

# The Application of Seminar Teaching Method in the Course of Equipment Maintenance

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## Abstract

**This paper describes how to improve the application of seminar teaching method in the course of equipment maintenance from four aspects: familiar with the principles of seminar teaching method, reasonable selection of seminar topics, optimization of seminar content, and improvement of teaching process.**

## Keywords

**Seminar Method of Teaching; Courses; Cultivation of Subject Spirit.**

## 1. Introduction

In recent years, under the guidance of the Liberal Education, seminar teaching model has been introduced into the classroom, changing the traditional teacher-centered cramming teaching model. Teachers should start from the characteristics of higher education, from the cultivation of students' ability and quality, according to the course characteristics, training objectives and teaching content, adopt the mode of discussion teaching to cultivate students' comprehensive ability and quality. In the course of equipment fault maintenance, it has the characteristics of strong practicality, more time in practice, less time in theory and various kinds of equipment fault, so it is necessary to do a good job in the following aspects in order to make good use of the discussion teaching method.

## 2. To be Familiar with the Principles of Deliberative Teaching Method

To be familiar with the principles of deliberative teaching method is the guiding spirit of its application, the principle of seminar teaching method mainly includes the following aspects.

### 2.1. The Principle of Cultivating Students' Spirit of Subjectivity

In general, whether aerobic training or ANAEROBIC training, in different age groups, it is necessary to reach the right heart rate in order to have a better training effect. If the heart rate is too high, it will easily lead to dizziness, nausea and other symptoms, while if the heart rate is too low, it cannot play the role of improving physical strength, therefore, it is very important to control the heart rate in the training. The use of a heart rate function bracelet, real-time monitoring of the training personnel's heart rate, so that the individual to achieve the best training effect, improve training efficiency. The sleep monitoring function of the bracelet can help the training personnel adjust their work and rest reasonably and prevent the occurrence of fatigue training and other phenomena. The biggest shortcoming of the traditional cramming teaching mode is that the teacher is the main body in the teaching, the knowledge transmission only carries on the mechanical indoctrination to the student, the student passively accepts, does not pay attention to the student's main body status, let Students Take the initiative to participate in the teaching, with the teacher to discuss the problem, knowledge exploration, case practice, thus depriving students of the development of personality, their own exploration

and knowledge. In the process of cultivating students' practical ability, we should pay attention to the cultivation of students' subject status. In the course of teaching, we should give students the right of autonomy, and they can freely choose and discuss topics according to their interests and hobbies or important and difficult problems, for example, students can freely choose a certain type of equipment troubleshooting, but free to choose the topic to meet the requirements of teaching tasks, students cannot be arbitrary choice. Students choose to discuss the task after the division of tasks in the group, each individual to explore the problem independently, the group to discuss together, each person can express their own views, to display their own results, students can evaluate themselves and each other to find the answer to the question. In this way, students can Make the host and the guest exchange roles, in the teaching process has always been in a dominant position.

## **2.2. The Heuristic Principle**

Another of the most important principles of deliberative teaching is the heuristic principle, which requires the teacher to understand the students' mastery of knowledge and the students' personality characteristics during the teaching process, familiar with the syllabus, talent training program and teaching content, can grasp the important and difficult parts well, be good at using the working principle of equipment, difficult points of troubleshooting and controversial problems to induce students to think positively, in-depth discussion, find and raise problems, use relevant knowledge to analyze and solve equipment maintenance problems, encourage students to actively participate in classroom teaching activities.

## **2.3. The Step-by-Step Principle**

The step-by-step principle emphasizes the design of teaching content, the control of the teaching process and the use of teaching methods in accordance with students' mastery of knowledge, follow the gradual principle of changing from easy to difficult, from shallow to deep, from simple to complicated. Don't develop by leaps and bounds, or do it all at once. At the beginning, ask students some very complicated questions to discuss, this does not achieve the desired effect of seminar-based teaching, will only let students spend a lot of time in finding information, looking for answers. In the choice of the content of the study, let the students from the simple equipment troubleshooting case to the complex case study step by step, in order to promote the students from the understanding of equipment failure step by step development.

## **2.4. The Principle of Harmony**

The principle of harmony means that the teacher should play a good role of "guiding" in the process of discussion, reasonably guide the development of discussion-type teaching, care about students' learning situation, understand students' needs and solve students' problems, let the students feel that the teacher is affable, more willing to communicate with the teacher. Students should play the role of "acting" , actively participate in the discussion process, actively search for materials according to the discussion topics assigned by the teacher, actively communicate with classmates and teachers about the difficult problems they encounter, and think more about the problems raised by others, good at absorbing other people's opinions, humbly to the teacher and students to ask for advice, to their own answers and knowledge constantly improve. Teachers and students, students and students should communicate in an equal and harmonious atmosphere, in order to break down the barriers of psychological communication, in order to actively communicate in the course of the seminar, to express their views, only by pointing out the mistakes of others and activating the discussion process can the students change from the "object" to the "subject", and this kind of teaching meets the requirements of the discussion teaching.

### **3. Reasonable Selection of Research Topics**

#### **3.1. Reasonable Setting of Research Topics**

To implement research-based teaching topics is the key, in the selection of topics must be closely linked to the teaching content. The discussion of the problem can not deviate from the teaching content, aimless discussion. We should focus on the teaching goal, close to the teaching requirements, select some exploratory, controversial topics, combined with professional knowledge, so that students from multiple angles to discuss. Two, it's easy, it's hard, it's appropriate. Don't be too hard on the chosen topic. If it is too difficult, students do not know where to start, find a solution to the problem, are unable to find the right answer, unable to reach the results of the seminar. If too simple, for the topic of the study does not need students to find information, thinking, discussion, the answer is obvious, such a study of no significance. Students who cannot find the correct answers directly and have different answers should be chosen for the students to study, to deepen their understanding of knowledge and cultivate their ability of independent thinking and innovation.

#### **3.2. The Choice of the Entry Point of the Research Should be based on the Course Objective**

The teaching objectives of the course should be carefully studied before the seminar teaching method is applied to the equipment failure inspection and repair. Equipment maintenance is to train students' ability to test and repair equipment failure. The focus of course discussion and design should be on the maintenance of equipment failure, the scene of the research should be set reasonably, and the course system with the core quality of equipment maintenance as the target should be constructed, based on the understanding of the course standard and the teaching goal, this paper analyzes the troubleshooting of typical faults, combines the difficulties of the course teaching, grasps the typicality of the troubleshooting, and gradually trains the students' ability of testing and repairing the equipment faults. At the same time, we should make clear the relationship between the teaching objectives and the teaching activities. The teaching goal should be the instruction for the teaching activity, the teaching activity should be able to guarantee the realization of the teaching goal.

#### **3.3. Cultivate Interest Points According to the Characteristics of Teaching Objects**

Students are the main body of teaching, and should take the initiative to participate in the teaching. Therefore, the cultivation of students' interest points is very important. Only students are interested can they have initiative and carry out the seminar teaching smoothly. Teachers can cultivate students' interests from the following aspects: First, make a good analysis of the learning situation, fully understand the situation of students, such as what students learned before learning this course, what are your expectations and thoughts on this course. Through these pre-class work to achieve a full understanding of students, is conducive to the teaching process to take some good methods and means to cultivate students' interest and enhance classroom participation. Second, through the question to stimulate the question of students. When students have questions, they are interested in finding out the answers, which can arouse their interest in the discussion. In the mind of students have a lot of questions, you can stimulate their interest through this question, let them to find the cause of failure, put forward their views and students to explore together, to find the right answer. Third, through the curiosity to draw students into the teaching initiative. Students are very curious about what causes these malfunctions, so teachers should seize this curiosity and assign students the following tasks: preview equipment composition, working principle and common malfunctions, each team can select a different failure phenomenon for discussion. Students have the curiosity to find the

answer to the question of the motivation, will take the initiative to find information, consult each other, find the answer to the problem.

## **4. Optimizing the Content of the Seminar**

### **4.1. The Optimization of the Content of the Seminar**

the seminar teaching method need to select reasonable content to carry out the teaching, at the same time need to optimize the content, some content not suitable for carrying out the teaching of the seminar should be deleted, some content can promote the student seminar interest, the growth student knowledge can add in. Some teaching content is not entirely suitable for the use of seminar-based teaching methods, such as the composition of the structure and working principles only suitable for theoretical explanation, not as the content of the seminar. This requires the teacher, on the basis of being familiar with the teaching plan of the course, to optimize the teaching contents and methods of the whole course system, and to adopt the mode of conventional theoretical teaching for the study of such knowledge as composition, working principle, etc., to lead the students in their studies. Moocs can also enable students to learn the relevant teaching content before teaching, which not only increases knowledge but also fosters the ability of independent learning, so that students learn from passive to active. The typical failure of equipment can be taught by the mode of discussion. In order to improve the efficiency of teaching, local teaching, model training equipment, hardware-in-the-loop simulation system and video equipment maintenance are used.

### **4.2. Focus on Solving Teaching Difficulties**

Teachers should focus on solving teaching difficulties during the teaching process. The heavy and difficult points of discussion teaching are mainly divided into static heavy and difficult points and dynamic heavy and difficult points. Static heavy and difficult points are generally in accordance with the contents of a chapter heavy and difficult points. The dynamic heavy and difficult points are generally the heavy and difficult points that the students cannot fully understand some knowledge points or make mistakes in understanding due to the reasons of basic knowledge, cognitive ability and practical experience, etc., this kind of heavy difficulty content is not fixed, often vary from person to person. As for the dynamic difficulties, the teacher should follow up the students' mastery of knowledge in time, comb and integrate the contents which are difficult for the students to understand in time, go deep into a simple way, help the students to understand, and let the students have a discussion as a research topic, ask the students to look up the data and communicate with each other to find the right answer.

## **5. Improve the Teaching Process**

According to the characteristics of the course, the teaching process of seminar-based teaching model is set up as following five steps: Setting seminar topics, students' group communication, class report and discussion, improvement of lecture evaluation and course assessment.

### **5.1. Setting Discussion Topics**

Setting appropriate discussion topics is the basis for the success of the seminar-based teaching method. When setting discussion topics, teachers must adhere closely to the characteristics of the teaching contents, choose the discussion contents rationally and avoid discussion for the sake of discussion, the selected topics should be close to the focus of the study, and take into account the forefront of knowledge in the field, so that students can discuss and analyze the problem from multiple angles. At the same time, these topics are closely related to the previous knowledge, moderate degree of difficulty, easy for students to find information for self-study, easy to get better results.

## 5.2. Student Communication in Groups

Topic selection and grouping are carried out by means of students' self-selection and teachers' moderate adjustment. Students can choose topics according to their personal interests and form a discussion group with students of the same topic. Teachers according to the composition of each group of personnel moderate adjustment, too many or too few groups to adjust each other. The results of each group should be balanced, some students cannot have good results, and some students have poor results, which will lead to poor seminar results. Each group designated a responsible person, responsible for the development of group research and communication between teachers. Students divided into groups around the topic to consult literature, Joint Research, to find the right answer. In this process, the teacher can provide some teaching materials and literature materials for the students to go to the library or the Internet. The teacher helped the students to solve the problems they encountered in reading the literature.

## 5.3. Class Report Seminar

Class Report Seminar can be divided into group report and class discussion. The group reports mainly on what knowledge and skills they have acquired after learning this part. In the process of learning what problems encountered, how to solve. What should we pay attention to in the learning process in the future. Don't take more than 15 minutes. This allows time for group discussions with the rest of the class. During the group discussion, you may ask questions to the reporting group, but the questions should be closely related to the topic of the reporting group discussion. Do not repeat the same questions or ask no questions, in this process, the teacher should guide the students to think about the content of other people's reports from different angles, and compare their own group's research topics, so that the students can ask different questions from different angles, it is also conducive to their study of group topics. The teacher should keep a good record of the students' reports and give praise to the students who have made good reports and performed positively in class.

## 5.4. Comments, Revisions, Refinements

After the Class Report Seminar, the teacher should summarize and comment on the report of each group and the questions and statements of other students, and summarize the key points of knowledge of each report group for everyone to learn, point out some problems in the report, let the students revise and perfect, and submit the revised report to the teacher, as a peacetime result, can also be used for reference.

## 5.5. Curriculum Assessment

Curriculum assessment should focus on students' basic knowledge of the grasp and use of knowledge to solve problems. The following three aspects can be examined: First, the combination of group assessment and individual assessment. The teacher grades the group according to the overall performance of the group and the individual performance. Of the total score of the individual, 40% is the group score and 60% is the individual score. Second, teachers and students review together. The teacher's evaluation weight of students accounted for 70%, group members of the evaluation weight of 30%. Each group will discuss the results of the topic in the form of written report and PPT presentation in the classroom, the task group set assessment indicators, assessment weights and evaluation criteria. Third, will discuss teaching results into the peacetime results, in peacetime results in the proportion of 60%. After investigation, most of the students think that they have enhanced their self-study ability, innovation ability, practical ability, critical consciousness, teamwork consciousness and expression ability.

## 6. Conclusion

The conclusion discussion teaching mode has changed the traditional "cramming", "baby-sitting" teaching mode, it divides the students into several groups, the students study and exchange knowledge in the group and between the group. It is beneficial to promote the effective and deep level teaching interaction between teachers and students. It is helpful for students and teachers to share the knowledge and experience of equipment maintenance, improve the skills of equipment maintenance, and improve the quality of personnel training.

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