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Hybrid Teaching Mode of Mechanical Manufacturing Specialty in Colleges and Universities Based on Mu Course

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Abstract: With the rise of network courses such as Mu course and micro course, the traditional teaching method of fundamentals of mechanical manufacturing technology can not fully adapt to today's learning form. On the basis of absorbing traditional teaching and practical experience, the author's research group has practiced the hybrid teaching mode of integrating network and traditional teaching by using provincial high-quality online open courses, and introduced 3D design classroom display, enterprise and scientific research project driven teaching method, which has fully stimulated students' innovation and scientific research ability.

1. Introduction

College teachers and students have only experienced a few years from the passive acceptance of Mu class and other online classes at the beginning to the gradual acceptance and adaptation. The large-scale rise of Mu class breaks through the time and space constraints of classroom teaching, enables students to learn anytime and anywhere through computers or mobile terminals, meets the learning needs of students at different levels, and also brings challenges and impact to the traditional classroom.

2. Traditional Classroom and Flipped Classroom

Under the traditional classroom teaching mode, the initiative of what teachers provide and what students accept is often in the hands of teachers. When, how much and how students learn are well defined. In the mechanized teaching process, middle school students are easy to lose interest, get sleepy in the classroom and don't use their brains. Over time, no one answers teachers' questions in class, lose interactive links and become completely passive. However, teaching progress is easy to control and teaching tasks are easy to complete. It is the most common teaching mode today. In recent years, MOOC has mainly introduced the flipped teaching mode into the classroom. This mode is a teaching form in which the position of knowledge transfer and knowledge digestion is reversed, the process of teachers' teaching is completely left to the students themselves, the students learn new knowledge by watching teaching videos before class, and carry out discussion, communication, interaction and homework in the class in which the teachers participate, This

requires excellent MOOC network resources and network viewing conditions, and requires students to have high self-consciousness and initiative. Classroom discussion and interaction not only mobilize students' initiative and participation in learning, but also liberate some teachers' resources[1]. This model has been gradually adopted as a new teaching attempt in recent years. However, in this mode, students have to go through “learning” - “discussion” - “questioning” - “Q & a” - “retraining”, and the task is relatively heavy. For local undergraduate colleges, students' learning attitude and persistence can not be achieved, the teaching cycle and links of a knowledge increase, and the teaching plan is difficult to complete.

3. Hybrid Teaching Method Based on Mu Class

It is not suitable for students to abandon classroom teaching and fully implement the learning method of “Fundamentals of mechanical manufacturing technology” in network classroom. Overemphasizing the importance of virtual network will lead to the superficial course learning, but weaken the communication and communication between teachers and students and students in real learning life[2]. In the long run, the face-to-face communication between teachers and students and students will be reduced, which is easy to cause the indifferent relationship of “seeing but not knowing” between teachers and students. In the traditional teaching mode, teachers can observe students' reactions in the classroom at any time. Through face-to-face close communication with students, teachers can fully understand students and adjust them in time according to the classroom feedback. Therefore, this course should adopt the mixed teaching mode, focusing on key analysis, difficulty solving and classroom discussion in the classroom, with teachers as the guidance and students as the main body, and focusing on knowledge understanding and autonomous learning on the network.

4. Hybrid Teaching Mode of Mechanical Manufacturing Specialty in Colleges and Universities Based on Mu Course

4.1 Introduce Three-Dimensional Design to Increase Perceptual Knowledge

When describing the mechanism principle in the textbook, it is mainly based on two-dimensional diagrams, such as machine tool motion, fixture design, tool angle, etc. there are few content introduction tips, which increases learning difficulties. Taking the tool angle as an example, in order to mark the tool angle, it is necessary to establish a special tool marking angle reference system and mark the tool angle in this reference system. If the two-dimensional diagram in the textbook is used for explanation, it is difficult for students to understand the position and meaning of these angles[3]. The teacher establishes the three-dimensional model of the tool through the software and demonstrates it to the students on the spot to build the base plane, cutting plane and orthogonal plane, which can deepen the students' understanding of the structure and angle meaning of the tool.

4.2 Effectively Match Conventional Classroom Teaching

The hybrid teaching mode based on MOOC platform should follow the principle of step by step in the specific promotion and implementation process. At this stage, both the corresponding teaching exploration and the recognition and acceptance of students are in the preliminary stage, so we must effectively match with conventional classroom teaching. Specifically, because some students do not prepare well before class, or even do not form good pre class preparation habits, and can not get effective supervision and guidance, the first teaching can still be carried out by conventional teaching, so as to enable students to form perceptual cognition of knowledge, and then

guide students to learn again through MOOC resources after class[4]. Due to the first combing of knowledge in conventional classroom teaching, students will be easier to accept and have a better understanding of knowledge in the process of online course learning after class. At the same time, due to the different learning level, understanding ability and mastery degree of individual students, students can make their own arrangements based on their own situation in the process of learning online courses. For example, they can skip the mastered parts and study repeatedly where they are not clear.

4.3 Reasonably Design the Proportion of Classroom Teaching

In the process of classroom teaching, we can determine the time ratio as 1:3:1. The former mainly focuses on the communication and discussion in the previous classroom. Since students may have a deeper understanding of the previous course content or still can't understand the problems after online learning, they can explain their views and solve the problems they encounter through communication and discussion at this time[5]. The middle time is mainly classroom teaching. In this process, teachers should pay attention to combing the knowledge and guide students to understand the internal logical relationship of the knowledge system, so as to help students realize the overall planning and understanding of knowledge, and then lay a cognitive foundation and provide guidance for their next online course learning. The later time is mainly to arrange after-school learning tasks. In order to enable students to carry out after-school online learning purposefully, focused and effectively, teachers should assign after-school online learning tasks to students and point out the problems to be discussed in the next class.

4.4 Effectively Protect Students' Participation

Under the traditional teaching mode, the subject status of students' learning is not guaranteed, and the corresponding subject role is difficult to play. In this regard, in order to completely change the cramming teaching of traditional teaching and improve students' learning initiative and creativity, teachers should carry out corresponding communication and discussion courses after the teaching of each chapter, set difficult points and discussion topics or innovative discussion topics, and make students truly become the masters of the classroom by dividing learning groups, And it can enable each student to gain knowledge, find deficiencies, learn experience and improve in the process of personal participation[6]. Of course, teachers should play the role of organizer and guide in this process, observe and guide students' communication and discussion in an all-round way, collect and explain the common problems and doubts of students in each group.

4.5 Scientifically Set Assessment Index System

Under the traditional mode, the assessment of students' learning effectiveness is closely centered on the written test. Such a performance evaluation method is single, and it can not fully reflect the real situation of students' learning. In this regard, the author believes that at this stage, we need to further scientifically set the assessment index system to build a complete assessment mechanism, so that the final assessment results can reflect the real learning situation of students from many aspects[7]. Specifically, in daily teaching, teachers can test students' learning effectiveness based on students' completion by arranging Mu class homework, and even take the learning guidance and examination outline in Mu class as the focus of the examination. In addition, we also need to improve the existing performance evaluation methods. While retaining the written examination, we need to build students' usual performance evaluation indicators, such as students' interaction in class, completion of homework and operation proficiency, which can be used as reference indicators for

evaluating students' performance in their life.

4.6 Project Driven Teaching Method

In the classroom and offline, in order to cultivate students' innovative design and engineering practice ability and make students really become the main body of learning, the project driven teaching method can be adopted to give an actual working environment and needs, so that students can complete “engineering projects” in the form of groups. Firstly, set up a project team with 6-8 people as a group to give a part in actual production or scientific research project. When the production program is known, students are required to complete the processing technology of the part or design the fixture of a certain process, so that students can deeply understand the theoretical knowledge of part mechanical processing technology and fixture design, and enhance their team cooperation ability[8]. In the process of carrying out the project, students burst out curiosity to explore problems, showed a strong thirst for knowledge, understood what innovation is, and cultivated the spirit of scientific research and innovation ability in the research process.

5. Conclusion

Combined with the reality of colleges and universities, this paper adopts the hybrid teaching mode based on Mu class, which overcomes the scattered disadvantages of students' passive learning and whole network Online Autonomous Learning in the traditional single classroom. The establishment of project driven teaching method not only gives full play to the role of teachers in the combination of teaching and research, three-dimensional virtual design and guiding the benign communication between teachers and students, but also gives full play to students' subjective initiative. Theory and practice complement each other, cultivate students' scientific research thinking, and lay a good foundation for them to become excellent scientific and technological workers in the future.

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