

Integrating Project-based Learning into Academic English Writing Class: A Case Study on Doctoral Candidates of Engineering

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Abstract—This study aims to explore the necessity and feasibility of integrating project-based learning into academic English writing class for doctoral candidates of engineering. A project-based learning (PBL) teaching mode was proposed and the doctoral candidates' perceptions of the mode were examined by data from interviews and reflection diaries. The results suggest PBL is effective to integrate language, contents and skills learning simultaneously. What's more, majority of the doctoral candidates have positive perceptions of PBL and their academic writing competence, communication skills, analytical, cooperation and problem-solving skills have been developed through PBL in academic English writing class.

Keywords—project-based learning; academic writing; case study; doctoral candidates

I. INTRODUCTION

In recent years, there are growing pressures and demands on doctoral students to publish English language research articles in international literature for participation in global scholarship during candidature. ERPP (English for Research Publication Purposes) has become a specialized and established branch of English for Academic Purposes(EAP), which is addressing the concerns of professional researchers and postgraduate students who seek to publish their research in peer-reviewed international journals (Cargill & Burgess, 2008). Novice scholars writing for publication face a vast array of linguistic, rhetorical and non-linguistic difficulties when they target center English journals, for example, a physics doctoral student in her study found herself “far from being able to write her first English research article up directly in English” due to her limited English proficiency and unfamiliarity with the rhetoric structure of English journal articles (Li, 2005).

The use of projects and project-based learning has gained some popularity as a way of promoting meaning-focused communication and integrating different language skills in second and foreign language education. Project-based instruction has been heralded as a most promising activity that can socialize students into academic language and literal skills (Beckett, 1999; Stoller, 1997). Many advantages of project-based learning have been enumerated, including not only providing learners with ample opportunities to learn the language through engaging them in real-life activities, but also

enabling them to develop new knowledge and various social and communication skills (Beckett, 2006).

The purpose of the present study is to integrate project-based instruction as a pedagogical activity into academic English writing class for doctoral candidates, which may help teachers understand the impacts of project-based learning on students and shed light on the improvement of project-based learning in academic English writing class in the future. The study includes two steps. The first step is to propose a teaching mode to investigate the necessity and feasibility of applying project-based learning in English class and develop a clear picture of the overall academic writing practices. With interview and reflection diary as instruments for data collection, the second step is to probe doctoral candidates' perceptions of project-based learning in academic English writing class.

II. LITERATURE REVIEW

The application of PBL in EFL contexts started 3 decades ago as a vehicle of student-centered learning principles. A project is defined as an extended task which usually integrates language skills work through a number of activities (Hedge, 1993). Beckett (2002) defined a project as “a long-term activity that involves a variety of individual or cooperative tasks.” Project work encourages imagination and creativity, self-discipline and responsibility, collaboration, research and study skills, and cross-curricular work through exploitation of knowledge gained in other subjects.

It is commonly accepted that writing instruction should meet the specific needs of writers and that students in scientific and technical fields benefit more by learning to write to match the requirements of their specific fields. However, doctoral students writing for publication have met incredible challenges and the perceived difficulties and impediments experienced by them may be related to: insufficient command or inability to reach an acceptable academic style in that language; difficulties in responding appropriately and effectively to journal editors and reviewers; unfamiliarity with the rules of scholarly publishing; obstacles for accessing information; difficulties in selecting appropriate journals; inadequate knowledge and skills for conceiving and designing research; difficulties in selecting

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publishable research topics; difficulties in choosing appropriate research methodology etc. (Jun Lei & Guangwei Hu, 2019).

A variety of teaching mode and method for academic writing classes have been proposed to meet the needs of students, from genre-based framework to metadiscourse strategies to courses targeting specific disciplines serving a heterogeneous group of students from many disciplines. However, for project work in EFL contexts, very few studies have been undertaken, and most of which investigated the relationship between PBL and learners' motivation, learner autonomy, critical thinking etc. In fact, one empirical study within the framework of project-based learning was conducted in academic English writing class for undergraduates, and the results showed the awareness and general and academic writing competence was enhanced (Liping Yang & Guang Han, 2012).

III. METHODOLOGY

A. The Participants

The participants in this study comprised 25 doctoral candidates (5 females and 20 males, belonged in the 20-24 age group) of engineering from a key university in Wuhan, Hubei province, most of whom were in upper intermediate or advanced English levels. Paper Writing and International Publication as a required academic English writing course for these doctoral candidates began in the first semester of the first year of doctoral education. The teaching objective of the course was to develop students' academic writing competence and help them be familiar with the processes and rules of scholarly publishing. And the course lasted for 12 weeks, 4 periods each week, where the teacher used a combination of instructional strategies, including a variety of inside and outside classroom projects in academic English class.

B. Data Collection and Analysis

This was a qualitative case study for doctoral candidates of engineering. The project-based learning was integrated into academic English writing class in the first semester of 2018 and a student-centered principle was followed in the teaching process. And the teaching activities and tasks were real and meaningful academic writing projects. The present study included two steps. The first step was to propose a project-based learning teaching mode in academic English writing class, where the teaching objective, contents, processes and evaluation about the project-based learning were explored. And the second step was to probe students' perception and evaluation of the PBL. The data were collected by one-on-one interview and students' written reflection diary over a three-month period.

IV. RESULTS

A. The Project Framework

The Project Framework is to show students' language, content, and skill development which occur simultaneously through project work. The teachers use the Project Framework as a mediation tool to help students understand her goals and plans. In this case study, an adaptation of Beckett and Slater's

design of framework has been developed (Beckett & Slater, 2005), which captures four key components important to the PBL-integrated curriculum as well as the students' educational goals. Four key components will be considered in the framework, which are language, contents, attitude and skills, respectively.

The first component is language, with a focus on enhancing the awareness and capabilities of creativity as well as writing competence in practical academic English writing for publication purpose. Meanwhile, combined language abilities, like speaking, reading, listening and vocabulary will also be developed. The second component is the contents of projects, including the textbook contents and the interested theme or topics of the projects. The third component is the attitude of the learners, especially participation, collaboration, negotiation and reflection attitude of the learners in doing projects. The last one is skills, for example, communicating, academic research skills, collaboration skills, autonomy and critical thinking skills etc.

B. The Teaching Mode of PBL in Academic Writing Class

Project work involves contents, products and processes. To fully implement the project approach, teachers need to develop an understanding of the process of project work and students work towards an agreed goal and they will be individual or cooperative in-depth investigation of real-world subject matter and topics of interest. A PBL teaching mode is proposed as follows in academic writing class for doctoral candidates:

(1) Objective: to raise doctoral students' awareness and capabilities of innovation, and develop writing competence in academic writing for publication

(2) Method: project-based learning and teaching method is used, and the class is student-centered and teacher-facilitated, where the problems are solved by individual exploration and group cooperation.

(3) Schedule: 5 themes or topics of interests will be chosen by students, and 4-6 students will be organized as a group voluntarily. 5 projects will be implemented from week 2 to week 12, which is over a three-month period.

(4) Contents: the exploration contents of the 5 projects are related to the textbook of Paper Writing and International Publication; 5 topics of interested, including studies on writing research article title, abstract, introduction, main text (method, results, discussion, conclusion), references and plagiarism.

(5) Processes: the procedure of a project includes four major steps, namely: preparing the project → constructing a project → presenting the project → evaluating the project. The detailed processes of implementing a project are as follows: research tasks and requirements presented by teachers → students making groups voluntarily and selection of research topics → students' planning and scheduling of a project → research articles reading, gather information, discussing and analyzing information related to the project → a presentation to report the exploration results by groups → teachers and other students' feedback and evaluations of the projects → students' reflections and hand in the final product.

(6) Evaluation: the evaluation of the course includes formative and summative evaluation. Formative evaluation is the one-on-one student interview and written reflection diary and summative evaluation is the final exam. The interviews are semi-structured, with a set of specific questions on students' opinions about PBL in academic writing class. The interviews are audio-recorded and transcribed for analysis. After students finish the project and hand in the final written project report, they will write reflection diaries with focus on the positive and negative opinions of PBL teaching mode. Finally, an oral presentation and an academic paper will be finished at the end of the semester and teacher will score the performance of the students. Moreover, students will have a paper examination at the end of the semester.

C. The Results of Evaluation

25 doctoral candidates participated in the project in academic writing class, and all of them were interviewed and handed in their reflection diaries. Data from open-ended questions of interviews and reflections were analyzed qualitatively which were concerned with teaching goals and effectiveness of PBL, strategies to implement project-based learning, perceptions of PBL etc. As for the goals and effectiveness of project-based learning, majority of the students agreed that their academic writing and publishing skills were developed by PBL and meanwhile they learned how to think innovatively and use academic research skills to solve real-world problems. More importantly they thought their academic writing competence, communication skills, analytical, cooperation skills have been improved over a three-month period. Compared with the traditional teacher-centered class, student-centered PBL class provided more opportunities to students to engage in real-world or theme-based tasks and activities, which could arouse the learning interests and confidence of students. Teachers became facilitators and students were more active and interactive to work collaboratively to solve problems they have met in the project. Therefore, a student-centered project-based learning class was preferred by students.

In the reflection diaries, the doctoral candidates expressed a wide range of perceptions of project-based learning, some positive, some mixed, and some negative toward project-based instruction as a classroom activity. 88% of the students who perceived project-based instruction positively wrote project-based learning provided them opportunities to learn and improve academic writing and communication skills. Their confidence has been raised and awareness of innovation and cooperation in international publication has been developed. While doing the projects, they have acquired some skills and strategies in writing paper for publication, for example information researching, interpreting, analyzing and synthesizing and using comparing, contrasting and justifying in writing. One student perceived PBL negatively because he complained the project required much time and it's hard for him to accomplish. And one student felt frustrated by PBL because the oral presentation in class made him anxious. Meanwhile, at the end of the term, the students' performance in oral presentation, academic paper and final examination were

graded. Fortunately, for 25 participants, nobody failed in the evaluation. 13 got A and 10 got B and 2 got C. Students' writing competence and problem-solving skills have been developed noticeably by PBL teaching mode.

V. CONCLUSION

Project-based learning is student-centered and exploratory in nature and this study investigates the feasibility of integrating PBL into academic writing class among fresh doctoral candidates. It is significant to inspire teachers to achieve a balance between the quest for credit and the desire to see learners develop academic language and skills. Despite few student's perception of PBL time-consuming and hard to accomplish, majority of the candidates agree that project-based learning is a necessary and feasible approach, which is effective to integrate language, contents and skills learning simultaneously and motivate students to learn intrinsically and foster problem-solving, independent and cooperative working skills in the real meaningful writing processes. More importantly, the awareness of innovation, the confidence as well as the competence of language, especially academic communication and writing competence have been enhanced through PBL. However, this study is an exploratory case study and the samples are not big enough. Therefore, empirical studies, both qualitative and quantitative studies with a wide range of participants will be suggested, and the effectiveness and improvement of PBL instruction on improving learners' writing competence will be particularly explored in the future.

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