

# Reform and Innovation of Teaching Mode of Prosthodontics Guided by OBE Concept

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**Abstract:** In order to change the disadvantages of passive input of traditional teaching model and deliver high-quality oral clinical graduates to the clinic, this paper combines the clinical prosthodontic effect-oriented OBE teaching concept with online courses, based on the ideological and political ideas of modern courses, to reform the traditional teaching model of prosthodontics, so as to achieve better teaching effects. In this paper, in the form of a modular knowledge chain structure, forward-looking academic research results and curriculum ideology and politics are introduced into the curriculum, and a combination of classroom teaching, online teaching and practical teaching is adopted. In this process, this paper designs a variety of teaching forms such as case-based, discussion-based, and flipped classroom, and carries out innovative reform and practice of teaching methods to improve students' learning effect, cultivate students' clinical thinking ability, and lay a solid foundation for clinical work. This teaching mode promotes the coordinated development of students' knowledge, ability and quality, and will achieve remarkable results in cultivating clinical repair talents.

**Keywords:** Prosthodontics, OBE concept, Teaching innovation.

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## 1. Introduction

Prosthodontics is a highly practical oral clinical professional course, which involves multiple disciplines, has many knowledge points, and is abstract in content. Students tend to feel bored and difficult to understand during the learning process [1]. To become a qualified prosthodontist, students are required not only to have a solid theoretical foundation but also to have good clinical operation skills and systematic clinical diagnosis and treatment thinking ability. Therefore, how to turn boring knowledge into vivid and interesting to improve students' interest in learning? How to better transform the knowledge learned into clinical application and cultivate professionals who meet clinical needs? These problems have become problems that teachers of prosthodontics need to solve urgently [2]. Selecting appropriate teaching methods can cultivate high-quality and practical dental talents. The teachers of this teaching and research department will guide the OBE teaching concept oriented by the clinical restoration effect[3,4], integrate the modern curriculum ideological and political concepts, and adopt the teaching method combining classroom teaching, online teaching, and practical teaching, to improve the teaching effect of oral restoration in the classroom, and to cultivate students' clinical thinking ability and lay a foundation for the improvement of clinical patients' repair effect.

## 2. The Pain Points of Traditional Teaching of Prosthodontics

The traditional teaching method of prosthodontics has a single form and the classroom atmosphere is dull. It can be roughly divided into three stages: the first stage is the theoretical class teaching, that is, the teacher teaches clinical theoretical knowledge according to the content of the textbook and the syllabus; the second stage is the experimental class operation, that is, combined with the theoretical teaching content, clinical simulation operation

exercises are carried out on the head-proof model in the laboratory; the third stage is clinical practice, that is, students enter different clinical departments for practice after the entire theoretical and experimental teaching. Although this "teacher-centered" model is conducive to teachers playing a leading role and managing and controlling classroom teaching, the explanations given by teachers are often boring and abstract, and students are not motivated to listen to the lectures. This leads to low efficiency in theoretical classrooms, unreasonable arrangement of practical teaching process, theory divorced from practice [5], and the trained medical students are only the type of "study-examination-passive examination". At the same time, students tend to have two problems when studying prosthodontics: one is that students cannot fully grasp the basic theoretical knowledge; the other is that students' clinical operation ability is seriously insufficient [6]. The biggest disadvantage of this traditional teaching mode is that the students' initiative and cognitive subject role have not been fully reflected, and the establishment of clinical thinking mode is obviously insufficient, so it is difficult to meet the various needs of dental prosthodontics in current medical care.

## 3. Integration of OBE Teaching Principle

Outcome-based education (OBE) emerged in the United States in the 1980s. It is a new educational concept that emphasizes student-centered education and focuses on the cultivation mode of what students can achieve and do after receiving education [7]. This educational model breaks the idea of traditional educational design, adopts the idea of reverse design and forward implementation, and decides the course system construction according to the needs of graduation [8]. This kind of education mode plays an important role in promoting the reform of engineering education and improving the quality of engineering personnel training, which has become the focus of extensive attention in local engineering colleges in China. At the same time, with

the development of Internet technology, the application of online teaching platform can effectively transform the traditional "teacher-centered" mode to "student-centered" mode. These new educational concepts and methods have brought new ideas for the teaching of prosthodontics. Therefore, in order to cultivate high-quality prosthodontists with clinical thinking ability and in line with the clinical needs of the society, the teachers of our research department make full use of the existing resources, actively explore the new teaching mode that adapts to the contemporary development needs, make full use of Internet technology, and combine the online course with the clinical prosthodontist-oriented OBE teaching concept. Based on the ideology and politics of modern curriculum, the traditional teaching model is reformed in order to improve the classroom teaching effect of prosthodontics.

## **4. Innovation and Reform of Teaching Model**

### **4.1. Classroom teaching reform oriented to the effect of clinical restoration**

The basic theoretical knowledge of prosthodontics can be divided into three knowledge modules: restoration of tooth defect, restoration of dentition defect and restoration of dentition missing. Flipped classroom, scenario simulation, CBL combined with PBL and other teaching methods are used to select different repair methods according to different defect types of each module, and different cases are set up in terms of the clinical repair effect of each repair method and various influencing factors of repair effect. The students are divided into groups to analyze and compare the differences of different repair effects and the reasons for different effects. By participating in the design and implementation of the treatment plan of the whole case, the students have a more systematic and full understanding of the advantages and disadvantages of each repair method, indications, possible problems after repair and treatment, clinical precautions and other knowledge points. At the same time, the case analysis and discussion class in the form of flipped classroom mainly cultivate students' clinical thinking ability. The clinical situation is simulated to evaluate the students' ability of analyzing and solving problems.

Under the background of moral education in contemporary education, based on the modern curriculum concept of ideological and political education, in the professional theory teaching of prosthodontics, the teachers of our department deeply explore the ideological and political elements in the teaching of prosthodontics, and integrate the ideological and political concepts into the teaching of professional knowledge, so as to cultivate students' dedication, responsibility, rigour and realism; not to succumb to the temptations of greed, width in treat; caring with kindness, empathy; motivation and diligence, overcome difficulties.

Students should be guided by the medical spirit of serving patients, and the ideological and political elements will run through each unit of the course syllabus, and the concept of professional ethics will be transmitted to students. For example, for patients with dentition defects who have a single tooth missing, we will guide students to empathy and think, if it is their own, whether to choose implant or fixed denture with both teeth removed, to cultivate dentists with good professional ethics, the students should have a sense of love for injury and empathy, uphold the principle of "retaining

natural teeth" in oral medicine, and always consider patients.

### **4.2. The effective combination of theory and experiment courses**

The organic connection of theoretical courses and experimental courses, some theoretical knowledge points with strong practical operation and more clinical application are transferred to the laboratory, and theoretical knowledge is taught and practical operation is carried out on the laboratory head simulator at the same time, which can effectively combine theory and clinical operation. Such as clinical examination to tooth defect restoration, impression preparation, model perfusion, tooth preparation and temporary crown production; the design of removable partial denture, bending of clasp and tooth arrangement in dentition defect restoration; the anatomical landmarks of edentulous jaw marked, muscle function modified, jaw relationship recorded, complete denture , and so on .

### **4.3. Construction of network teaching platform**

According to the characteristics of this discipline, the following four modules are formed on the network teaching platform: 1) Teaching resource module: including course introduction, teaching syllabus, experimental syllabus, experimental tutorials, case library, multimedia courseware and references. Teachers make micro-classes or small videos to analyze and explain important knowledge points, so as to facilitate students' understanding and memory. 2) Communication and question answering module: various forms of discussion and question answering guidance are set up to enhance the communication and interaction between teachers and students and realize knowledge sharing. 3) Knowledge self-test and assessment module: for students to conduct self-test at any time, it is convenient to understand the mastery of knowledge. The score of online learning and online assessment account for 20% of the total score of the course, in order to improve the enthusiasm and initiative of students. 4) Knowledge expansion module: teachers recommend new technologies, new materials, new methods of frontier disciplines in each section, as well as relevant references, textbooks and websites to facilitate students to broaden their horizons and expand their learning.

### **4.4. Guiding college students' innovation and entrepreneurship projects**

In addition to improving students' theoretical knowledge and practical operation ability, we also pay attention to the cultivation of students' scientific research ability, encourage and guide students to conduct scientific experiments, actively participate in social practice activities, guide students to apply for university students' innovation and entrepreneurship projects by opening the laboratory to students, so that students can design, understand and implement scientific research projects combined with their professional knowledge. The new technology, new materials and new methods are integrated with the theoretical knowledge of the discipline, and the practice of multi-disciplinary projects is combined to improve the height and difficulty of learning, increase the initiative of students to arrange their own learning, let students increase their learning input, support students to continuously improve themselves and develop in an all-round way, so as to cultivate students' scientific literacy and innovative thinking ability. This provides a large amount of

knowledge reserve for future study and clinical practice.

#### **4.5. Reform of assessment and evaluation methods**

The assessment methods include process assessment and summative assessment. The final knowledge assessment accounts for 60%. The process assessment mainly includes the usual homework score accounting for 20%, which is divided into two forms: online teaching platform and offline homework arrangement. The process assessment also includes the participation of students in case analysis and discussion class, the situation of answering questions in class, the test and investigation in class, the utilization of network teaching platform and the activity of participating in topic discussion, which accounts for 20%.

The assessment of homework and final knowledge mainly evaluates students' mastery of basic knowledge. The assessment of students' participation in curriculum design can stimulate students' enthusiasm for learning and guide them to actively participate in the teaching process. Through this comprehensive assessment method, the comprehensive, scientific and comprehensive evaluation can be enhanced, so that students can learn more actively, actively put forward the problems in the study, teachers can also give timely feedback, track the actual learning situation of students, improve the teaching process, further explain or expand the knowledge, further promote the communication between teachers and students to achieve our goals in teaching objectives and cultivate students' active learning ability.

### **5. Teaching Innovation Effect**

#### **5.1. The improvement of classroom teaching effect**

The teaching model based on the OBE concept and clinical prosthodontics effect makes up for the disadvantages of the traditional teaching model of boring and monotonous, improves the students' boredom in class, and steps out of the "magic circle" that they cannot understand. At the same time, it also reduces the burden of teachers, makes teachers get rid of the rigid, boring, repetitive blackboard writing and abstract explanation of slides, and significantly improves the teaching effect of prosthodontics.

#### **5.2. The improvement of teaching satisfaction**

Through this teaching model, the classroom is diversified, and the students' satisfaction with the teaching of prosthodontics has been greatly improved, so as to greatly improve the traditional crate teaching method of basic theoretical knowledge of prosthodontics, so that the students have a more solid grasp of the basic knowledge and basic skills of prosthodontics, and increase the students' sense of identity with the prosthodontics. It is helpful to realize the teaching goal and improve the teaching effect of prosthodontics, and improve the teaching efficiency.

#### **5.3. The excavation of students' autonomous learning potential**

This teaching model takes students as the center, aims at learning effect and ability improvement, cultivates students' autonomous learning ability, makes students change from passive learning to active learning, and improves the enthusiasm and initiative of learning. At the same time, the distance between teachers and students is drawn, the

probability of students' performance is greatly improved, and the courage of students is improved, and the sense of team cooperation is enhanced. Teachers guide students to actively collect information, review literature and use deep cognition to obtain clinical diagnosis and treatment strategies, deeply tap the learning potential of students, and increase the investment in learning. In addition, by making a time plan for students, students are provided with more choices between "what to learn", "how to learn" and "why to learn", and students are trained to discover, analyze and solve problems at the original cognitive level. Combined with the knowledge discussion in online classroom, teachers give students feedback in time and guide students to enter the deep problem space, and actively explore new fields, new knowledge, to achieve the expansion and extension of knowledge.

#### **5.4. The cultivation of students' clinical thinking mode**

This teaching model cultivates and exercises the clinical thinking ability of the students, makes the students realize that learning knowledge is not only to cope with the examination, but also how to apply it to the clinic to solve the problems of patients in the future. The students are urged to analyze and solve the problems on the basis of a certain knowledge reserve, so as to ensure the clinical repair effect of patients with oral defects.

#### **5.5. The improvement of teachers' professional quality**

Through the implementation of the course teaching mode, teachers can more comprehensively grasp the students' knowledge learning, and can adjust the teaching content and rhythm immediately. At the same time, through the improvement and implementation of teaching methods, the basic theoretical knowledge can be deeply excavated, the professional quality has a new understanding and improvement. Teachers should invest more in teaching work, improve their own teaching level, and have a great improvement in the ability to improve teaching methods.

### **6. Summary**

This innovative teaching model overturns the traditional infusional teaching method, makes the teaching forms of prosthodontics more diverse and the teaching content more abundant. At the same time, it emphasizes the purpose of teachers' teaching and students' learning, defines the functional orientation of teachers and students, optimizes the teaching design of the course, makes full use of network resources, and combines the online course with the OBE teaching concept oriented by prosthodontics effect. It solves the existing problems in the traditional teaching of Prosthodontics, improves the efficiency of theoretical teaching, avoids the disconnection between theory and experiment, and obtains good teaching effect. At the same time, the role of network platform and the adoption of case discussion in flipped classroom greatly improves students' ability of autonomous learning, establishes and strengthens students' clinical thinking mode, improves students' innovation ability, and promotes the coordinated development of students' knowledge, ability and quality. In addition, this teaching model puts forward higher requirements for teachers' ability, and the supervising teachers need to master a wider range of medical basic knowledge and related operation

ability during teaching, and adjust teaching methods according to different students' learning conditions in order to ensure the attainment of teaching objectives and obtain good teaching effects.

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