content during their English learning journey, thereby facilitating language support for future academic pursuits and enhancing communication ability within an international academic milieu.

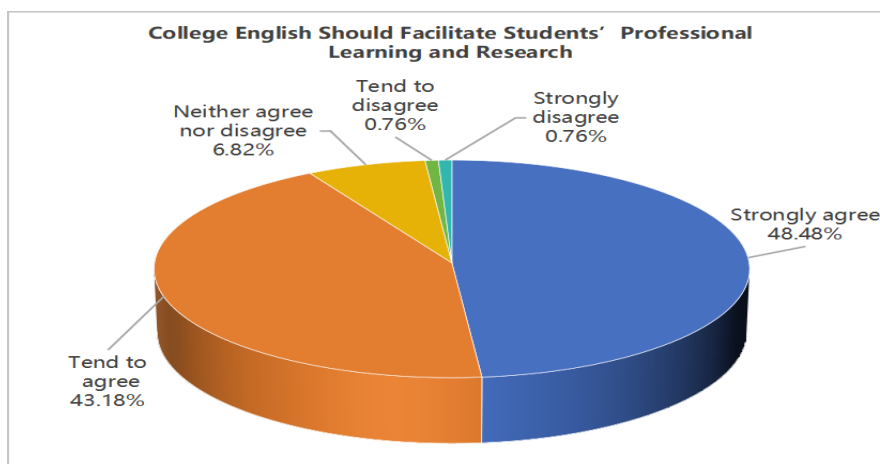


Figure 1: Function of College English in Promoting Non-English Majors' Professional Learning

Improvement of English Proficiency in Discipline-Related Fields

The 10th criterion in the "Engineering Education Accreditation Criteria" (2022) issued by the China Engineering Education Accreditation Association is "communication," which refers to the ability to effectively engage and exchange ideas with industry peers and the public on intricate engineering problems (Hu Jiehui, 2023). Proficiency in English for professional purposes constitutes a crucial aspect of training new engineering talent. As depicted in Figure 2, 87.88% of the surveyed students aspire to freely explain fundamental concepts within their field of study in English; more than half of them anticipate English language proficiency in telling stories about Chinese engineering science and technology (63.64%) as well as China's development (65.15%). This indicates that

students aim to enhance their international communication skills within their respective professional domains through English language acquisition.

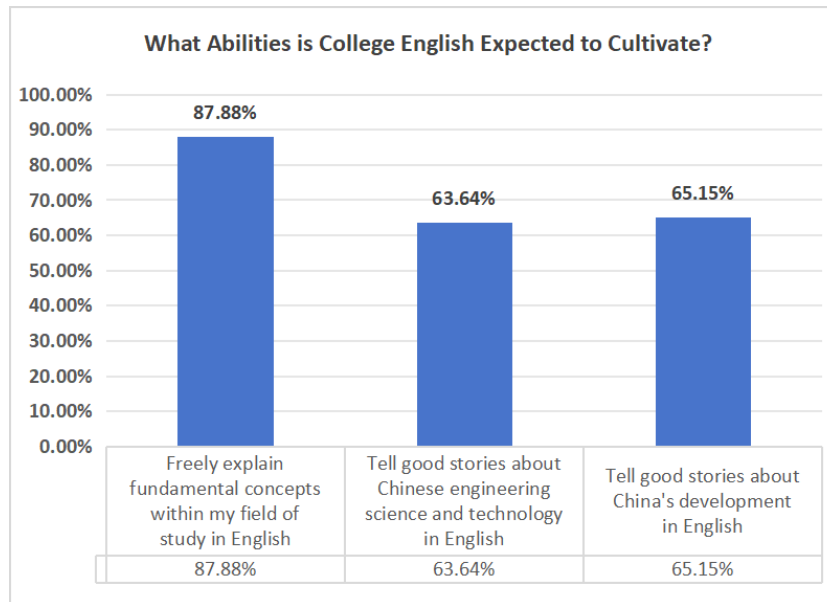


Figure 2: Abilities to be cultivated by College English

Simultaneous Enhancement of Humanistic Knowledge and Professional Competence

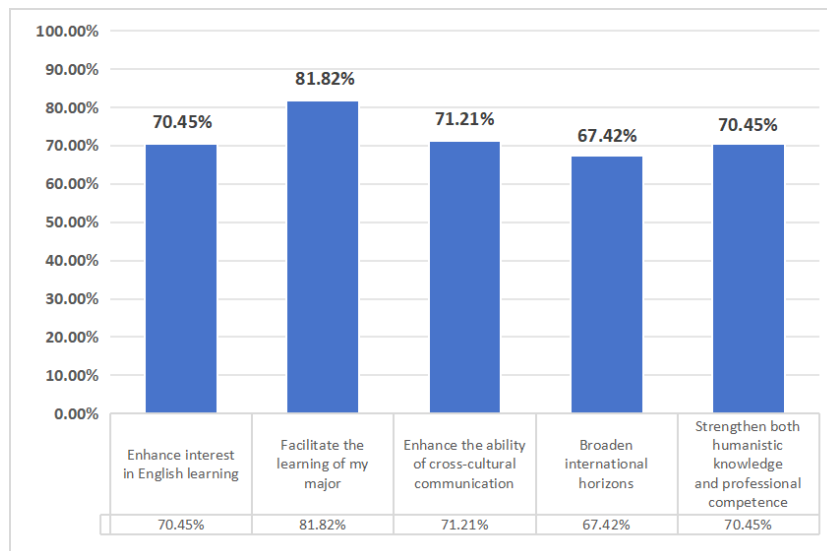


Figure 3: Benefits of Integrating Subject Content into College English Teaching

As shown in Figure 3, when asked about the benefits of integrating subject content into College English teaching, 70.45% of the participants think the integration can enhance their humanistic knowledge and professional competence simultaneously. This reflects students' pursuit of interdisciplinary knowledge and comprehensive literacy. 70.45% of the students believe that integrating professional knowledge into College English can enhance their interest in English learning, while 71.21% of the students perceive



it as a means to improve their cross-cultural communication abilities. Additionally, 67.42% of the participants acknowledge its potential to broaden their international perspective, and 81.82% of the surveyed students recognize its capacity to deepen their understanding and problem-solving ability within their respective fields of study. These findings indicate that students find English learning combined with professional knowledge more appealing, as it not only fosters the development of humanistic qualities but also facilitates proficiency in specialized areas, thereby enabling simultaneous improvement in both humanities-based knowledge and professional competence.

IV. WAYS TO REFORM COLLEGE ENGLISH TEACHING CONTENT IN THE CONTEXT OF NEW ENGINEERING EDUCATION

The traditional English teaching for general purposes cannot address the demands of the "new engineering education" development. Thus, it is crucial to integrate language and specialized education to meet the evolving needs of the industry (Yue Hong 2024). The analysis above regarding the current state of College English teaching and the evolving needs of students about English learning indicates that the curriculum of College English in engineering colleges should be tailored to the training objectives of developing new engineering professionals. The focus should be on enhancing students' proficiency in engineering English through the integration of English language skills and engineering knowledge. This approach will help students sharpen their language abilities and acquire the global competencies necessary for effective cross-cultural communication, collaboration, and competition in addressing challenging engineering issues.

Integrate Fundamental Professional Knowledge into College English Teaching

In the context of new engineering education, it is essential for College English to proactively broaden its content to address the issues in traditional teaching, including a narrow focus of the content, a lack of integration with students' major studies, and insufficient development of students' practical English skills (Wang Zonghua, Xiao Fei, 2023). The teaching content of College English should provide language support for students' professional learning and research in accordance with the principles of language teaching and learning. It should integrate specific subject matter with language teaching objectives and thus promote the fusion of language skills, cultural understanding and interdisciplinary knowledge. For instance, core knowledge in engineering could be incorporated to help students understand the common features of engineering discourse. Furthermore, by selecting cutting-edge scientific and technological innovation narratives and other relevant materials, we can integrate the cultivation of innovation awareness into English classes. This approach will stimulate students' innovative potential and foster their innovative thinking. By keeping abreast of developments in cutting-edge science and technology and understanding the latest research and technological trends, students can broaden their horizons and lay a solid foundation for their future career development.

Enhance English Application Ability in the Professional Field

The new engineering education aims to foster creative engineering and technical talent, with an emphasis on improving students' capacity to communicate and collaborate in professional settings across different cultural contexts. This focus is intended to enhance students' international competitiveness and leadership within their respective industries. Given the evolving landscape of new engineering education, the ability to effectively apply professional English has become a core competency and essential component of College English (Wang Zonghua, Xiao Fei, 2023), and it is also the core quality generally recognized by students as found in the survey. To enhance the cultivation of new engineering talent, College English teaching content should give due attention to the language difficulties that students encounter during their major studies. This approach aims to develop students' English ability to effectively communicate in a professional setting.

Integrate Humanistic Knowledge with Professional Competence to Develop Students' Global Competence

The 13th criterion in the "General Criteria for Cultivating New Engineering Talent" proposed by Lin Jian (2020) states: "Global



competence – the capability to effectively communicate, compete, and cooperate in a cross-cultural environment." This criterion exemplifies the global perspective and high professional standards expected of new engineering talent. Global competence refers to the multi-dimensional ability required to successfully learn, work, and interact with individuals from diverse cultural backgrounds in an international setting (Hu Jiehui, 2023). It is supported by four factors: knowledge, skills, attitudes, and values (OECD, 2018). Therefore, College English teaching content should not only focus on promoting humanistic values and enhancing students' intercultural communication skills, but also emphasize practicality. This means not only enhancing students' proficiency in language skills such as listening, speaking, reading, writing, and translation, but also catering to their professional development and enhancing their competence in international academic or professional exchanges.

Furthermore, a crucial aspect of the reform in College English teaching content is that the humanistic essence of College English is not just illustrated in cross-cultural education and the cultivation of cross-cultural communication skills. It also emphasizes the development of students' ability to comprehend and interpret Chinese culture, as well as enhancing their English skills in telling Chinese stories within relevant professional fields. The proficiency to narrate Chinese stories in English and promote Chinese culture is not solely imperative for their own career development, but is also vital for meeting the demands of societal advancement in the new era (Li Jie, 2024). In the selection of specific teaching content, teaching materials related to China's scientific and technological development, China's outstanding scientists, and industry innovation can be selected to integrate the feelings of home and country into the whole process of engineering talent training.

V. CONCLUSION

College English plays a crucial role in the training of engineering talent, and the development of new engineering education imposes higher demands on College English teaching. The content of College English instruction should align with students' professional needs, emphasizing the development of their language proficiency and global competence for effective cross-cultural communication, exchange, competition, and collaboration on intricate engineering issues. By integrating language and cultural knowledge with subject-specific expertise, enhancing the practical application of English in professional domains, and fostering a harmonious blend between humanistic values and pragmatic application within College English teaching, we can contribute to cultivating interdisciplinary and innovative engineering professionals who possess both specialized knowledge and foreign language fluency.

FUNDING:

This paper is funded by the Teaching Research Project of Beijing Association of Higher Education (MS2023246) and the University Research Training Project of Beijing Institute of Petrochemical Technology (2024X00102).

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Cite this Article: Ziyu Guo, Boming Li, Shan Ge, Kexin Cao, Yaojie Hua (2024). Reform of College English Teaching Content in Engineering Colleges against the Background of New Engineering Education. International Journal of Current Science Research and Review, 7(6), 3765-3770