

## Research of Self-help Teaching Method in the Classroom Teaching of Theoretic Course

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**Abstract:** Teaching method of classroom in university is singleness nowadays. In order to improve students' autonomous learning ability and cultivate their cooperation spirit and innovative ability, self-help teaching method was used in classroom teaching of master's theoretic course. This paper introduce the characteristics, procedures and requirements of that teaching method. Practice of classroom show that self-help teaching method is a effective method to master's theoretic course. And it's effect is better than traditional teaching method to grasp the knowledge, interaction between teachers and students, classroom atmosphere, etc. The leading role of teacher must be played effectively in the application of self-help teaching method, choose the right subject and the student, provide the lecture notes and supplementary materials, while the student should make inquiry learning, prepare lessons and arrange group discussions.

### Introduction

There are many classroom teaching methods in China's universities nowadays, such as the heuristic teaching method, inquiry teaching method<sup>[1]</sup>, etc. But most of the teachers in the theory of the classroom on the podium generally use the traditional lecture-style teaching method. This will cause some problems, especially for the master degree candidate who have several years learning experiences, such as the students' learning enthusiasm is not very high, and the learning effect is not very good, etc.

Classroom teaching is the main form of universities teaching, however, educational circles generally pay attention to the study of the general education teaching method for a long time, and ignored the research of teaching methods in universities. There also exists a opinion that "university without teaching", as well as "teaching method is only in primary and secondary schools "and other concepts. *The Opinion about the Development of Deepening Teaching Reform to Meet the Need of High Quality Talents in Twenty-first Century* pointed out that "reform the teaching method is an important content of deepening the reform of teaching. We need to pay attention to the subject status of students in the teaching activities, fully mobilize students' learning enthusiasm, initiative and creativity." "We also need to reform 'forced-feeding method ',and reform the teaching method that pay too much attention on teaching ,at the same time we should practice the lively teaching methods such as heuristic, discussion-based, research type ,etc." <sup>[2]</sup>

The "Self-help teaching method in the classroom master's theoretic course", which adopt the teaching method that selectivity to let the students teach a special subject on the platform ,is based on the teaching and research sections' many years teaching experience. Self-help teaching method, in opera terms should be "cross-dressing method", from the view that "the students teach on the platform while the teacher listening under the stage" is a new method of teaching. Some teacher tried this method in experiment teaching<sup>[3]</sup>. Some people think that the classroom teaching of engineering theory is not computer alternating teaching, nor the liberal arts courses, so is it appropriate to take self-help teaching method? And will this new teaching plan mislead students? Will it weaken the students' enthusiasm to learn something? Will it indulge the teachers do other

work in classroom time?

After the teachers' many times attempts and improvements in the teaching and research sections in many classes such as *New Technology of Organic Wastewater Biological Treatment*, they think that using self-help teaching method under certain conditions is conducive to improve the students' learning enthusiasm, initiative, and research ability, and can promote the innovation ability of postgraduates. Self-help teaching method has the features such as autonomous, interactive, cooperative, and creative, and it is a effective teaching method in master's theory course and it can be promoted.

## **The implementation of self-help teaching method**

### **The theoretical basis of self-help teaching method**

*New Technology of Organic Wastewater Biological Treatment* is a comprehensive and preface course for master graduate student in environmental engineering discipline, and is the foundation course for their theoretical study and research. However, when these graduate students face with similar courses once, not only the content is very complex, but also of highly theoretical, and technical experience is dispersion and complex, which make students feel difficult to mention interests, and even some content is difficult to understand and grasp. Though teachers spent a lot of energy to inspire, the teaching effect is not ideal, so it is necessary to reform the teaching method. The author believes that in the same class, the self-help teaching method is appropriate to the cultivation of the innovative ability of graduate students.

Some students themselves explain on the platform and work as the teacher, they can show their elegant demeanour, and cherish the rare opportunity. At the same time, teaching at the stage requires strong logical thinking ability, expression ability, as well as comprehensive ability. Therefore, some students have some difficulties.

Self-help teaching method is same to heuristic method or inquiry teaching method that the theoretical basis of instruction design<sup>[4]</sup> include the theory of information literacy education, learning motivation theory and the theory of dominant and main body of teaching<sup>[5]</sup>, etc. Self-help teaching method conforms to the cognitive and psychological characteristics of students, and in line with the requirements of the current reform that boost education for all-round development. Self-help teaching method is an important way that make diathesis education practicable to classroom teaching, and cultivate students' innovative and practical ability. Self-help teaching method is helpful to make good use of internal driving force, to promote students to study actively and passionately, and improve the learning effect. It is also helpful to overcome the phenomenon that some professional courses' teachers pay little attention in class, and the phenomenon that injection teaching make some students pay little vigor in learning .

### **The implementation program of the self-help teaching method**

Basis for the implementation of self-help teaching method include: firstly, the teaching objects are graduate students, who have the experience of relevant professional practice and design, or other teaching process, and most of them have studied related courses about *Wastewater Treatment Engineering* at the undergraduate level. Secondly, students should have interests in teaching, and ready to show their knowledge and research director, willingly to share and communicate with classmates. Moreover, the time of teaching the course arranged by school teaching plan is about 4 hours. Finally, the school has provided students with rich, updated library, laboratory and other information resources.

The learning material is the second edition of *The New Technology of Wastewater Biological Treatment -Theory and Application*, the chief editor is Yaoliang Shen, and published by Chinese environment science press. The total number of teaching is 60 class hours.

The implementation program of the self-help teaching method include: select target, set problems, lesson-preparation, trial lecture, teaching, discussion and summary. The concrete teaching process is

introduced as follows.

**Select target.** Making sure which student would like to choose which topic. The first thing is the thematic content, the teacher should list the framework, includes the learning content, focus and difficulties in each chapter in advance, and list the topics that are available for students to choose. The second is the material, the teacher should put his lecture notes, questions, reference documents, images as well as the accumulated problems for students to choose. Of course, it is necessary to choose the upcoming students who can't have a stutter, dialect or epilepsy and other mental disease.

**Set problems.** Each lesson has to prepare two or three questions to stimulate the lecturer and the listeners' interests. The problems should be acceptable to both teachers and students, conform to the study direction of the project, and can't be too biased. They can be restricted problems, or inspired or divergent questions; it can be necessary problems in books, also can be a expanded question in the literature; it can be a easy question to solve, or a difficult one. So, whether the lecturers or classes of students can be guide by the questions before classes to read books, look for references and other network resources.

**Lesson-preparation.** It is the foundation of success for those students who rarely talk on the platform. Students participating in the lecture must make active preparations before class, look for relevant information, write notes and prepare the lesson carefully. The teacher should help students in the content, material, time and other aspects, of course, the speaker can not be limited too much to his teacher. Through the initiative and research study of the project can prepare needed materials and solve problems. And preparation can highlight the core, the way of thinking, and the main content of the topics. It also can help students brew how to communicate with the audience.

**Trial lecture.** Advocate students do the trial and estimate the time, rhythm, core, and whether the key content is master or not, ready to experience the psychological feeling to communicate with the audience. And it is suggested that the teacher not to participate in.

**Teaching.** After the trial, students can teach on the platform formally. Even though it is necessary to do discussion in the class, but at this moment it has been the basic embodiment of teaching achievement.

**Discussion.** It is necessary to have short communication in the class, but can not be arranged too many and can not take up too much time. After finish the class, they can discussion in groups about the prepared questions, and also can discuss new problems appropriately. Then, a student should answer the questions in the class, the other students can be questioned and come up with different views and methods, complement and communicate with each other.

**Summary.** At the end of the class, the teacher can explain where is difficult if it is necessary. The teacher should evaluate the effects by on-the-spot questions, questionnaire survey, table scoring and other methods about what were taught, also including the students, advice and common summary of teachers and students at the end of the semester, which will help self-help teaching method be improved.

### **Discussion about the application of self-help teaching method**

Since 2009, self-help teaching method has been applied in each session of environmental engineering graduate students' classroom teaching. Many students use charts, animations, allusions and other colorful ways, which greatly attracted the attention of the students. From the number that students accounted for the teaching, at first there were only 3 in 23 students who dare to show themselves, and this year the number is 9 in 19 students, while the proportion increased from 13% to 47%. This change shows that most students are satisfied with the effect of self-help teaching. They think the learning content is enrichment, and the effect of grasp knowledge, interaction between teachers and students, the classroom atmosphere is obviously superior to the traditional classroom teaching method. From the implementation process, the author makes a summary that self-help teaching method has several requirements in application, which can be discussed.

### **Well prepared before class**

Only in this way, can teachers play their leading role and teach students according to their aptitude, do not delay other students at the same time. Only in this way, can they do it better in choosing students and projects, setting up problems, check the lessons, summary and other aspects, in order to guarantee the quality of classroom teaching. It is necessary for the teacher to retell, supplement or summary if the effect of student teaching is not very good. The material provided by teachers before class and the information gained by students in the network form the platform on the implementation of self-help teaching method.

### **Use research topics as lead**

Students select their own topics will make them learning forwardly by literature research, practice research, test analysis and other ways. And expand the study scope beyond the textbook. Then they come to speak out and will ensure a better teaching effect than the injection method. It is appropriate and feasible for professional theoretical courses that emphasis on teaching content and information.

### **Establish a team cooperation mechanism**

After discuss the problem clearly, discussions can help students to learn. About the role of discussion, it is pointed out in *Learning* that "to study all by oneself without a friend makes one ignorant and ill-informed"<sup>[6]</sup>. Through the discussion of the content, students can inspire each other, deepen understanding, and at the same time stimulate the enthusiasm for learning.

### **Show the comparison to inspire enthusiasm**

Teachers and students will have judgment on the effect of the student, and the way of scoring show that the effect is very good and welcomed. But we should pay attention to the use of comments and other incentives in a moderate way, or it may have positive effects on some students.

### **Cycle teaching will promote self-help**

The aim is not let a certain amount of students teaching on the platform, and the teacher can't give students the platform completely. At the same time, the teacher should summary on the students' teaching, only in this way the effect can be improved. Teachers' integrative teaching ability can be improved through the application of the self-help teaching method.

### **Conclusion**

Self-help teaching method is easy to organize and have a good effect, also can cultivate students' innovative ability in theoretical classroom teaching.

Self-help teaching method must ensure the leading role of teachers' teaching. Except the students' study and extracurricular preparative, the material preparation and guidance of teacher before class are essential. Teachers must prepare carefully before class in response to students' random questions.

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