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## Exploration and practice of TFU teaching mode in teaching higher pharmacy education: An example of teaching traditional Chinese medicine identification in the graduate course of Guilin medical university

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### Abstract

Combined with the education law of pharmacy postgraduates and the characteristics of the discipline, this study introduces the TfU teaching concept into the theoretical course of traditional Chinese medicine identification for the master's degree of pharmacy in this school, and constructs a teaching reform mode integrating "online + offline" hybrid teaching, focusing on cultivating postgraduates' scientific research thinking ability, and promoting the students' independent acquisition of knowledge. It focuses on cultivating postgraduates' scientific research thinking ability, promoting students' ability to independently acquire knowledge, excavate knowledge, raise questions, analyze problems and solve problems, and has achieved good teaching results in teaching practice, to provide a reference for the research of blended learning mode of other similar courses in this specialty.

**Keywords:** TfU teaching mode, graduate students, blended teaching, traditional Chinese medicine identification

### Introduction

The TfU teaching model, known as Teaching for Understanding (TfU), was proposed by the Harvard Research Institute in its program Project Zero, and consists of the following components Generative Topics, Understanding Goals, Understanding Performances, and Ongoing Assessment, the TfU model directs teachers to focus on how to promote student understanding, which is more than just a matter of understanding. The TfU teaching model guides teachers to focus on how to promote students' understanding, which is not only about students memorizing knowledge and principles but also about being able to learn by example and apply what they have learned to analyze and solve problems in new situations. The TfU teaching model has been popularized and applied in many countries and regions and has been recognized and positively evaluated by educational institutions in many countries, this educational concept was introduced in China in 2005. In recent years, the practical teaching of TfU teaching mode in China has been gradually applied in secondary school natural science subjects<sup>[1]</sup>, which has broadened teachers' teaching ideas.

### The current situation of teaching traditional Chinese medicine identification to graduate students in our university

Identification of Chinese medicine is a specialized course for the training of master's degree students of pharmacy in the School of Pharmacy of the University, which mainly includes the research on identification methods of Chinese medicine, safety evaluation of Chinese medicine, research on quality standards of Chinese medicine and standard substances of Chinese medicine, research on the influence of factors on the quality of Chinese medicine, and research on the identification of Chinese medicine and new drugs, etc. The focus of the teaching of Chinese medicine identification is the same as that of undergraduate study. The teaching of Chinese medicine identification for master's degree students is not the same as that of undergraduates, and it does not require students to memorize the information-intensive and complicated general theories and theories, but to follow the development of the times, reflect the latest progress of academic research, and construct the core content of

teaching to guide graduate students to carry out in-depth theoretical and practical research related to the discipline, so this course requires extremely high requirements for the professional knowledge reserve and scientific research and practice ability of the lecturers. Therefore, this course requires a high level of professional knowledge and research and practice ability from the lecturers. At present, the Department of Biopharmacy in the School of Pharmacy of the University undertakes the teaching of this course, but some of the lecturers lack the educational background in traditional Chinese medicine, and their scientific research ability is relatively weak, and the theoretical classroom teaching of traditional Chinese medicine appraisal has not yet formed a stable and effective teaching mode, and there is no scientific teaching concept to guide the students, so there is a lack of interaction between teachers and students in the classroom, and the students' participation is low, and their understanding of the content of the teaching of this discipline is biased and not thorough. Teaching reform at the graduate level should focus on helping students flexibly apply the theoretical knowledge they have learned to the writing of their dissertations, and in the process improve their scientific research ability and cultivate their scientific research quality and innovative thinking [2].

After many discussions with the course team, the TfU teaching concept is applicable to the teaching method of our master's degree in the course of traditional Chinese medicine identification for graduate students, therefore, in this teaching reform practice, we adopt the TfU teaching model integrated with the "online + offline" blended teaching model, which provides teachers with references and guidance for the design and implementation of the teaching. The model helps teachers to clarify their thinking in the form of a framework, guides them to analyze the teaching content accurately, clarifies the situation of the students,

chooses appropriate teaching methods, designs diversified teaching activities, mobilizes students' enthusiasm, and encourages them to learn knowledge independently, improve their ability and construct their own knowledge system.

### TfU teaching concept combined with the construction of an "online + offline" blended teaching mode

#### Preparation for teaching the course

Reorganize the professional teaching team, combine the TfU teaching concept with the "online + offline" blended teaching mode, design the specific implementation plan for each chapter of the course; complete the summary of e-learning resources, update the teaching plan and the course assessment guide, record the relevant micro-teaching videos, and produce e-courseware adapted to the teaching and learning of the "Rain Classroom". The program will complete the summary of online learning resources, update the teaching plan and course assessment guidelines, record relevant micro-lesson videos, and produce electronic courseware adapted to the "Rain Classroom" teaching.

#### Implementation of "online + offline" mixed-mode teaching activities

Before the lesson, the teacher defines and refines the "inspiring thesis" to determine the "comprehension objectives"; during the lesson, a series of "comprehension activities" are carried out to help students understand the content of the study. During the lesson, a series of "comprehension activities" are carried out to help students understand the learning content; at the end of the lesson, "continuous evaluation" is obtained through the performance and behavior of students in the teaching activities. The technical approach and program for implementation are as follows.

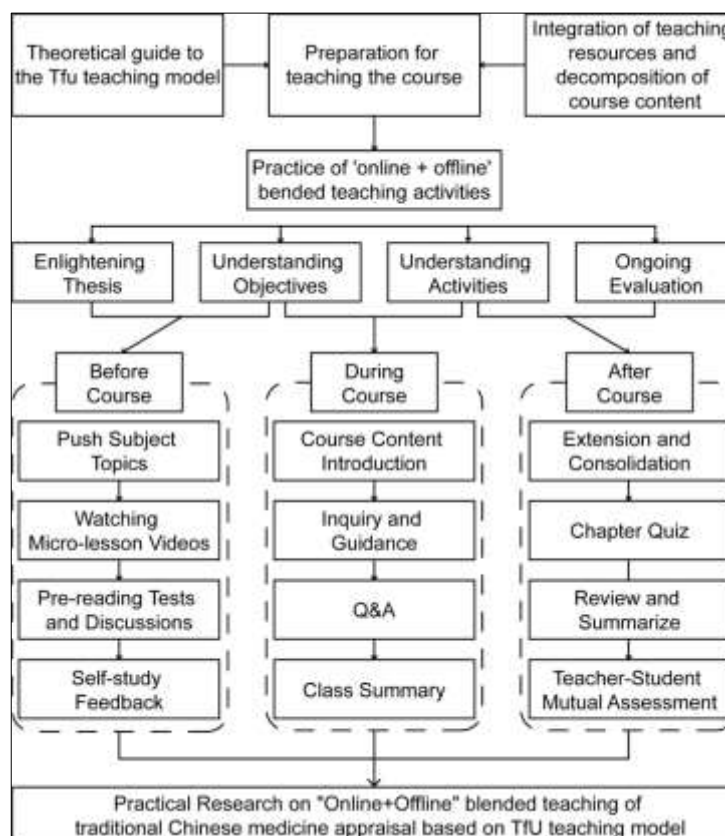


Fig 1: Diagram of the "online + offline" mixed-mode teaching model

**Pre-course activities**

1. Push open subject topics, microclass (or Mooc) videos, and PPT courseware before class for students to utilize fragmented time outside class for learning and thinking.
2. Discussions on subject topics are collected before class, and teachers analyze the learning situation and adjust the teaching plan according to students' self-study feedback.

**Classroom activities**

1. Introduce cutting-edge research, disciplinary literature, and other information to stimulate students' interest in learning and initiate the learning of the content of the lectures.
2. Flexible design of the teaching program according to the content of the lecture, combined with the teacher's guidance for group discussion and other activities, prompting students to think about the subject matter.
3. Students will ask questions about the important and difficult points, encourage students to participate in the discussion, and finally the teacher will give a concise lecture.

**After-school activities**

1. Teachers push relevant popular science videos, scientific research papers, or extended reading materials on the Rain Classroom platform to supplement expand, and consolidate classroom content.
2. Teachers determine the evaluation methods such as students' self-assessment, students' mutual assessment, and teachers' comments, and encourage students to evaluate the content, link teachers' teaching, etc. Teachers adjust their teaching strategies according to the classroom effect and students' feedback.

**Achievements and perspectives of educational reform practices****Constructing a New Teaching Mode for Graduate Students in Traditional Chinese Medicine Appraisal**

This practical research constructs a hybrid teaching mode of "online + offline" for the theoretical classroom of traditional Chinese medicine appraisal, guided by the teaching concept of TfU and mainly utilizing the "Rain Classroom" of WeChat. This new learning mode makes use of the advantages of the mobile Internet, which is not restricted by time and space, better integrates teaching resources, improves the limitations of a single teaching mode, and solves the practical teaching problems of difficulty to mobilize the interest of students in the learning process, and difficult to comprehend the key points. The limited theoretical classroom expansion throughout the pre-course - in the classroom - after-school teaching of each link, changing the traditional one-way teaching mode, and cultivating students' independent learning ability. The interaction between teachers and students is transformed from the classroom to inside and outside the classroom, and the teachers and students can share information and discuss relevant knowledge online during the course teaching, which is highly accepted by the students and has a good teaching effect.

**Organize a diversified faculty based on TfU teaching concepts to improve the quality of the teaching team**

In this practical study, the team members were reorganized according to the teachers' professional academic backgrounds in the pre-preparation stage of the teaching

courses, taking into account the depth and breadth of the teachers' specialties. In the teaching team, the professional teachers have a basic learning background related to pharmacy, and the middle-aged and young backbone teachers take the lectures of the main theoretical teaching courses, and the professors and associate professors with high academic qualifications or senior titles who also have the scientific research topics and design projects of natural medicinal chemistry, traditional Chinese medicine identification, traditional Chinese medicine resources, pharmacology of traditional Chinese medicine and other research projects are also assigned to participate in the guidance of the courses so that to achieve the good effect of promoting the teaching and the learning with the research, forming a good development mode of integration of science and education and collaborative education. This will achieve the good effect of promoting teaching and learning through research, and form a benign development mode of integration of science and education and collaborative education.

**Practical research results and experiences can be used to inform similar curricular reforms**

The research results and experience can be applied to the construction of the Chinese medicine identification course for the master's degree students of pharmacy in our university, and also play an important role as a reference in the subsequent updating of the teaching and training programs and syllabus. The courses with high similarity in teaching and training in our graduate pharmacy courses include biopharmacology molecular biopharmacology, etc. The practical research results and experience of this project can be used as a reference for the reform of these similar courses, and promote the development of the professional curriculum construction of master's degree graduates of pharmacy in our university.

**Conclusion**

The integration of the TfU (Teaching for Understanding) teaching concept with a blended "online + offline" teaching mode has significantly enhanced the theoretical course on traditional Chinese medicine identification for pharmacy master's students at our university. This innovative approach focuses on fostering scientific research thinking and independent knowledge acquisition among postgraduates. Through the implementation of this teaching reform, we have observed improved student engagement, deeper understanding of course content, and enhanced ability to apply theoretical knowledge in practical research contexts. The success of this teaching model underscores its potential applicability beyond traditional Chinese medicine to similar disciplines. By emphasizing interactive learning, continuous assessment, and the integration of diverse teaching resources, our approach not only addresses existing challenges in theoretical classroom teaching but also prepares students more effectively for academic and professional challenges in their field. Future efforts will continue to refine and adapt this educational framework, ensuring ongoing improvements in graduate education and contributing to the advancement of pharmacy education nationally and internationally.

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