

Innovative Practice of Improving Engineering Students' Performance Competence at College Level

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Abstract—Guided by Course Syllabus, the authors and her co-workers have made analysis on statistics, and then have researched and reformed in aspects of teaching models, teaching methods and quality evaluation. It is concluded that applying student-centered teaching mode that enabling students to actively participate in teaching activities and guiding students to learn language by doing is an effective way to improve students' language performance competence. The article uses cognitive theory from different perspectives to explain the innovative practice of cultivating engineering students' performance competence to use language.

Keywords: *engineering students, performance competence, innovative practice*

I. INTRODUCTION

Since long, the purpose of college English teaching in China is clearly referred to "cultivate students with strong reading ability and a certain degree of listening, speaking, reading, writing, and translation capabilities". Obviously, reading ability has been put in a prominent position, causing Chinese students to fail to participate in social activities even though they have passed the English proficiency test. The students' actual language performance competence is very poor, which is known as "Dumb English" and "Deaf English". Some students said: "Foreigners may not have as wide vocabulary of English words as I do, but I am not able to speak. I have studied English for more than ten years, but I am still 'deaf' and 'dumb'." Such phenomenon has not changed much so far and such phenomenon is especially true for engineering students who are poor at expression. Yet, with the continuous deepening of China's opening up and the rapid development of the Internet, society's need for English talents, especially those who are competent for applying English is more urgent. Such need is also a challenge for English teaching of engineering universities. Therefore, English courses in engineering colleges have gained more and more attention from the public and the society.

At present, the college English syllabus states that the purpose of college English teaching is to train students to have a strong reading ability, a certain ability of listening (the syllabus applied by science and engineering also requires a certain translation ability), and elementary writing

and speaking ability. So that students can use English as a tool to obtain the information required by the major, and lay a good foundation for further improving English. For this purpose, the Chinese College English Test (CET) band 4 and band 6 assess students' performance competence to use the language, as well as the students' mastery of syntactic structure and word usage.

Nevertheless, it can only show that the teaching reform of English courses in engineering colleges has obtained basic conditions, yet are still many problems need to be solved. How to change the teaching concept while teaching, how to understand the essence of the "syllabus", and how to improve students' practical ability to use language are the key points.

The author started from the 2018 freshman, and adopted the comprehensive course "Advanced College English". It took one year and 128 teaching hours, and carried out attempts in respect of investigations, teaching modes, methods, and quality detection and verification. Based on the big data analysis results obtained from those attempts, the following is to consult with professionals and fellows and to make some suggestions on how to train students to use language skills in teaching.

Firstly, after the freshmen were enrolled, a placement test and a questionnaire survey were conducted using their spare time during military training. The placement test involves a total of 157 students in 4 classes. The test results are shown in "Table I".

TABLE I. TEST RESULTS

Course Average Class Score	Listening	Reading	Vocabulary and syntax	Speaking
Dynamics 1841 (Pilot Class)	46.2	71.4	68.2	47.1
Dynamics 1842 (Pilot Class)	43.8	69.3	64.5	48.6
Hydropower 1841	41.5	64.2	62.6	39.3
Hydropower 1842	45	70.1	67.3	46

It can be seen from "Table I" that engineering students have poor English language skills and weak basic knowledge. Students' listening and speaking skills are distinctly weak, which is unsurprising and is in line with the current situation of English learning. Questionnaire survey and interview are both conducted. The questionnaire survey includes four major items: learning attitudes, the purpose of English learning; difficulties in English learning; and the students'

degree of English demand and recognition of English. Each major item has more than five sub-questions, and each sub-question has three to five options. Students can choose one or more options in accordance with their own circumstances. On the last part, students write their own opinions and suggestions on English teaching. The survey results are shown in "Table II".

TABLE II. STUDENTS OPINIONS AND SUGGESTIONS ON ENGLISH TEACHING

Course Average Class score	Listening and Speaking	Reading and Writing	Grammar	Vocabulary
Dynamics 1841 (Pilot Class)	50	6.4	6.3	4.2
Dynamics 1842 (Pilot Class)	45	8.6	3	7.3
Hydropower 1841	47	13.6	8	5
Hydropower 1842	48	15.4	5.9	5.8

The results from "Table II" clearly show that students feel difficult to improve their English listening and speaking abilities. In the questionnaire of students' degree of English demand and recognition, more than 45% of students indicate that they want to improve their listening and speaking ability most. Though students feel difficult to improve the listening and speaking skills, they desire to improve those skills. Hereby, it can be seen that these students have a positive and right attitude towards English learning. In the questionnaire of students' purpose of English listening, 60% of the students regards learning English as the need for their future work. It is urgent for students to improve communicative competence, and the communicative competence is the most crucial means to obtain interpersonal skills. Therefore, training students' practical performance competence is not only a concern for the society and English teachers, but also a consensus among college students.

Secondly, as the engineering students have poor English language skills, less class hours, and weak basic knowledge, the teaching syllabus is followed with the principle of giving priority to practicability at a moderate degree. Its main feature is insisting on learn a little, master in what learned, and able to use what mastered. To conquer current circumstances and meet the needs of foreign language talents in the society, three ways of cultivating engineering students' practical language performance competence are used in teaching.

II. THE INNOVATIVE PRACTICE OF LAYING A GOOD FOUNDATION OF LANGUAGE AND CULTIVATING STUDENTS' PERFORMANCE COMPETENCE TO APPLY LANGUAGE

Language is a communication tool, while language knowledge (vocabulary, pronunciation, grammar) is the premise of language communication. Without solid language knowledge, it is impossible to obtain strong language communication skills. The ultimate goal of language teaching is to foster students' ability to communicate in written and oral ways. Acquired language knowledge does not mean acquired language performance competence. Language performance competence can veritably reflect the

strength of language knowledge. Such competence can only be obtained through purposeful and targeted cultivation and practice. Engineering students have acquired a certain level of language knowledge after studying in high school. Therefore, the grasp of language knowledge at this stage is by no means a simple process of memory and imitation. The grasp of language knowledge should be followed from flexible application to creative use. In teaching, the principle of "learning while using, combining learning with using" is implemented. Each unit of "University Experience English" is developed on a same communication topic, and is divided into four parts: speaking, listening, reading, and writing. In the pilot classes, the "listening and speaking" leading method is adopted, allowing students to listen to the sample audio first, then use pair work to learn imitation, and leave the communicative tasks for students to prepare after class. Five or six groups of students were required to make voluntary presentation about their work in the next class. Students

should pay attention to the standardization of pronunciation and intonation, the correctness of the words, and the consistency between performance and dialogue. At the moment, the teacher and other students are the audience. They will point out the errors of the students in the performance and correct them in time, so that the listening and expression skills for all students are improved. In 128 class hours, students made daily communication dialogues in topics of introduction, greetings, gratitude, apologies, farewell, directions, weather, study, hobbies, diet, and health, etc. Not only spoken English ability is trained, but also the English performance competence is improved. The training of English performance competence is embodied in the training of English practicability competence. The performance competence is the ability to use elementary language skills. The ability to apply these elementary skills to practical foreign affairs can also be called "practicability competence". The "performance competence" is the basis of "practicability competence", and the "practicability competence" is the embodiment of "performance competence". Therefore, students carried out dialogues relating to foreign activities such as welcome pick-up, schedules and event arrangements, accommodation, banquets, accompanying shopping, tours, medical consultations, etc., and dialogues relating to foreign affairs such as interviews, introduction of company factories, product introductions, business negotiations, and hosting business conferences, etc. The foreign teachers were invited to join these activities. Through these purposeful and targeted training, students' oral communication skills were improved, and their language knowledge is also consolidated and strengthened. The training also improved their ability to use language in practice and helped them understand the cultural differences of other countries.

III. INNOVATIVE PRACTICE OF CLASSROOM TEACHING WITH LEARNER-CENTERED TEACHING MODE TO IMPROVE STUDENTS' LANGUAGE PERFORMANCE COMPETENCE

The English class in college is basically lecture-centered. The function and necessity of lecture cannot be denied, but it is not advocated to lecture too much. The lecture should be "less and refined", that is, the length of the lecture should be less while the content of the lecture should be refined. Otherwise, the students will not be provided with opportunities to practice, and thus will unconsciously inhibit the enthusiasm for learning. The theory of cognitive psychology believes that learning is a positive process of interaction.

The primary task of foreign language learning is to "learn" rather than "teach". As a practical course, English language skills require the individual practice to achieve the effect of learning, which largely depends on the subjective initiative and participation of students. The process of learning is the process of combining new knowledge with existed knowledge. It is also the process of translating language skills from understanding to practical application. Adopting a learner-centered class teaching mode does not mean lessening teacher responsibilities or letting slide the

students. On the contrary, teachers' responsibilities and burdens are heavier and their work is harder.

This teaching model firstly broke the traditional model of lecture first and then training. In the pilot class, the new lecture was led-in by checking students' online video preview, and the explanations should be refined. Then, language practice activities were carried out during the class. Finally, the teacher would summarize the lecture and assign the homework and preview tasks. In this basic class teaching mode, teachers should prepare a variety of teaching activities, such as pair work, group work, discussion, role play, and class presentation, etc. to create a lively class atmosphere, and to stimulate the enthusiasm and initiative of classmates, enabling each student to participate in activities and learn language in practice. Teachers become the designers and managers of classroom activities and the inspirer of students' practical activities. For students, they must preview before the class following teacher's requirements and meet the requirements in order to participate in classroom practice. It is emphasized that everyone should participate in. And the frequency and performance of participation are regarded as part of performance assessment for students.

At the same time, students are able to complete the content of online video settings to practice vocabulary, grammar, translation, reading and writing and realize human-computer conversations to exercise oral expression skills by use of the superstar "one cloud platform and three ports" learning system, which each unit with different situations are matched with advanced English comprehensive course training from the shallower to the deeper. The system primarily complements and perfects what is learned in class.

IV. THE EXTRACURRICULAR ACTIVITIES AND MODERN TEACHING METHODS

To carry out a variety of extracurricular activities and create a good English language atmosphere for students, the college has launched an English experience festival event for all its students. The event includes reading, guess riddles, drama scene performances, English singing and speech competitions, dubbing and many other extracurricular activities. Students can choose one of the activities freely, and organize activities regularly to improve their enthusiasm for learning English, and thereby it will be beneficial to the cultivation of students' practical performance competence of language. Xiang Ruikun from dynamics class of 2018 has won the third prize in the provincial English speech contest of "Foreign Language Teaching and Research Press Cup".

The development of science and technology has provided modern teaching methods for language teaching. The sound recording, video recording, film, Internet and other scientific and technological means are used in teaching to enhance students' learning, practice and communication platforms, improve the teaching effect of foreign language. Such scientific and technological means played an immeasurable role, especially in improving students' practical application of language skills.

After the 128 hours of student-centered practical training, four 2018 classes are tested for their English performance

competence test at the end of the course. The test results are shown in "Table III".

TABLE III. STUDENTS ENGLISH PERFORMANCE COMPETENCE RESULTS AT THE END OF THE COURSE

Course Average Class score	Listening	Reading	Vocabulary and Syntax	Speaking
Dynamics 1841 (Pilot Class)	71.2	81.3	79.2	78.6
Dynamics 1842 (Pilot Class)	69.4	79.2	74.5	80.3
Hydropower 1841	59.2	69.5	67.8	50.3
Hydropower 1842	63.1	72	72.3	69

The comparison between "Table III" and "Table I" showed that whether the students were in the pilot or non-pilot classes, though the exams had reached to the proficiency level and all the English abilities had been improved, the teaching results from pilot class using new teaching model showed a distinguished improvement in students' listening-speaking and listening skills. Above experiment drew conclusions that the cultivation of practical performance of language skills are equally important as the solid foundation of language knowledge, the class teaching model with students as main bodies while teachers as subsidiaries are adopted basing on students' actual situation, the participation and practice are emphasized, and the language practice activities are integrated throughout the classroom. The premise was to keep student-centered, goal-oriented, and cultivate reading ability. Attaching importance to listening ability as well as focusing on speaking, writing and translation skills, the foreign languages teaching was strove to get twice the result with half the effort, and hence laying a good foundation for students' future language learning.

V. CONCLUSION

The research team members have made a whole year of unremitting efforts. Based on the OBE teaching concept, a student-centered teaching model was established, following the guiding principles of "combination of learning and use", "combination of learning and application," and "learning a little, mastering what learned, and being able to use what mastered". In the limited lecture hours, reforms were made in teaching methods, teaching measures, and teaching processes, etc., and the cultivation of students' English performance competence is consciously emphasized. The students' ability to practice language indeed improved a lot. Students also developed autonomy in learning. Such teaching model facilitated the application improvement of five language skills of listening, speaking, reading, and writing. The expected reform effect was achieved. Indeed, during the research of this topic, there are still many deficiencies, such as limited academic hours and inability to provide a real language communication environment. The research team members will continue to work hard, make unceasing exploration and improvement based on results-oriented concept, implement interactive teaching by means of modern teaching methods, stimulate students' interest in learning, and get in touch with more authentic language environments to

cultivate new engineering talents who have humanistic spirit and can meet social needs.

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