Practical Teaching Reform and PTCSA Construction of Logistics Management Major

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ABSTRACT
With the transformation and development of colleges and universities, logistics management major aims to cultivate skilled talents in line with the requirements of enterprises, focusing on training students' practical ability. The cultivation of students' practical ability in universities lies mainly in the teaching of practice. Based on the analysis of the current situation and existing problems of practical teaching of logistics management major in colleges and universities, we construct a PTCSA (Progressive Training Chain for Student Ability) based on OBE (Outcome Based Education). The main line is "introduction to the major - cognitive practice - basic courses of the major - professional practice - elective courses for the major- graduation design". The training chain is divided into several stages, and the objectives and tasks of each link are analyzed. Finally, we put forward some suggestions on the implementation of the training chain from the aspects of practical teaching and assessment. It aims to form a perfect teaching system and achieve the goal of cultivating students' practical ability.

Keywords: *Logistics management, Practice, OBE, PTCSA.*

1. INTRODUCTION

With the rapid development of modern logistics industry, the demand for talents in the logistics industry is constantly rising. At the same time, higher requirements are put forward for talents in the logistics industry. How to cultivate more excellent logistics talents has become an important issue facing colleges and universities. Logistics management is usually attached to industrial engineering (mechanical engineering), traffic engineering, management science and engineering and other engineering disciplines, with strong engineering education characteristics. More and more attention has been paid to the cultivation of high-quality talents with engineering practice ability. The cultivation of students' engineering practice ability is more from the practice link, so how to organize the teaching and assessment of the practical link of logistics management major is of urgent necessity and significance.

2. CURRENT SITUATION AND DEFICIENCY OF PRACTICAL TEACHING OF LOGISTICS MANAGEMENT MAJOR

2.1. Current Situation of Practical Teaching

Since 2000, the Ministry of Education approved the first university to set up logistics management major, so far, the logistics management major has formed a certain teaching mode and system. The logistics management major has strong practicality, and the reasonable organization and arrangement of the practical links in the teaching system is of great significance. Under the guidance of basic theory, practical teaching is a kind of teaching activity that can cultivate students' skills and comprehensive quality through guiding students' practice [1]. Practical teaching is the most important part of teaching in colleges and universities.

At present, the cultivation of students' practical ability in logistics management major is mainly divided into two parts: inside and outside. In the school, students are provided with in-class experimental content and independent experimental content of relevant

professional courses, which are respectively set according to the requirements of professional courses and independent experimental requirements in the talents training program. For example, this professional enterprise sand table simulation comprehensive experiment, international logistics simulation experiment and so on. The off-campus part is carried out by students in the internship unit during their study, and the content is about the learning and cultivation of practical ability of enterprises. This is carried out according to the actual training program and plan. Internships are usually self-directed by students or in cooperation with schools and enterprises. In addition, some of the off-campus activities include enterprise visits and short-term productive internship, which are mainly carried out in the school-enterprise cooperation practice base [2].

2.2. The Deficiency of Practical Teaching

By analyzing the current teaching situation of logistics management major in practice, combined with the requirements for logistics talents under the background of "new engineering", the following problems exist in the teaching organization and arrangement of practice link of logistics management major.

(1) The cultivation system is fragmented and the teaching system is not perfect.

In the process of application-oriented transformation, some universities are prone to fragmentation of talent training system and imperfect teaching system due to problems such as ideas, path selection and resource allocation [3]. From the connection between courses of logistics management major, to the connection between independent experiments, to the connection between practical teaching of each semester, there is no complete system, which is not conducive to the systematic cultivation of logistics management talents. Secondly, the course system of talent cultivation in some colleges and universities is set on the basis of discipline system rather than technology system, which leads to the lack of professionalism of graduates and affects the recruitment of talents by logistics enterprises.

(2) The matching degree between theory and practice is not high, and the teaching and assessment methods are single.

Traditional teaching is usually centered on the teaching of basic theories. In recent years, case teaching have been gradually introduced, which have enhanced the connection between theory and practice to some extent, but still fail to fully realize the match between knowledge and skills. In the aspect of the assessment of practice, there are mainly three assessment and scoring methods. The first is the usual experimental report + final assessment, which is usually used in the experiment of basic courses, such as university physics experiment. The second method is the attendance and performance of experimental courses + experimental reports. This method is usually used in the experiments of specialized courses, such as enterprise simulation sand table experiment. The third is to complete practical activities together as a group, which is usually used for curriculum design or courses with strong practicality. The above assessment forms are gradually formalized. Some students fabricate experimental data in the assessment process, and their skills cannot be effectively exercised, which is not conducive to the assessment of students' comprehensive ability.

(3) The cooperation between school and enterprise is not deep enough.

The main purpose of higher education is to train and transfer talents according to the needs of society and enterprises. In recent years, most universities and enterprises have established cooperation in teaching together to match supply and demand. However, most "school-enterprise cooperation" stays in the middle-level cooperation stage with "small participation, shallow depth and short time", which lacks sufficient support for practical teaching and fails to fully cultivate and exercise students' practical ability.

3. THE PTCSA BASED ON OBE

3.1. Basic Introduction

Results-oriented education refers to OBE based on learning output, with emphasis on the engineering education concept of "student-centered, results-oriented and continuous improvement". The teaching concept of OBE not only attaches importance to the cultivation of basic and professional ability, but also attaches importance to the close connection with frontier science, engineering practice and social application practice, aiming to make course planning and teaching meet the needs of the industry. OBE education philosophy is oriented by students' learning outcomes, determines teaching plans and links in reverse direction, takes students as the teaching center, and teachers guide students to achieve the expected learning goals [4]. Its principle is shown in Figure 1.

Based on the OBE, the PTCSA is constructed, which is to take students' learning outcomes as the guidance, focus on multiple dimensions, integrate multiple resources, and use multiple teaching methods, and promote students' practical ability cultivation step by step, so as to form a perfect teaching system. The teaching system requires teachers to adopt a consistent and unified thought in the practice link. According to the formation process of students' practical ability, the content of the practice activity system is decomposed to form a series of relatively independent tasks with

different difficulties and requirements, and these tasks are assigned to the appropriate stage of the practice link. Through multiple iterative training of practice links at different levels, students' practical ability is finally cultivated.

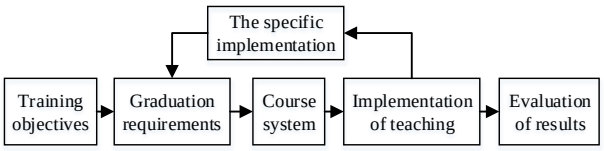

Figure 1 The Principle of OBE.

3.2. The Specific Process

In combination with the characteristics of logistics management major and the background of "new engineering", the PTCSA of this major is constructed based on OBE, as shown in Figure 2. The specific process is as follows.

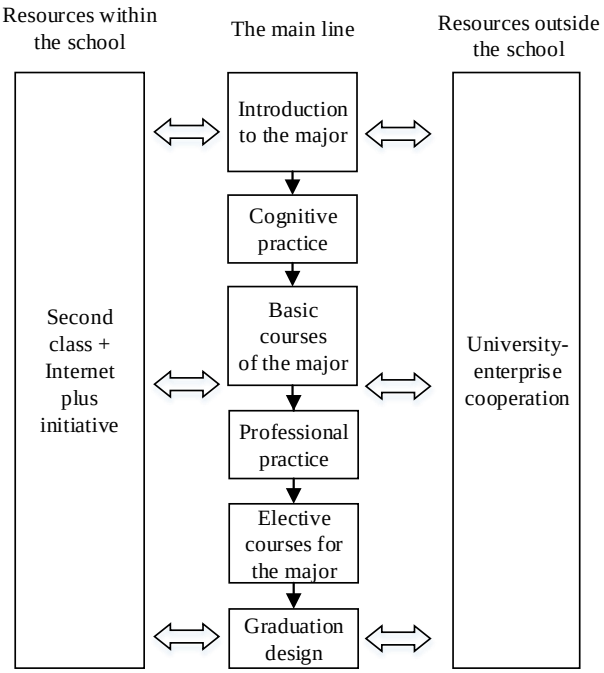

Figure 2 A Process of PTCSA

(1) The lower grades highlight the cultivation of professional cognition and innovation consciousness.

In the freshman year, the course of introduction to the major of logistics management will be offered, and the cognitive practice course for 1-2 weeks will be offered in the freshman year. For example, visit the warehouses of well-known companies such as Wuhan Kyushu, Wuhan tobacco, etc. Let students have a perceptual understanding of the logistics industry, know what logistics is doing, understand the basic status of logistics operations, help students form a preliminary understanding of this major, and lay a foundation for the study of professional courses for senior students.

(2) Senior students should cultivate the ability to research and analyze problems.

After the freshmen have a preliminary understanding of the logistics management major, the professional basic courses are gradually introduced in sophomore, including operation management, warehouse management, logistics marketing, etc., to help students have a deep understanding of the various components of the major. Professional practice is an important part of practice in junior year. In this link, by applying theoretical knowledge into practice, it will be of great help to improve students' practical ability. Meanwhile, in the process of contacting with enterprises, it will help students understand the requirements of enterprises for logistics talents. The introduction of elective courses in the senior year enables students to have a full understanding of the theoretical knowledge of the major and a more comprehensive understanding of the major after participating in certain practical activities. Students can choose courses according to their own interests to broaden their professional knowledge and prepare for graduation design.

(3) Graduation design highlights the exercise of comprehensive ability.

Graduation design is a comprehensive application stage, for graduates, from the early collation of materials, to the later completion of the work, the writing of graduation design specifications, and graduation design takes almost a semester of time. In this stage, students should take graduation design as the goal, graduation thesis as the goal or graduation thesis and design combined as the goal to complete the integration of theory and practice. The major of logistics management usually takes the graduation thesis as its target [5]. Students are required to select topics and complete the graduation thesis. As the last comprehensive practical course in university, it can effectively train students' ability to solve complex problems [6].

4. SUGGESTIONS ON THE PTCSA

By constructing the PTCSA under the concept of OBE and combining with the current situation and deficiencies of practical teaching of logistics management major, suggestions for the implementation process of the cultivation chain are put forward as follows.

4.1. Organize Systematic Teaching

To practical teaching, should according to the requirement of the society and enterprises for logistics management talents, with students as the center, to develop reasonable teaching targets, pay attention to the management of process, considering the ability of

students, from several aspects such as the practice process performance communication ability, practical writing ability, team cooperation ability, research ability, practical ability, the cultivation of the emergency event handling ability [7]. In order to form a complete teaching system, we will effectively integrate the scattered practical teaching links of logistics management major at present, combine the cognitive practice with the specialized basic courses, and combine the professional practice with the graduation design. Research shows that a more active learning atmosphere is conducive to the improvement of students' academic performance [8]. Therefore, in terms of teaching methods, students' participation should be enhanced and their own teaching style should be constantly improved [9]. Therefore, in terms of teaching methods, students' participation should be improved. For example, based on real cases, the project case-driven grouping and cooperation method is adopted to solve problems, and the grouping is required to be carried out in stages. Through grouping, there is a competitive relationship among groups, which enhances the enthusiasm of students. There is a cooperative relationship among the members of the same group, which is conducive to improving the coordination ability, organizational ability and communication ability of students [10]. Students should submit different deliverables at different stages and present and explain the deliverables in class. Deliverables at different stages include project documents, large assignments, applications, experiments, design reports and course summaries.

4.2. Establish a Diversified Assessment System

When OBE is taken as the basic concept, a diversified assessment system for practical teaching of logistics management major should be established according to the clear teaching objectives and multi-level progressive practical teaching contents formulated by practical teaching. Based on OBE, establishing diversified evaluation system, to examine the ability of the students from various perspectives, not only can evaluate the students enthusiasm and initiative in the process of practice, etc., at the same time can evaluate students practical ability, the basis of comprehensive application ability and innovation ability, etc., and can analyze students achieve learning aim, and the gap between the enterprise needs, pay attention to examine students' practice basic skills, the cultivation of comprehensive application ability and innovation ability and improve, thus stimulate students learning enthusiasm and initiative.

Specifically, teachers should comment on the problems and phased achievements of students in the learning process. According to the overall completion of each project team and the performance of team members in each project team, each student's performance is comprehensively evaluated, so as to realize the assessment of students' comprehensive ability. The specific classification is as follows.

(1) Basic course experiment: For example, in the experiment of university physics experiment, electrical and electronic technology and other basic courses, the assessment method of combining process and result is emphasized, and the comprehensive method of grade + final assessment is adopted. In addition to the experimental report, we can also introduce the way of mutual grading among students in the same group. We should relate student evaluation with new course selection and graduation management system to assure every student be serious to the evaluation. If a student does not do the evaluation seriously, he/she won't be allowed to take a new class or graduate [11].

(2) Practical and hands-on experimental courses: The method of centralized arrangement is adopted to strengthen the cultivation of students' practical ability, problem analysis and problem solving ability mainly through practical ability assessment. The grading method adopted is the grading method of teacher + student and ten enterprise personnel. In all processes, students' experiments are graded according to the production mode of the enterprise. In the grading process, an enterprise professional is introduced (it can be a teacher of our school who is specialized in the practical work of the specialty with the work experience of the enterprise). Enterprise professionals can integrate practical skills into testing problems, provide valuable Suggestions from the perspective of enterprises to students, and increase students' ability to apply knowledge in practice.

(3) Curriculum design, etc. Adopt the actual topic that introduces the enterprise as the topic. Written materials+ defense + student grading will be used for grading. The main purpose of introducing student grading groups is to stimulate students' interest in learning, guide students to devote themselves into practical activities of curriculum design, stimulate students' consciousness of innovation, and cultivate students' innovative thinking and teamwork ability.

4.3. Strengthen the interaction between school and enterprise, expand the way of practical teaching

The practical teaching in local colleges and universities should be carried out from both inside and outside the school. By integrating the resources inside and outside the school, the students can have a variety of opportunities for practical training. From the internal perspective, universities should first ensure the integration of internal resources, smooth flow of information, timely and accurately grasp the real information of students and teachers, and should design

a dynamic internal practical teaching system according to the feedback of information. But if the practice teaching is only carried out in the school, the practice teaching for students will not only be inefficient, but also easy to lead to the wrong direction. In order to fully and effectively integrate the needs of enterprises for logistics management professionals, the most direct way to effectively practice OBE concept teaching is to develop courses jointly with enterprises in the design of practical teaching of logistics management majors[12]. For example, we will work together to build a digital resource database, online courses, micro courses and MOOC courses that are suitable for smart logistics, so as to provide students with various forms of teaching methods and provide teachers with ways to improve their own experience. On the one hand, teachers' practical teaching ability is improved; on the other hand, application-oriented talents meeting the requirements of enterprises are cultivated [13].

5. CONCLUSION

By analyzing the teaching status of logistics management major in colleges and universities in practice, it's found that the training system is fragmented, the teaching system is not perfect, the matching degree between theory and practice is not high, the teaching and assessment methods are single, and the cooperation between colleges and enterprises isn't deep enough.

Therefore, in view of the deficiencies, combined with the characteristics of logistics management major, as well as social and enterprise demand for logistics management professionals, based on OBE built the PTCSA, the analysis of the chain at various stages of training target and tasks, and puts forward corresponding Suggestions on the concrete implementation, such as organization systematic teaching, establishing diversified evaluation system, strengthen the interaction between colleges, broaden the practical teaching means, etc., to form a more perfect teaching system, better implement logistics management professional talents cultivation of practical ability.

AUTHORS' CONTRIBUTIONS

Yong Gu carried out the study and collected important background information. Yong Gu and Ju Chen carried out literature search and manuscript editing. Ju Chen drafted the manuscript. Zhangqiong Wang performed manuscript review. All authors have read and approved the content of the manuscript.

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