

Analysis of Teaching Setting and Innovation of Mechanical Manufacturing and Automation Specialty Courses Based on Cooperative Teaching Mode

Jian Yi

Luzhou Vocational and Technical College, Luzhou 646000, Sichuan, China.

Abstract : In recent years, some mechanical engineering majors in my country have tried to introduce collaborative teaching methods. Through the process of mutual teaching cooperation between different disciplines, the teaching effect of mechanical majors has been improved. Based on the construction of a collaborative teaching model with collaborative teaching as the core, this paper analyzes the innovative application of collaborative teaching in my country's current mechanical manufacturing and automation majors, and discusses the curriculum setting of collaborative teaching from the preparation stage to the implementation stage of the classroom. Comprehensive compound engineering talents provide certain teaching theory and practical experience.

Keywords : Collaborative Teaching Mode; Mechanical Manufacturing and Automation Specialty; Teaching Setting; Innovation Analysis

The mechanical manufacturing and automation major focuses on cultivating application-oriented all-rounders who are proficient in theory and practice. However, the current teaching status of this major in my country is disconnected between theory and practice. Teachers are overly pursuing high-precision scientific research in different professional directions, neglecting the improvement of students' comprehensive ability. The existing teaching knowledge system is very scattered, and the interdisciplinary nature of this profession prevents a single teacher from fulfilling the requirements of teaching goals. The collaborative teaching model focuses on collaborative teaching between teachers of different subjects and focuses on training the integrated talents who combine work and study, therefore, how to use the collaborative teaching model has become a problem for educators in the field of mechanical manufacturing and automation.

1. The basic connotation of collaborative teaching mode

1.1 The connotation of collaborative teaching

The concept of collaborative teaching focuses on the word "cooperation". It can also be called group cooperative teaching, which is a special form of teaching organization. There are three main characteristics of collaborative teaching. One is that the teachers and students of the course have a close cooperative relationship while completing learning and teaching tasks together. Second, the teaching of the course requires two teachers or a teaching team of two or more. Third, it has strong flexibility whether it is in the task grouping of teachers and students or the time and space configuration of courses.

Therefore, it can be said that the connotation of collaborative education means that two or more educators form a teaching team under the guidance of common teaching goals. These teachers should have their own professional fields and be able to complete teaching tasks. Complementary advantages in the process, division of labor and cooperation can carry out a certain organizational form of teaching activities under the planning of the same unified teaching plan.

1.2 The connotation of collaborative teaching mode

Before expounding the connotation of collaborative teaching mode, we must recognize the difference between teaching mode

and teaching theory. Collaborative teaching is an effective teaching theory, and the collaborative teaching model is the medium and bridge from the concept of collaborative education to the practice of professional courses. It can be said that it is based on the practical summary of the theory and the teaching characteristics of specific subjects. It is a relatively stable and operational practice method and strategy system.

Since collaborative teaching has more complex key links than other ordinary teaching activities, the establishment of collaborative teaching mode will be affected by various factors. Among them, the subjective attitude of educators, teaching ability, cooperation ability and teachers'. The degree of theoretical understanding and so on all have an impact on the establishment of this teaching model, which is its particularity.

2. The necessity of adopting collaborative teaching mode in the teaching of mechanical manufacturing and automation majors

2.1 The teacher's single knowledge structure cannot meet the requirements of comprehensive teaching goals

In my country, graduates majoring in mechanical manufacturing and automation often enter the manufacturing industry to engage in mechanical processing operations or jobs related to mechanical automation technology management. As the degree of mechanization has been getting higher and higher today, all kinds of mechanical equipment are developing in the direction of precise structure. The subject content of this major also shows more and more the intersection of physics, computer, mechanical manufacturing and other related disciplines.

However, the course teachers of my country's machinery manufacturing and automation majors are very specialized and single teaching talents in a certain direction. In practical teaching, only one aspect of theoretical knowledge can be taught to students, and no one teacher can take on the task of cultivating professional comprehensive mechanical professionals. At the same time, in the pre-job vocational training for teachers in universities or vocational schools in my country, the training of all-round teachers for the cultivation of students' comprehensive abilities has also been neglected, which makes it increasingly impossible for teachers in mechanical manufacturing and automation courses. Rely on their own independent power to complete many teaching tasks. Therefore, collaborative teaching among teachers is particularly necessary.

2.2 The requirements for cultivating exploratory and compound talents with students as the main body

Most of the training models of machinery manufacturing and automation majors in our country are a large-class teaching system where a teacher faces a group of students, so that the individual differences of students are neglected, and there are fewer students with outstanding individuality. In addition, many students have to deal with exam and perfunctory teachers, so naturally it is impossible to cultivate mechanical compound talents that can meet the needs of the current society.

At the same time, school teachers are often easy to teach according to their own ideas and syllabus. Many problems that are difficult in theory and require joint practice to be solved have been easily taken by teachers, causing students to learn but understand. It can be said that this is not really student-based teaching.

3. Curriculum teaching setting and innovation analysis

3.1 Preparation stage of the course

First of all, it is necessary to analyze the themes and key points of the courses in combination with the content of the mechanical manufacturing and automation professional courses. Based on the existing national curriculum teaching system, explore the teaching content settings that meet the requirements of the students' theoretical understanding ability, and reconstruct a single course teaching goals.

Secondly, rationally organize and establish a team of teachers. According to the professional knowledge of different subjects contained in the course content, teachers who are good at different subject areas should be invited to join the teaching team. Attention should be paid to the reasonable allocation of teachers with different expertise. Under the premise of teachers' willingness, jointly design the teaching of a certain course Implement the plan and teaching objectives, and allocate class hours reasonably.

3.2 The specific implementation stage of the course

3.2.1 Relying on the class teaching system to integrate subject knowledge points

Although the collaborative teaching method has been introduced into the mechanical manufacturing and automation professional courses, it is not suitable to change the traditional large-class teaching system in view of the limited teaching resources and the tight teaching time. The center of traditional class teaching is to impart book knowledge. Collaborative teaching courses led

by a team of teachers should give full play to the advantages of class teaching, focus on the integration of knowledge points in mechanical manufacturing and automation, and pay attention to the characteristics of different courses. The series of knowledge points between similar courses and through learning, for example, between courses, “mechanical design fundamentals” should be combined with “machinery manufacturing fundamentals”, and different course teachers will give key explanations, so that students can learn about each course. Knowledge can be learned systematically, which can maintain the continuity of knowledge, which is more conducive to students to make complete mechanical products.

3.2.2 Establish an effective collaborative teaching class operation management system

In the teaching setting of mechanical manufacturing and automation professional courses, it is necessary to rely on a certain class operation management system to maintain the practical stability of the collaborative teaching mode. To this end, teachers need to work with class leaders, learning committees and other students to establish a core collaborative teaching class normalization management team. These students should ensure that they are both excellent in character and learning, have a certain prestige among students, and be able to take the lead in maintaining classroom order, Responsibilities for communicating information between the teacher team and students. In addition, the course teaching team of machinery manufacturing and automation must do a good job of internal coordination, maintain the task assignment between the main lecturer and assistant lecturer of the course, so as to carry out good course management in the process of collaborative teaching.

For example, in the development of the course “manual machining of mechanical parts”, the development of collaborative teaching can combine the theoretical courses of mechanical parts processing with practical training courses, and at the same time connect the content of CNC machining with it. Teachers explain together and set up a class management system to maintain collaborative teaching. Since the professional operations such as sawing and filing of “manual processing of mechanical parts” require students to learn more, if the theoretical explanation of mechanical processing principles is not paid attention to in the course, students will have to imitate rigidly without knowing. For this reason, the normalized management team of the class should play a role in communicating the theoretical knowledge acceptance level and skill practice needs of all students to the teacher team, conveying the teaching arrangements of collaborative teaching to the students, and organizing the division of labor and cooperation in the processing training. Ensure the smooth development of collaborative teaching with the guidance work in place.

4. Conclusion

All in all, the collaborative teaching model changes the focus of teaching from the instillation of scattered knowledge to the understanding and application of comprehensive knowledge, which is more in line with the various requirements of contemporary society for machinery manufacturing and automation professionals. Therefore, the introduction of a collaborative teaching model, under the joint efforts of multiple teachers, truly starts from the needs of students, allows students to understand various knowledge points, and learns to apply mechanical manufacturing and automation theories in practice. This is now to avoid a single knowledgeable talent. Cultivation can realize the important requirement of comprehensive exploratory talent training.

References

1. Shi Q. Exploration of the teaching reform of machinery manufacturing and automation professional courses based on collaborative teaching mode. *Internal Combustion Engine and Accessories* 2020; (05): 291-293.
2. Cao J, Xu D. Research on the collaborative teaching mode of the comprehensive curriculum of intelligent manufacturing production. *China Vocational and Technical Education* 2019; (29): 53-56.
3. Hu L, Li B, Tang Y, et al. Exploration of the teaching reform of mechanical precision design and inspection courses based on the collaboration of learning, research and teaching. *China Modern Educational Equipment* 2016; (17): 72-74.