Research on POA-based EAP Class in Engineering University Under the Background of "Double First-class Initiative"

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Abstract. Under the background of "Double First-class Initiative", to contribute to the objective of training talents with international competitiveness, College English course in engineering universities bears the responsibility of training students with international academic exchange ability. In theory, POA and EAP for engineering students have high compatibility; in teaching practice, it is proved that with the target of "integration of learning and application", POA can solve the problems of "separation of learning and application" and "separation of teaching and research". The data from the methods of questionnaires, interviews and observations further validate the applicability of POA in EAP for engineering students and the high acceptability of POA among the students.

Keywords: POA; EAP; Engineering University; Double First-class Initiative.

1. Introduction

Conceived in 2015, the Chinese national education policy of "Double First-class Initiative" aims to develop an increasing number of world-class disciplines and universities and cultivate sci-tech talents with international competitiveness. As a compulsory course in college, College English plays an important role in the implementation of the policy, since English is an important instrument for international academic exchanges in key core fields of sci-tech development. Therefore, in engineering-featured universities, it is especially important to reform the curriculum, changing from EGP (English for General Purposes) to EAP (English for Academic Purposes), so as to give full play to the instrumentality of English, the teaching method of POA (Production-Oriented Approach) is used to help in this reform.

2. The Rationality of Applying POA in EAP for Engineering Students

Currently, there are the common problems of "separation of learning and application" and "separation of teaching and research" in the teaching of EGP; for engineering students, EGP cannot help them in their professional research, so the course plays no role in cultivating engineering talents. Applying POA in EAP is adopted to solve this problem. Proposed by professor Wen Qiufang in 2015, POA is a systematic language teaching methodology that incorporates scientific teaching concepts, teaching hypotheses, and teaching procedures.

POA is applied in EAP for engineering students for the following reasons. Firstly, the "Cultural Exchange Principle" and "Key Ability Principle" in POA's teaching concepts aim to cultivate application-oriented talents with an international perspective, which is in line with the "Double First-class Initiative". Secondly, POA proposes "learning centeredness" and "integration of learning and application", advocating students to "use while learning, and learn while using" [1], which solves the problem of "decoupling" language teaching from real-world application. EAP for engineering students aims to help students successfully engage in scientific research in their major field in English, such as writing academic papers and conducting international academic exchanges, so as to achieve the goal of connecting students' actual scientific research needs with English teaching, which is consistent with "integration of learning and application". Therefore, POA has a high degree of compatibility with EAP for engineering students. This research will take EAP in Harbin University of Science and Technology as an example to discuss the role of POA in EAP for engineering students.

3. POA-based Teaching Practice in EAP for Engineering Students

A four-period teaching experiment that lasted for one week was conducted, the teaching content of which was writing abstract for academic papers. Before that, both "text-centered" and "task-centered" teaching methods have been tried. The teaching objects were sophomores of grade 2022 majoring in Vehicle Engineering in School of Mechanical and Power Engineering. The total number of students was 47, and 90% of them have passed CET-4.

3.1 Research Questions

This research focused on the following two questions: 1. Compared with the "text-centered" and "task-centered" teaching methods, is POA better in achieving the goals of "integration of learning and application" and "integration of research and teaching"? 2. What about the evaluation and acceptance of POA among the students?

3.2 Research Methods

In order to obtain as objective results as possible, the three methods of questionnaire, interview and observation were adopted, since triangular verification ensures the credibility and validity of the research.

Through the app "Questionnaire Star", the questionnaire of "Satisfaction with the Effect of POA-based EAP Course" was distributed and collected among the students. The options were in the form of a five-point Likert scale, namely, "strongly disagree", "disagree", "neutral", "agree" and "strongly agree". The percentage of the number of people in each option was collected.

The interview was a semi-structured one, meaning the interviewer prepares a rough outline in case the intention or the main questions of the interview is forgotten, while the content of the interview can be flexibly adjusted according to the situation.

The observation in classroom included both the teacher's self-observation and peer observation from other teachers. After obtaining the consent of the students, the teacher videotaped the whole teaching process for post-class check and reflection; the teacher also invited two peer teachers to observe the teaching methods and students' reactions in the class, and give feedback after class.

3.3 Research Process

The research process consisted of the three parts of setting teaching objectives, designing and implementing the teaching procedures according to POA's theory for teaching process, and collecting and analyzing the data.

3.3.1 Teaching Objectives

The teaching objectives included communicative and linguistic ones. For communicative objective, students should be able to write an abstract for an academic paper, based on which the students can conduct academic exchanges in a conference. For the linguistic one, students were supposed to acquire the common moves and steps for abstract and the signposts in between.

3.3.2 Teaching Procedures

According to POA, a complete teaching process includes the three sessions of motivating, enabling and assessing.

(1) The motivating part should present real communicative scenarios to students, who will try to complete the production task by themselves and realize their "knowledge gaps", thus their learning interest is generated. According to POA, four elements are needed here, namely, topic, purpose, identity, and setting [2]. With a consideration of the students' majors, the motivating scenario with real communicative value was designed as follows: As an expert in your field, you have been invited to present your research abstract at the 2023 5th International Conference on Mechanical Engineering and Vehicle Engineering (MEVE). Prepare your abstract and presentation.

The MEVE conference is a well-known conference in the circle of vehicle engineering, and students who have just started their major studies are likely to participate in such a conference in the

future, therefore it would stimulate students' learning interest. The abstracts could be for the students' own papers, or a translated one of another person's Chinese paper in the same field. In order to train students' academic oral English ability at the same time, the experimenter required students to present the prepared abstract in a video of about 2 minutes, and submit the abstract and video to the online platform. Students had no previous knowledge about what elements constitute an English abstract, so their desire to learn were aroused. Due to the limited class time, this task was assigned as homework at the end of the previous class; before the class, the teacher should select typical samples from the homework for TSCA (teacher-student collaborated assessment) in the offline class.

(2) As for enabling, it followed the principles of "alignment, gradualness and variety" [3]. The activities in this part were aligned to the teaching objectives and the students' need; also, the various activities' difficulty was gradually increasing while the teacher's scaffold was gradually removed. Finally, the students would be able to complete the abstract independently.

In the first two periods, the abstract moves of IMRD (Introduction, Method, Results and Discussion) or PMRD (P for purpose) were taught to the students through abstracts for three influential English papers in their major. At the language level, commonly used vocabulary and sentence patterns in each step were also shown to the students. Then, the teacher presented another abstract and asked the students to point out the location of each move. The teacher also engaged the students with activities of blank-filling and sentence-ordering, in which the students filled in the missing parts of the abstract with the commonly used vocabulary and sentence patterns in each step, and analyzed the correct ordering of each sentence according to the moves.

(3) TSCA is conducted in the second two periods. The teacher presented typical samples of pre-class assignments to students, and let students assess the pros and cons in them. Then, the teacher put forward his own assessments for these samples, and summarized a set of assessment checklists with the students. The checklists included three dimensions: language content, language form, and overall presentation effect. Students carried out self-assessment and peer assessment according to the checklists. The three dimensions were scored separately with a range of 1-5 points. After class, students revised their drafts and videos and submitted them again. The teacher assessed the students' assignments with the aid of computer assessment and then arranged the students with the top five scores to conduct on-site academic presentation in the next class.

3.3.3 Data Collection and Analysis

Altogether 47 questionnaires were distributed and all were valid. The questionnaire mainly investigated the overall satisfaction level of POA-based EAP and the significance of each teaching process. Most of the students were satisfied with the teaching process (42 people, 89.36%); the highest satisfaction level lied in the engaging session: 45 people, that is, 97.74% of the students believed that the scenario had effectively stimulated their interest in learning; followed by the assessing session (43 people, 91.48%), through learning assessment checklist, and cooperating with teachers and classmates to assess typical samples, students were more aware of the problems in their own production; the relatively low satisfaction level existed in the enabling session (40 people, 85.12%). For students who had not passed CET-4, it was difficult to read the English abstracts; although some terms' Chinese meanings had been provided, the session still posed a big challenge for these students.

The interviews mainly involved three parts: "learning gains", "problems in learning" and "suggestions and feedback to teachers". Regarding learning gains, most students reported positively. For example, "The conference scenario made me take it seriously, because I am likely to participate in this kind of conference in future, so I feel the class is very useful." (S2, S stands for student, and the number is given to the student by the author.) Regarding the problems in learning, some of them were related to the teaching design. For example, the class did not dedicate to correcting the grammatical problems in the students' production, which caused confusion to the students: "I feel that there were some grammatical errors in the samples. Those might be the errors I tend to make. I hope the teacher can explain how to correct them." (S13) The suggestions and feedback to teachers

were also positive. For example, "I can feel that the teacher wanted us to do more activities so that we can learn more, but I hope that the teacher's class pace will slow down." (S8)

After the teaching observations, peer teachers also gave some positive evaluations on the teaching method and teaching effect. For example, "This teaching method shows that the teacher has put a lot of thought into the design in the early stage, so that the activities in the classroom can be linked together, and the students can 'use while learning'." (T1, T represents the teacher.) There are also questions about the teaching design. For example, "I feel that the gap from writing to speaking is still quite large, and the assessment criteria of these two tasks should not be exactly the same. In fact, the production task is too ambitious in that both written text and presentation video are required." (T2)

3.4 Reflection and Discussion

Based on the video for the class and the above data analysis results, the author reflected upon the teaching, and the results are discussed as follows: The research can prove that compared with the other two teaching methods, POA performs much better in balancing input and output, and in aligning teaching to students' scientific research. The data obtained through questionnaires, interviews, and observations can confirm that students generally hold satisfactory attitudes towards POA. Due to the author's lack of teaching experience in applying POA, this experiment has also left many regrets: Firstly, the students were not instructed clearly that grammatical problems should be solved by consulting teachers and classmates at the online platform, because class time was limited, and it can only contribute to realizing limited teaching objectives; secondly, too many activities were included in the enabling session, and the classroom pace was too fast; thirdly, the teaching objectives were too ambitious. It was not easy to achieve both writing and speaking objectives during the limited class hours. Hopefully, these problems can be effectively resolved through repeated polishing, future teacher-student cooperation and peer evaluations.

4. Summary

With four class periods, the research has proved that POA is suitable for EAP course in engineering universities, and it plays an important role in solving the two major English teaching problems of "separation of learning and application" and "separation of research and teaching". The experiment shows that under the background of "Double First-Class Initiative", POA can promote the instrumentality of College English, and enhance the engineering students' ability to tell Chinese academic stories to the outside world. In the future teaching, the level and acceptability of the students should be fully considered in the enabling session, and the activities should not be too many but refined, so as to ensure the quality of teaching; in addition, making use of online resources and adding teachers' scaffolding may solve the situation of some students' "laging behind" in class.

Research Funds

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