

Informatization Teaching Design of Pharmaceutical GSP Practical Training in Higher Vocational Education Based on "Flipped Classroom" Taking the "Receiving and Acceptance of Pharmaceuticals" Project as an Example

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ABSTRACT

With the development of information technology, under the promotion of the concept of "Internet +", Internet platforms such as micro-courses and MOOCs provide students with a wider range of learning channels. In this paper, through a teaching design example of a lesson, under the guidance of the teaching concept of "flipped classroom", using informatization teaching methods, it expounds effective methods to improve the classroom learning efficiency of the "GSP Practical Training of Pharmaceuticals" for higher vocational students.

Keywords: *Flipped classroom, Informatization teaching design, GSP Practical Training of Pharmaceuticals, Learning efficiency.*

1. INTRODUCTION

The student's learning process consists of two stages: "information transmission" and "absorption and internalization". "Flipped classroom" is also called "inverted classroom", which reconstructs the learning process of students and puts the "information transmission" stage in traditional classrooms before class. Students learn rich online courses through Internet platforms such as micro-classes and MOOCs, and discuss with other students on the Internet. Moreover, it puts the traditional after-school "absorption and internalization" stage of students in the classroom through the interaction between teachers and students, students and students. Under the guidance of the teaching concept of "flipped classroom", teachers use information technology in "GSP Practical Training of Pharmaceuticals" to realize online and offline blending teaching, breaking through the limitations of learning time and space, and reflecting the openness, practicality and professionalism of vocational lessons. This paper takes the "Receiving and Acceptance of Pharmaceuticals" project as an example, and develops teaching design ideas from four aspects:

"teaching analysis", "teaching strategies", "teaching implementation" and "teaching reflection".

2. TEACHING ANALYSIS

The "Receiving and Acceptance of pharmaceuticals" project comes from the second project in the "Practical Training Course of pharmaceuticals Operation Quality Management Standard", and the practical training courses for students majoring in pharmaceutical operation and management are 4 hours.

2.1 Textbook Analysis

This textbook is guided by the new version of GSP, combined with the job skill requirements of the practical training student employment group, school-enterprise cooperative development, in accordance with the process of pharmaceutical business and the setting of project tasks for corporate positions, and the teaching method is based on project teaching method. The knowledge points of this project are designed in accordance with the operation process of the receivers and inspectors at the pharmaceutical

receiving and inspection positions of the pharmaceutical trading enterprise, and the relevant knowledge involved in the receiving and acceptance is displayed in the form of knowledge expansion. In addition, this project cooperates with Wisdom Tree to develop the micro-class video of the fine course "Pharmaceutical Operation Quality Management", so that students can learn online through the learning platform. At the same time, it purchases GSP simulation software that meets the requirements of "Pharmaceutical Operation Quality Management" and is docked with enterprise post operations. The teaching resources are abundant, which can meet the requirements of the blending teaching mode.

2.2 Student Analysis

The students participating in the training have completed relevant basic courses such as "Practical Course of Pharmaceutical GSP", "Pharmaceutical Affairs Management and Regulations", and "Pharmacy" and so on. The students have learned the necessary knowledge to complete the task of the project, including the GSP clauses of pharmaceutical receiving and acceptance in the process of pharmaceutical operation and management, the appearance quality requirements of each dosage form of the pharmaceutical, as well as the "Regulations on the Management of Pharmaceutical Labels and Specification".

Through interviews with students, it is found that more than 90% of the students don't have the study habits of preview and review, and have forgotten the knowledge they learned. Students have the characteristics of insufficient initiative in learning, weak self-learning ability, poor self-control ability but better information technology. More than 97% of the students usually like to shop online and receive express delivery almost every day. They are very familiar with the receiving and acceptance of goods, which lays the foundation for the receiving and acceptance of pharmaceuticals.

2.3 Analysis of Teaching Objectives

According to the curriculum standards, with reference to the professional qualification standards of "Pharmaceutical Commodity Buying and Selling Personnel" and the skill spot check standards, this paper establishes four-dimensional teaching goals including knowledge, skills, abilities, and emotions. The focus of its teaching is "the content of receiving and acceptance of delivered pharmaceuticals"; the difficult point in teaching is to "correctly judge the

results of pharmaceutical acceptance according to the specific requirements of the external quality of pharmaceuticals".

3. TEACHING STRATEGIES

3.1 Adopting Blending Teaching to Stimulate Students' Enthusiasm for Participation

Students watch online videos related to pharmaceutical receipt and acceptance in the micro-class video of "Pharmaceutical Operation Quality Management" on the Xuexitong platform. Teachers post discussions and assignments on the platform, and students complete them on the platform. On the platform, teachers can count the completion of students' tasks, and also supervise students who have not completed their tasks. In offline classes, through information technology, teachers can use the platform to perform student sign-in, preemptive answer, timing, topic discussions, quizzes, questionnaires and other operations in the classroom, and conduct intelligent statistics. It motivates students to participate actively through various means.

3.2 Work Task List Guides, and Students Are Divided into Groups of Roles to Encourage Progress Together

Students imitate the receiving and acceptance of pharmaceuticals in retail pharmacies. According to the job setting of the enterprise, the students are divided into groups of 4-5 people, and they serve as the person in charge (equivalent to the store manager), quality manager, inspector, receiver, and buyer. Each role has his own job responsibilities. All personnel must work together to complete the task together.

3.3 Setting up Scenario Simulation Training Operations to Improve Learning Effects

The school training room purchases GSP simulation software that meets the requirements of "Pharmaceutical Operation Quality Management" and is connected to the enterprise's job operations, and simulates each project task in the workplace according to the enterprise's operating process, and students learn in a real workplace environment. This not only consolidates the theoretical knowledge that students have learned, but also improves job operation skills.

4. TEACHING IMPLEMENTATION

4.1 Pre-class Preparation

4.1.1 Pre-class Guidance

Three days before the class, the professor issues a notice on the learning platform. Students watch online micro-class videos of the first 3 task points in the pharmaceutical receiving and acceptance chapter of the "Pharmaceutical Quality Management" course, and understand the concept of pharmaceutical receiving and acceptance and the basis for acceptance, the types of pharmaceutical acceptance by pharmaceutical distributors, the process of pharmaceutical receiving, the principles and methods of pharmaceutical acceptance sampling, and the content of pharmaceutical acceptance. At the same time, students are notified to preview the content of the relevant knowledge part of project 2 in the "Practical Training Course of pharmaceuticals Operation Quality Management Standard" to understand the specific requirements of the external quality of pharmaceuticals. On the day before the training, the teacher posts questions for students to discuss based on the knowledge they should have to complete the project task, and asks the students to summarize the preview content in the form of a mind map. Teachers check and count students' learning conditions on the teaching platform.

4.1.2 Teaching Preparation

Before class, in addition to preparing the lesson plans and PPT for class, teachers also need to prepare the pharmaceuticals and related bills for students to accept the simulation operation. When preparing medicines, in addition to the different product names and dosage forms of each group, teachers should try to choose the varieties of different situations that may cause problems in the operation of the enterprise, such as expired, near-expired, packaging, appearance quality problems, and inconsistent invoices and goods, etc., so as to cultivate students' knowledge application ability and adaptability.

4.2 Classroom Teaching

4.2.1 Reorganizing Discipline and Preparing for Class

Before the class, teachers can check in the students' attendance by scanning codes, gestures or locations through the platform.

4.2.2 Review Quiz

Teachers select the most important knowledge points in the content of the previous project that are closely related to the tasks of this project to ask questions, check the knowledge mastery of the students in the previous lesson, and at the same time link up with the learning content of this lesson.

4.2.3 Importing

According to the learning content of this lesson, the teacher designs the receiving inspection after receiving the express goods that the students are most familiar with, and introduces the concepts and content of the receiving and acceptance of medicines from pharmaceutical companies.

4.2.4 Releasing Work Tasks

In accordance with the content of pharmaceutical receiving and acceptance of pharmaceutical business enterprises, the task of this training is: to conduct physical verification and external quality acceptance of pharmaceuticals purchased by pharmacies from xxxx Pharmaceutical Co., Ltd.

4.2.5 Clearly Defining Learning Objectives

There are four-dimensional teaching objectives including knowledge, skills, abilities, and emotions. ("Table 1")

Table 1. Four-dimensional teaching objectives

Knowledge goals:	1. Master the quality management requirements of pharmaceutical GSP for pharmaceutical receiving and acceptance; 2. Master the pharmaceutical quality standards and related laws and regulations for pharmaceutical receiving and acceptance; 3. Grasp the content and specific requirements of pharmaceutical acceptance inspection.
Skill goals:	1. Be able to perform corresponding operations in accordance with the operating procedures of pharmaceutical receiving and acceptance, and make correct judgments on the results of acceptance. 2. Able to correctly fill in the acceptance records of pharmaceuticals.
Ability goals:	1. Each student's knowledge point skill spot check meets the standard. 2. After graduation, students can be competent for the positions of receiving clerk, inspector and quality manager.
Emotion goals:	Cultivate students' craftsmanship, teamwork spirit, judgment ability, and adaptability.

4.2.6 *Students Are Divided into Roles and Work Responsibilities are Clearly Defined*

There are 5 students/group. ("Table 2")

Table 2. Students roles and work responsibilities

Roles	Responsibilities
The person in charge	He is responsible for the entire project, divides work among team members, organizes team members to discuss and study, is responsible for the completion of the project and making a summary report, and gives each member a score based on the group members' pre-class discussion and operation.
Receiving clerk	He inspects the accompanying documents and physical verification with the incoming pharmaceuticals, checks whether the outer packaging is intact, damaged or contaminated, fills in the "Pharmaceutical Receiving Record" and reports any suspicious situations to the purchaser or quality manager.
Inspector	He inspects the quality of the pharmaceutical in accordance with the relevant quality standards, judges the acceptance results, and when there is a suspicious quality, he reports to the quality manager to fill in the "Pharmaceutical Acceptance Record" and fills in the "Pharmaceutical Rejection Form" for pharmaceuticals with suspicious quality.
Quality manager	He inspects the acceptance of pharmaceuticals; re-examines and confirms pharmaceuticals of doubtful quality, and feeds back the processing results to the inspector; checks whether the acceptance record is complete and standardized.
Buyer	He confirms and handles the inconsistent pharmaceuticals between the physical check and the purchase record or the accompanying documents. He signs the rejection form for the rejected medicine.

4.2.7 *Checking Students' Pre-class Preparation*

The teacher designs 3-4 questions for the knowledge points needed to complete the project task, applies information technology in the classroom, randomly selects students to answer the questions by Shake It Off, examines the students' online learning before class, and summarizes them. Students use simulation software to carry out the operation of pharmaceutical receiving and acceptance in accordance with the operating procedures. At the same time, the teacher uses ppt to display on the screen the contents of acceptance of external quality of pharmaceuticals as well as the specific requirements of laws and regulations for students' reference.

4.2.8 *Students' Report*

After the operation, the project leader of each group will summarize and report the receiving and acceptance. At the same time, the teacher displays the scoring standards on the ppt on the screen for students' self-evaluation and mutual evaluation.

4.2.9 *Students' Mutual Evaluation and Teachers' Evaluation*

Other students evaluate and score the reports of the group of students. The teacher will make a summary evaluation and score at the end, and the project leader will evaluate and score based on the operation of each group member.

The students' final training results for this project are: online statistical results*40%+students' mutual score*20%+teachers' score*30%+project leaders' score*10%.

4.2.10 Knowledge Extension

Teachers broadcast the operation videos of pharmaceutical receiving and acceptance posts produced in cooperation with schools and enterprises, to further connect with enterprise job skills and consolidate relevant knowledge.

The teacher enumerates the judgment and treatment of suspicious quality situations that the enterprise may encounter in the receiving and acceptance of the goods, and cultivates the judgment ability and quality outlook of the students.

4.3 Homework Assignment

For other inspection and acceptance types involved in pharmaceutical wholesale enterprises, such as the receiving and acceptance of special management pharmaceuticals, and the receiving and acceptance of sales return pharmaceuticals, the teacher assigns students to continue to watch related videos online, discuss and summarize knowledge through homework, and the teacher will also answer questions in time.

5. TEACHING REFLECTION

5.1 Design Features

- Under the guidance of the teaching concept of "flipped classroom", teachers use informatization teaching methods, a variety of teaching resources, and a blending online and offline teaching model, reflecting the openness of classroom teaching.
- Fully connected with enterprise positions, students in groups use simulation software to simulate the workplace environment in a task-led manner, letting students "practice while learning, learn while practicing", which reflects the practical and professional nature of classroom teaching.
- Diversified evaluation methods enable students to learn from each other. Students' participation in evaluation also increases their interest and self-confidence.

5.2 Teaching Effect

After class, the teacher communicates with students on the platform and WeChat, conducts simulation skill spot checks and makes students participate in skill competitions. The results show that the students basically achieve the task teaching objectives of this project. All students pass the skill

spot check examinations, and the skill competition scores also improve significantly. At the same time, students recognize this teaching model, believing that it improves the autonomy and universality of learning, and improves the learning effect and efficiency.

6. CONCLUSION

Pharmaceutical GSP practical training in higher vocational colleges, design project tasks based on the pharmaceutical business process of pharmaceutical distribution enterprises, and students work in groups and roles in a simulated workplace environment. Teachers conduct a compounded online, offline, theoretical and practical learning method. This teaching method fully meets the requirements of enterprise job operation skills, mainly based on two routes: one is that during pre-school time, students learn and discuss related professional knowledge online; the other is that, in offline classroom, students are divided into roles to simulate workplace collaboration to complete work tasks. This method integrates GSP quality management knowledge and job operation skills, and integrates information technology with course teaching; gives full play to the leading role of teachers' guidance and inspiration, stimulates the initiative and creativity of students as subjects, guides students to explore independently, and expands students' professional knowledge and expands classroom capacity.

AUTHORS' CONTRIBUTIONS

Bo Dai is responsible for experimental design, and Lianghui Hu contributed to revising and editing.

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