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Research on the Construction and Application of a Project based Learning Model for Maritime English Based on EDIPT Design Thinking Model

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Abstract

The EDIPT design model, as the most widely used design thinking model in the field of education, has unique value in supporting project-based learning. In response to the prominent problems in the current project-based learning process of maritime English, this article constructs project-based learning of maritime English based on the EDIPT model, and elaborates on the development, implementation, and evaluation process of project-based learning of maritime English based on textbooks in detail with specific lesson examples, aiming to provide ideas for the design of project-based teaching in vocational English education.

Keywords

EDIPT thinking model; Maritime English; Project-based learning.

1. Introduction

Against the backdrop of major economic and social changes, vocational education, which is most closely related to economic and social development, is facing unprecedented practical challenges. The country has begun to focus on promoting the "three education" reform of teachers, textbooks, and teaching methods in the field of vocational education. The"three education" reform has become a key lever to enhance the adaptability of vocational education to economic and social development, and achieve high-quality development of vocational education. The country advocates educational reform for the cultivation of students' various abilities, not only focusing on their practical exploration spirit, but also emphasizing the cultivation of their thinking. Nowadays, how to cultivate innovative talents that adapt to modern development is a concern of educational reform.

Maritime English belongs to English for Specific Purposes (ESP) and is also a core course in the teaching of maritime technology. It is an important tool for communication and exchange at sea. In recent years, with the vigorous development of the dual high construction of major vocational colleges and the construction of exemplary vocational colleges, the reform practice of project-based teaching has also been widely carried out. The main reason is that the adjustment of the development positioning of vocational education has triggered the reform of teaching modes, strategies, and methods. Teachers must find breakthrough points in vocational education that can implement the concept of "combining engineering and learning", and ultimately find teaching reform projects that are suitable for themselves. The curriculum and teaching design of maritime majors are crucial, as they will directly affect the quality of maritime applied talents and thus affect the development of the entire maritime transportation industry. The implementation of project-based teaching reform in vocational colleges is an inevitable result of the trend of vocational curriculum reform. After a period of reform, maritime English has shown a positive development trend in teaching design. However, it is undeniable that there are still some bottlenecks in the practical application of teaching, and the integration of new design concepts into teaching has become an urgent matter.

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2. Project-based Learning

2.1. The meaning of project-based learning

Project based learning (PBL) is a practical activity that fully selects and utilizes optimal learning resources, obtains complete and specific knowledge through practical experience, internalization and absorption, and exploration and innovation, forms specialized skills, and develops (Buck Institute of Education, 2008).[1] Regarding project-based teaching methods, different scholars have different definitions. Starting from the purpose of cultivating students' lifelong learning abilities and attitudes, the Curriculum Development Department of the Education Department of Hong Kong believes that project-based teaching is a process of in-depth exploration based on a certain theme or theme, combined with corresponding tasks or situations, for exploratory learning, allowing students to connect knowledge, skills, values, and attitudes for knowledge construction (see Figure 1). Rudolf Pfeifel from Germany believes that project-based teaching focuses more on students' learning interests, life experiences, and initiative. In project group activities, students, under the guidance of teachers, propose project ideas, conduct feasibility analysis, make decisions, and implement the project. During the project implementation process, they decide on learning content and methods based on the goals. In fact, this is a teaching process where students plan, implement, and evaluate learning activities on their own with guidance and assistance. Scholars in China have a relatively consistent view that project-based teaching is an advanced form of practical teaching, which leads team activities with projects. The purpose is to enable students to comprehensively apply their existing knowledge, experience, and skills in practice. By completing complete work projects, students can not only gain practical work experience, but also cultivate knowledge and skills related to practice, collaboration, and expression, Enable students to acquire and develop professional abilities. Overall, project-based teaching method mainly refers to the joint participation of teachers and students in a project's teaching and training activities, with the main goal of improving students' employment competitiveness, sustainable development, and entrepreneurial ability. Teachers are mainly responsible for formulating the project name, main content, and presentation of results; Students are mainly responsible for formulating specific steps for project implementation, such as collecting information, implementing plans, and evaluating assessments.

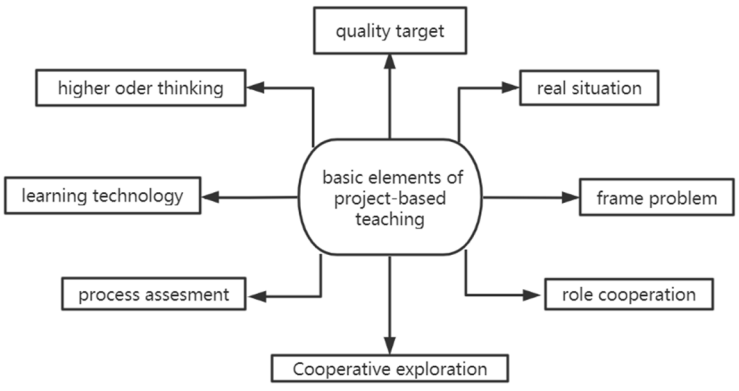

Figure 1. Basic elements of project teaching

2.2. Characteristics of project-based learning

The research and practice of project-based teaching in China originated in the late 1990s. The project-based teaching method has many advantages. It not only enhances the learning interest of vocational college students and allows them to participate in various learning activities

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independently, but also greatly improves their comprehensive abilities such as analytical ability, communication ability, innovation ability, and job ability.

2.3. Main problems encountered in project-based learning design

2.3.1. Lack of theoretical guidance for teacher design

In project-based learning, teachers often design projects based on their own experience, lacking systematic design models to guide project development. Due to the lack of guidance in design thinking, there is a lack of logic, rationality, and correlation between the various stages of course design as a whole. Through a period of practice, students have discovered the phenomenon of only seeing mechanical dialogue but not their thinking content in the teaching of maritime English. The project-based design of maritime English once fell into a dilemma, lacking development in both width and breadth, which led to the overall low quality of project-based learning.

2.3.2. Students lack sophisticated design guideline

Students lack clear understanding of the course learning process and specific learning guidelines when studying professional English. Without clear learning scenario creation and understanding of learning objectives before class, project-based learning can only stay at the surface of the project. The teaching task of maritime English is to grasp professional language knowledge and develop comprehensive language proficiency. However, a lack of well-designed teaching methods can lead to students lacking clear learning objectives, making it difficult to cultivate their subject core competencies in project-based learning.

2.3.3. Traditional Single Project Design

Many project-based teaching designs have not fundamentally broken through the traditional teaching design model. Although they are wrapped in a project-based shell, they are merely formalistic. The entire classroom design lacks a cycle of key knowledge and feedback evaluation, resulting in students being unable to reflect and optimize their work in teaching. If the product feedback is not detailed enough, the depth and effectiveness of project-based learning cannot be guaranteed.

Based on this, the author attempts to introduce the EDIPT model into project-based teaching of maritime English, exploring ways to improve the effectiveness of project-based learning in vocational English and achieving results oriented outcomes.

3. EDIPT Model

3.1. EDIPT model

The EDIPT model is a design thinking model that originated in the design industry and quickly became popular worldwide after being further developed by the Stanford University School of Design. Known as the "most widely used design thinking model in the global education field".[2] It includes five stages: E-Empathize empathy, D-Define definition, I-Idea creation, P-Prototype prototyping, and T-Test testing. This model not only has unique value in supporting project-based learning or problem-based learning, but can also be widely applied in multiple fields such as business, engineering, and product development. It comprehensively revised the entire project completion process, with the aim of helping teams and individuals improve their innovation and problem-solving abilities.

3.2. The Five Links of the EDIPT Model

E-Empathy, also known as empathy, requires designers to consider issues from the perspective of others, understand and feel their emotions, perspectives, and experiences. This is a basic requirement in this model to ensure that subsequent activities can be designed around the user's real needs.

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D-Define: Based on the information obtained in the first step, designers need to clarify the essence of the problem and obtain an accurate description of the design objectives, laying the foundation for the next step of creativity.

I-Idea Creation: Designers use techniques such as brainstorming and group discussions to come up with various solutions to problems.

P-Prototype Prototype Production: In this stage, designers will concretize the plan and design models, sketches, systems, and so on.

T-Test testing: Designers test the prototype to understand whether it solves the original problem and whether it has received user approval.

The above is an explanation of the concept of the EDIPT model, which adopts a dynamic coupling mechanism from "problem generation" to "problem solving" in these five stages, and has unique value in supporting project-based learning and solving complex problems. [3] At present, this design model is widely used in the field of education. However, there is still relatively little discussion in professional English courses such as maritime English.

4. Application Pattern Design of the EDIPT Model

4.1. Dual cycle mode (see Figure 2):

E: Before class, students watch micro courses and teaching resources on the platform for pre class preview and online testing.

DIPT: Complete basic common tasks in DIPT cycle 1 during class; DIPT loop 2 applied personality task.

Consolidate and expand the knowledge in class after class.

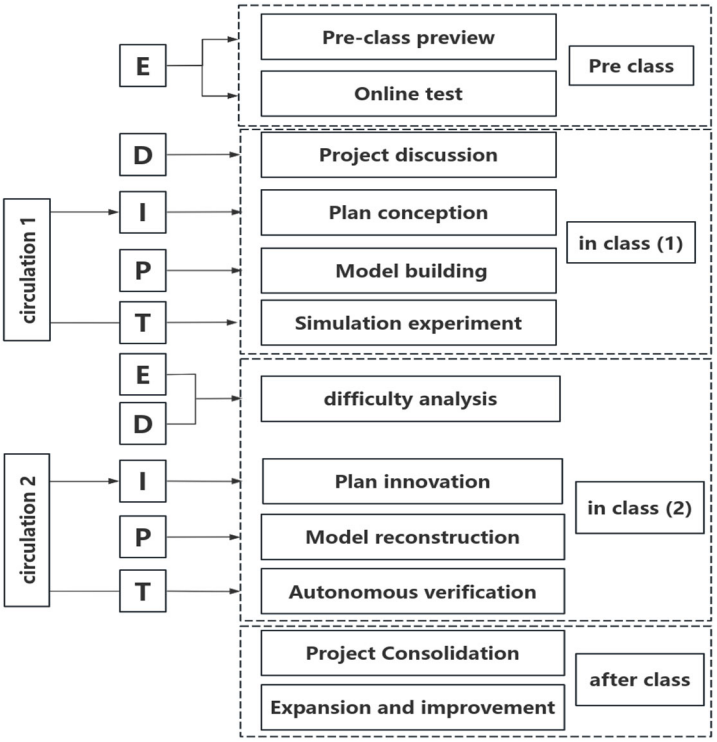

Figure 2. EDIPT Dual Loop Mode Flowchart

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4.2. Single cycle mode: (see Figure 3)

E: Teachers conduct pre-school analysis through questionnaire surveys, interviews, and observations before class, and determine teaching objectives based on students' actual learning abilities.

D: Present questions or projects for classroom discussion.

I: Teachers and students discuss together to come up with answers or solutions.

P: Display of student works.

T: Verify the effectiveness of the evaluation.

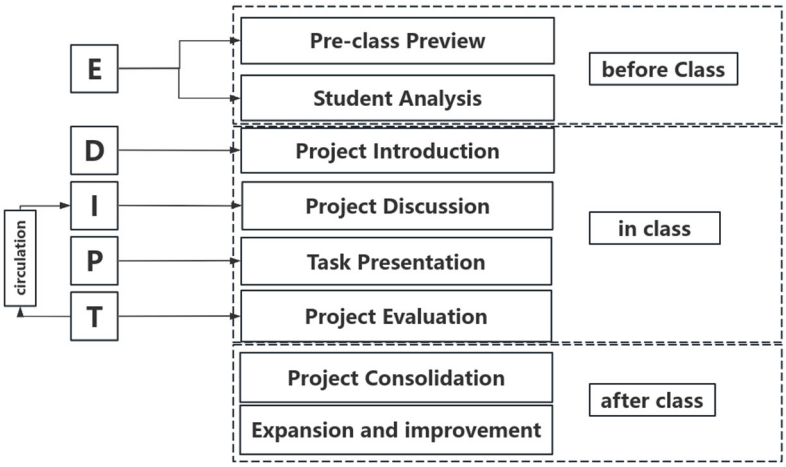

Figure 3. EDIPT Single Loop Mode Flowchart

The specific design model used in the specific learning of maritime English depends on the project output results that students need to achieve and the learning needs of students at different levels of learning.

5. Application Pattern Design of the EDIPT Model in Maritime English Courses

Using the EDIPT model as an example to design teaching for "Ship Manning and Responsibilities on Board" in maritime English. With the theme of "Maritime Power, My Responsibility", students are required to master relevant vocabulary and sentence structures, use them correctly, and focus on cultivating their listening, speaking, reading, and writing abilities. At the same time, it is important to strengthen value guidance for students, integrate ideological and political elements, enhance their core literacy, and motivate them to work hard to achieve their dream of becoming a maritime power. By repeatedly practicing, discussing and modifying, further expanding what is learned, and achieving output.

5.1. Project Analysis

Project analysis: This project belongs to the topic of "crew responsibilities". Students need to learn through discourse learning and video learning to understand the responsibilities that a crew member should have in their work. They should be able to express themselves clearly in English and guide them to understand their responsibilities and improve their sense of professional responsibility.

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5.2. Establishing Project Learning Objectives:

(1) Dig and understand the relevant introduction of crew personnel in the article introduction, and use mind maps to organize the English expressions of personnel levels and corresponding positions.

(2) Extract and summarize relevant English expressions about personnel from various departments and levels of ships in the textbook, and be able to summarize and organize key sentence patterns.

(3) Provide a strategy demonstration for the English brief introduction of personnel and related responsibilities on board, and develop a scientifically reasonable text plan.

(4) During group discussions and classroom presentations, achieve language output and enhance one's sense of professional responsibility,

5.2.1. Present thematic scenarios to evoke student resonance

(1) Teachers use videos on the Chaoxing platform to present descriptions related to the responsibilities of personnel on board, allowing students to try to jot down the vocabulary they hear and guess its meaning. The teacher asked, "Do you know how many departments are there on the board?" "What rank do you want to be in the future? What should you do to make it come true?" This led to the theme of this project.

(2) Assign tasks and require students to design a mind map of the job responsibilities of departments and personnel on board in small groups. Specific requirements include: 1) clear and concise description; 2) reducing spelling errors; 3) paying attention to the phenomenon of multiple words and one meaning; 4) combining pictures and text, and writing in a standardized manner

(3) Stimulate empathy and create a mind map. Teachers use multimodal materials such as news reports, pictures, and documentaries to show students materials that have made outstanding contributions or caused serious accidents in the crew position. Students should carefully observe what they see and hear, empathize with their professional responsibilities, and prepare for continuous learning and exploration.

5.2.2. Text information search, clarify problem definition

The teacher requires students to read the textbook with questions about the responsibilities of the relevant ship departments, and to find out if the personnel levels among the ship departments are the same? How to classify and memorize them, and require each group to carefully consider which common sentence patterns in the text can be used to describe crew positions, and to transform students from macro learning to micro understanding of the specific expressions and applications of responsibilities corresponding to each responsibility.

5.2.3. Integrate creative ideas and form a plan idea

(1) Teachers organize students to organize useful common sentence patterns and specific expressions that were sorted out in the previous definition process, and combine their existing knowledge and experience with brainstorming activities on the Learning Platform to propose sentence patterns for expressing crew responsibilities. At this point, the teacher is delaying the evaluation, appropriately delaying the time for evaluation and summary, providing students with sufficient thinking space, and encouraging them to propose more problem-solving ideas and solutions based on their knowledge reserves.

(2) After completing the above steps, the teacher requires students to delve deeper into vocabulary and sentence structure details through searching the internet and other methods. Based on the thinking framework provided by the teacher, group members are encouraged to fully express themselves through group discussions. Group members engage in activities such as comparison, screening, debate, and integration to ultimately generate a complete plan.

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5.2.4. Concrete solution to complete task list tasks

The teacher requires students to review the learning task proposed in the initial stage of this lesson - to design a mind map for the personnel and related responsibilities on board in groups, and share the problems and solutions encountered by each group in the map design. Students fully demonstrate the plan from the perspectives of role division, implementation steps, feasibility, and innovation in completing tasks, and team members divide tasks to create task lists. During this process, the teacher is responsible for inspecting the discussions and cooperation among various groups, and providing positive inspiration and guidance when each group encounters difficulties, making the design proposal more reasonable, logical, and innovative.

5.2.5. Carry out testing to achieve the integration of learning, doing, and evaluating

Each group presents their designed mind map to the other students in the class, and team members supplement relevant difficulties and solutions, so that the "evaluators" can see the entire inquiry learning process through the display. During this process, through the Learning Platform, all members can conduct multi-dimensional evaluations such as teacher evaluation, intra group evaluation, and inter group evaluation. In the reflection stage of the later evaluation, teachers can use the SCAMPER tool commonly used by EDIPT to guide all students to provide feedback on each group's work from seven dimensions: "which sentence patterns can be replaced," "which content can be integrated," "which content needs to be adapted," and "which content can be optimized.". Subsequently, each group optimized their respective tasks based on feedback.

6. Conclusion

The EDIPT model provides a new way and approach for project-based learning of maritime English, and a sharp edge for the reform implementers of project-based teaching. Under the guidance of a system science design model framework, teachers develop projects by intricately linking teaching content with desired teaching outcomes. Students achieve knowledge internalization and literacy improvement unconsciously. At the same time, in each stage of designing the model, students think about the problems and tasks proposed by the teacher from different roles and perspectives, and evaluate, reflect, and optimize the project work, providing a foundation for further expanding learning after class and ultimately forming a closed loop of learning.

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