

Original Research Article

Open Access



Research on Strategies to Motivate Students in Vocational Colleges to Learn Chemical Engineering English

Lin Qiao*, Yue Li

Ningxia Vocational College of Industry, Yinchuan, Ningxia, 750021, China

Funded by Scientific research project of Ningxia Education Department NYG2024370

*Correspondence to: Lin Qiao, Ningxia Vocational College of Industry, Yinchuan, Ningxia, 750021, China, E-mail: 106657469@qq.com

Abstract: The widespread use of English has made it crucial in various industries, especially for students majoring in chemical engineering at vocational colleges. These students need to master English skills to adapt to current trends and enhance their employment competitiveness. Learning motivation is the direct driving force for students' learning, and stimulating this motivation is essential for students to actively and enthusiastically learn English. This paper first provides an overview of learning motivation, then conducts an in-depth analysis of the current state of English learning motivation among vocational college students majoring in chemical engineering, and finally explores corresponding strategies to stimulate learning motivation. The aim is to provide some references for English learning in chemical engineering majors at vocational colleges.

Keywords: Learning motivation; Vocational college students; Chemical engineering English learning; Enhancement strategies

Introduction

At the end of 2022, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the "Opinions on Deepening the Reform of the Construction of the Modern Vocational Education System," emphasizing the need to further improve the quality of vocational education and enhance students' practical abilities and professional qualities. In the field of chemical engineering, English is an essential tool for international communication,

and its importance in learning is self-evident. However, the current motivation for vocational college students to learn English for chemical engineering is generally lacking, which negatively impacts their learning outcomes and career prospects. Therefore, researching how to enhance vocational college students' motivation to learn English for chemical engineering is of great practical significance for improving their English proficiency and promoting their overall development.



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, sharing, adaptation, distribution and reproduction in any medium or format, for any purpose, even commercially, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

1. Analysis of the Current State of Motivation for Learning English among Chemical Engineering Majors in Vocational Colleges

To understand the actual situation of English learning motivation among chemical engineering students in vocational colleges, this study conducted a questionnaire survey among 150 chemical engineering students at a vocational college. The questionnaire included questions about interest in learning English, learning initiative, self-confidence in learning, and learning methods. A total of 150 questionnaires were distributed, and 129 valid questionnaires were collected. The results are analyzed as follows:

1.1 Lack of Interest in Learning

According to the survey results, approximately 29.3% of students expressed a certain interest in learning English, believing that it is crucial for their future careers and academic research. However, about 65.1% of students indicated only a moderate interest in learning English, viewing it as merely a requirement for exams or graduation. Additionally, around 5% of students showed no interest in learning English, perceiving it as unrelated to their major. This indicates that the interest of vocational college students in learning English for chemical engineering is largely driven by practicality and necessity rather than an intrinsic love or desire to explore the subject.

1.2 Insufficient Learning Initiative

In exploring the data on learning initiative, it was found that 57.4% of students reported that they usually learn English due to teachers' requirements or course schedules, rather than self-motivation or interest. Only 23.3% of students stated that they would proactively preview, review, and seek additional learning resources to improve their English skills. Moreover, nearly 20% of students indicated that they often feel confused and helpless in their English learning process, not knowing where to start or how to improve, which further exacerbates the lack of initiative in learning.

1.3 Lack of Self-Confidence in Learning

The survey also highlighted a significant lack of self-confidence among students in learning English, with 38.8% of students reporting that they often feel insecure about their English learning. They worry about their pronunciation, grammar, or vocabulary accuracy and

fear making mistakes in speaking or writing. This lack of confidence not only affects their learning outcomes but also potentially leads them to avoid using English in class or public settings, creating a vicious cycle.

1.4 Singularity of Learning Methods

When investigating students' learning methods, it was found that most students' English learning methods are relatively single, mainly focusing on textbook learning and classroom lectures. Less than 20% of students reported using various channels such as internet resources, English corners, or English clubs for learning English. This indicates that many students have not mastered or become accustomed to diverse English learning methods, limiting their learning effectiveness.

2. Problems in Learning English for Chemical Engineering Majors in Vocational Colleges

2.1 Disconnection Between Course Content and Practical Application

In the current vocational education system, there is a significant gap between the course content of chemical engineering English and the actual working environment and industry demands. This situation often leaves students confused during their learning process as they find it difficult to apply the theoretical knowledge learned in class to real-world work scenarios, thus questioning the practicality of their studies. For instance, students may learn a large number of technical terms, but in an actual chemical production environment, they may discover that these terms have more specific meanings and uses in certain contexts. This disconnect between theory and practice weakens students' motivation to learn, making them doubt the necessity of studying English.

2.2 Outdated Teaching Methods and Absence of Innovation

Many vocational colleges still rely on traditional teacher-centered methods in their chemical engineering English teaching, lacking innovation and interactivity. This teaching model overly emphasizes the unidirectional transmission of knowledge while neglecting students' active participation and individual needs. In class, teachers usually act as the sole narrators of knowledge, with students becoming passive listeners.

Such teaching methods fail to stimulate students' interest and motivation in learning. Furthermore, the lack of effective interaction and feedback mechanisms means that students cannot receive timely guidance and assistance when encountering difficulties, exacerbating their learning challenges.

2.3 Limitations of the Evaluation System and Lack of Incentive Mechanisms

Many vocational colleges rely too heavily on exam results to evaluate students' performance in chemical engineering English, ignoring the assessment of their practical application abilities. This single evaluation method often focuses too much on grammar and vocabulary mastery, overlooking the functional use of language in communication. Consequently, it fails to comprehensively reflect students' English proficiency and progress, and it does not motivate students to improve their English skills. Additionally, the absence of effective incentive mechanisms makes it difficult for students to gain a sense of achievement during their learning process, further diminishing their enthusiasm for learning.

2.4 Insufficient Teaching Resources and Uneven Teaching Quality

The lack of teaching resources is a significant issue in the teaching of chemical engineering English. Many teachers may lack a professional English background or sufficient knowledge of chemical engineering, making it challenging for them to effectively integrate English knowledge with professional practice during teaching. Moreover, disparities in teaching levels among teachers lead to inconsistent teaching quality, which not only affects students' learning experience but also negatively impacts their learning outcomes.

3. Strategies to Motivate Chemical Engineering Majors in Vocational Colleges to Learn English

3.1 Innovate Teaching Methods to Enhance Learning Experience

Innovating teaching methods is a crucial way to motivate students in chemical engineering English courses. The traditional "spoon-feeding" approach can no longer meet the learning needs of modern students. Therefore, teachers should actively explore and implement new teaching methods. One approach

is to adopt project-oriented teaching methods. Teachers can divide students into groups, each responsible for an English project related to chemical engineering. Through researching and completing the project, students will actively learn and apply English knowledge, enhancing their practical skills and problem-solving abilities. Additionally, teachers can introduce online teaching platforms to enrich teaching content and methods using internet resources. Utilizing multimedia resources such as videos, audio, and PowerPoint presentations can provide vivid and engaging English learning materials. Online platforms also facilitate teacher-student and student-student interactions, allowing students to learn English in a relaxed and enjoyable atmosphere. Moreover, teachers can implement flipped classroom teaching. In this model, students preview course content through videos and readings before class, and then engage in discussions, exchanges, and presentations during class. This teaching method encourages students to participate actively, enhancing their self-directed learning and critical thinking skills.

3.2 Regular Feedback and Personalized Guidance

A regular feedback mechanism is essential in teaching chemical engineering English to vocational college students. Teachers should regularly assess students' progress, identify learning problems and difficulties, and provide corresponding guidance and support. Through regular tests and assignment corrections, teachers can understand students' mastery of knowledge points and adjust teaching strategies and pace accordingly. Teachers should also encourage students to proactively raise questions and express their confusions to provide timely explanations and tutoring. In terms of personalized guidance, teachers can offer tailored learning suggestions and resources based on students' learning characteristics and needs. For students with weak English foundations, teachers can recommend suitable learning materials and methods to help them solidify their language skills. For students with a strong interest in learning, teachers can guide them to explore English knowledge in the field of chemical engineering further, broadening their academic horizons. Additionally, teachers can provide one-on-one tutoring and Q&A sessions outside of class to help students overcome learning difficulties.

and problems. Personalized guidance allows teachers to better meet students' learning needs, stimulate their motivation, and promote their overall development.

3.3 Integrate Practical Components to Enhance Professional Competitiveness

To better combine chemical engineering English knowledge with actual work and enhance students' professional competitiveness, teachers can integrate practical components into their teaching. Firstly, teachers can organize internships and practical training in chemical engineering English. By collaborating with enterprises, students can apply their English knowledge in real work environments, understanding industry norms and operational procedures. This not only improves students' English application skills but also cultivates their professional qualities and teamwork spirit. Secondly, teachers can guide students to participate in research projects related to chemical engineering English. By engaging in tasks such as translation and literature reviews in research projects, students can gain insights into the latest knowledge and technological developments in the chemical engineering field, expanding their academic vision and research capabilities. Furthermore, teachers can encourage students to participate in English competitions and exchange activities related to chemical engineering. Competitions and exchanges help students practice their English speaking and writing skills, enhance their cross-cultural communication abilities, and broaden their international perspectives. These practical components improve students' English application skills and professional competitiveness and foster their innovation and practical abilities, laying a solid foundation for their future careers.

3.4 Improve the Student Evaluation System to Stimulate Intrinsic Motivation

To more comprehensively and fairly evaluate students' achievements in learning chemical engineering English, vocational colleges should reform and improve the existing evaluation system. First, the focus should shift from solely exam scores to a comprehensive assessment of students' practical English application abilities. This includes evaluating students' reading comprehension, written expression, oral communication, and professional translation skills. By designing assessment tasks that integrate real-world work scenarios,

such as simulated business reports or professional document translations, the system can more accurately reflect students' ability to apply English in practical environments. Secondly, the evaluation system should emphasize process evaluation, focusing on students' learning processes and progress. Teachers can record students' performance in class discussions, group collaborations, and assignment completions, tracking and assessing their learning progress dynamically. Incorporating peer evaluation and self-evaluation can also involve students in the evaluation process, enhancing their self-reflection abilities and sense of responsibility. Establishing incentive mechanisms is another crucial means of stimulating students' motivation. Schools and teachers can set up various learning awards, such as excellent assignment awards, progress awards, and best team collaboration awards, to recognize students who perform outstandingly or make significant progress in their studies. These rewards can enhance students' sense of achievement and stimulate their enthusiasm for learning, encouraging them to put more effort into learning English.

3.5 Strengthen Faculty Development to Improve Teaching Quality

The key to improving the quality of chemical engineering English teaching lies in building a professional and efficient teaching team. Vocational colleges should increase investment in teacher training, regularly organizing teachers to participate in professional English teaching seminars and skill training to enhance their teaching capabilities and professional qualities. Encouraging teachers to engage in teaching research and explore more effective teaching methods and strategies is essential to meet students' evolving learning needs. Additionally, schools should hire English teachers with backgrounds in chemical engineering and rich teaching experience to enhance the professionalism and diversity of the teaching team. Inviting external experts and industry professionals to hold lectures or workshops can help teachers stay updated with the latest industry trends and demands, enabling them to better integrate practical knowledge into their teaching and improve its relevance and practicality. Furthermore, schools need to establish a comprehensive, fair, and motivating teacher evaluation system. This system should not only focus

on teachers' research outputs but also on their teaching effectiveness. Diverse evaluation methods should be employed to assess teaching effectiveness. Student feedback, as direct participants in teaching activities, can reflect teachers' effectiveness. Peer evaluation can provide professional and constructive feedback, helping teachers identify blind spots and areas for improvement. Self-evaluation allows teachers to reflect on their teaching practices, clarifying their strengths and areas needing enhancement.

Conclusion

In summary, stimulating the motivation of vocational college students to learn chemical engineering English requires a multifaceted approach. Setting clear learning goals, innovating teaching methods, providing regular feedback and personalized guidance, integrating practical components, and establishing incentive mechanisms can effectively enhance students' motivation and English proficiency. Strengthening faculty training is also key to improving teaching quality. Continuous exploration and implementation of new teaching methods and strategies are necessary to inject new vitality into the teaching of chemical

engineering English in vocational colleges.

References

- [1] Wang, Xiaolei. "Investigation and Research on the Motivation of Vocational College Students' English Learning." *Journal of Tianjin Vocational Institutes Union*, vol. 19, no. 9, 2017, pp. 81-85.
- [2] Guo, Xiaobing. "Research on the Motivation Incentive Mechanism of College English Learning in Vocational Colleges." *Talent*, no. 8, 2015, p. 213.
- [3] Li, Yanyan. "Study on Enhancing the Motivation of Vocational College Students' English Learning." *Corporate Culture (Mid-Month Issue)*, no. 6, 2015, pp. 265-266.
- [4] Mao, Yongbing. "Preliminary Exploration of the Factors Influencing the Motivation of Vocational College Students' English Learning." *Market Weekly (Theoretical Research)*, no. 11, 2015, pp. 134-135.
- [5] Zhang, Jie. "Research on Motivation Strategies for English Learning in Vocational Colleges Oriented by Career Goals." *Overseas English*, no. 12, 2023, pp. 229-231.