

## Research on Teaching Reform of "Engineering Drawing" Course with Students as the Main Body

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### Abstract

In Chinese colleges and universities, "Engineering Drawing" classroom is generally teacher-centered teaching mode, students can only passively receive knowledge, less interaction between teachers and students, classroom effect is relatively poor. According to the characteristics of "engineering drawing" course, this paper will expound the necessity of "student-centered" curriculum reform, and summarize the suggestions and methods of implementing student-centered teaching in teaching practice, so as to improve the teaching effect of "Engineering Drawing" course.

### Keywords

"Engineering Drawing", university project, teaching reform, taking students as the main body.

### 1. The Necessity of Implementing the Curriculum Reform of "Taking Students as the Main Body"

One of the main tasks of higher education is to cultivate high-level specialized talents with innovative spirit and practical ability. It has become an important mission for colleges and universities to construct an education system suitable for innovative education and training innovative talents.

The educational concept and practice of "taking students as the main body" conforms to the talent demand of modern society. The key to the implementation of quality education focusing on innovative spirit and practical ability is to change students' learning methods and teachers' teaching methods. The traditional examination oriented education emphasizes "teachers as the main body", and the improvement of teaching quality and effect is not obvious. Quality education emphasizes "taking students as the main body", emphasizes that "learning" is more important than "teaching", and attaches importance to the cooperation and interaction between teachers and students. Teachers are no longer simple knowledge imparters, but designers, organizers and service providers of classroom activities. Students are no longer passive learners, but master professional knowledge in practice through teaching activities, so as to give full play to their potential To improve the practical ability.

It is easy for the students to embody the engineering consciousness. If this course is taught according to the traditional mode, most of the talents trained are full of rational thinking and rigid conventions. Generally speaking, they dare not go beyond the books easily, so it is difficult to cultivate pioneering talents. Therefore, we must break through the shackles of the original teaching mode and carry out creative education. The research-based teaching method of "taking students as the main body" is a kind of research-based teaching method based on the constructivist learning theory, which is different from the traditional teaching method. In the whole teaching process, we advocate student-centered learning under the guidance of teachers; in the learning process, driven by strong problem motivation, through the active application of learning materials and learning resources, students will carry out independent exploration,

interactive discussion and cooperation, and master learning methods, so as to cultivate students' ability to use knowledge and recreate in practice. In the undergraduate teaching, we should advocate the "student-centered" research-based teaching method, which mainly links the teaching with the ability to solve problems, so that students can learn real knowledge. The purpose of education is not only to spread knowledge, but also to enable students to master learning methods and cultivate their desire and ability of lifelong learning.

## **2. The Main Factors Affecting the Effect of "Student-Centered" Inquiry Learning and Practical Teaching**

According to the teaching experience of several years, the following problems exist in the teaching of "Engineering Drawing" in Colleges and Universities: (1) the teaching method mainly studies the teacher's classroom design and the application of the teaching method, neglects the study of the students' learning method, which leads to the students' passive state in the learning process, and seriously affects the teaching effect of the classroom; (2) the teaching mainly emphasizes the learning of professional knowledge and the application of teaching methods Mastering is not closely related to practical teaching, thus neglecting the cultivation of students' practical ability, students are seriously divorced from practice, and their practical ability is also poor; (3) teaching assessment methods are relatively simple, focusing only on the assessment of theoretical knowledge, while neglecting the assessment of students' learning process and practical ability, resulting in high scores but low abilities or high expectations and low abilities; (4) the teaching assessment method is relatively simple Scientific research and teaching are out of touch, ignoring the mutual promotion and complement between the two. As a result of these problems, the implementation of "student-centered" research-based teaching method will be affected to a certain extent, and it is difficult to attract the attention of teachers and students, resulting in low classroom teaching effect.

Combined with the actual situation of colleges and universities and the characteristics of "Engineering Drawing" course, this paper carries out the teaching reform of the course, discusses how to infiltrate the research-oriented teaching method of "taking students as the main body" into the classroom teaching of "Engineering Drawing", effectively improve the teaching quality and effect of "Engineering Drawing" course, make students understand the essence of "Engineering Drawing" course in the course learning, and improve the teaching quality and effect of "Engineering Drawing" course Through the exploration and practice of "student-centered" research teaching method reform of "Engineering Drawing" course, on the basis of ensuring the quality and effect of classroom teaching, we should strengthen students' pioneering spirit and innovative consciousness, cultivate their innovative thinking and practical operation ability, so that students can participate in scientific research, technological development and social practice as soon as possible Some extracurricular activities of science and technology, and get basic scientific research training, which is of great significance to the training mode and law of innovative and research-oriented talents.

## **3. Through Teaching Practice, This Paper Puts Forward Suggestions and Methods to Improve the Effect of Classroom Teaching**

Through the exploration and practice of inquiry learning method in non machine major and near machine major, this paper summarizes the suggestions and methods to improve the effect of classroom teaching.

First of all, as a teacher to update the concept of education, continuous learning, improve their knowledge level. In the traditional teaching process, teachers are often arbitrary and concentrate on inculcating knowledge for students, which leads to the situation that teachers

are eloquent and students are listless. At the same time, due to the relatively stable course content in basic education, after five years of teaching, teachers are familiar with the teaching materials and syllabus, and have accumulated certain experience, so the pressure on self-learning will not be great. In the activities of scientific inquiry, students hope to explore a lot of problems, and their learning knowledge is far beyond the scope of classroom teaching and teaching materials. At this time, teachers have lost their reliance on books and outlines, and need to constantly update their own knowledge. In combination with the current social development trend and students' learning needs, they should expand their own knowledge level to make teaching and research full Combined. At the same time, the opening of students' learning content has greatly expanded the scope of students' understanding, and the way to receive knowledge has changed from single to multiple. In inquiry learning, teachers and students discuss relevant issues, gradually weaken the boundaries between teachers and students, exchange the relationship between teaching and learning, and find and solve problems together. At this time, there is an equal relationship between teachers and students. Teaching has changed from "listen to me" to "discuss together". Moreover, through scientific inquiry activities, teachers will feel incompetent when guiding students to explore or study with students, and they will be aware of their own narrow knowledge from the heart, thus stimulating teachers to continue learning. In the process of continuous learning, teachers should update their educational concepts, learn and accept new educational ideas in line with social development. Only with advanced educational ideas can they have advanced teaching methods, and thus may have a positive impact on students.

Secondly, pay attention to the cultivation of students' independent inquiry ability and create a good learning atmosphere of independent inquiry. Let students explore independently is to let each student according to their own characteristics, use their own way of thinking to explore and find problems freely, and solve problems independently. Because the process of learning knowledge is the process of actively constructing knowledge. In the process of classroom teaching, we should give students time and space to explore freely. We should not turn the teaching process into a mechanical teaching process. We can set aside appropriate time to ask questions, give students certain inspiration and guidance, let students independently study and cooperate in discussion, so as to provide students with the opportunity to express and discuss problems freely. When students' opinions are wrong, guide students to find problems by themselves, correct themselves, and leave opportunities to students. Teachers should not replace students' thinking. In this way, students can combine their knowledge and solve practical problems through various learning and discussion modes such as individual, group and collective. In the process of independent research, students have acquired knowledge and mastered certain skills. In a class, the cognitive ability of students is also very different. When setting questions, teachers should conform to the characteristics of students' knowledge, combine difficulty with ease, and let students be willing to explore and discuss. Through relaxed and pleasant inquiry learning, students construct the meaning of new knowledge and experience the happiness of acquiring knowledge, thus enhancing the consciousness of autonomous learning and cultivating the spirit of exploration and creativity.

Finally, we should be good at summing up in the learning process and combine teaching with scientific research closely. Learning is a long process. It is a process of constantly summing up, making mistakes and correcting constantly. In the process of learning, making mistakes is not terrible. What is terrible is making the same mistakes constantly. For example, after talking about a chapter or part, we should summarize it in a timely manner and give some examples in practical application. We can combine theory with practice, connect knowledge before and after, and sublimate knowledge. In order to cultivate students' innovative consciousness and ability, teachers can enrich some new achievements in scientific research work and some main arguments in scientific research papers into the course, and explain them as specific examples.

In this way, teaching and scientific research can permeate each other, so that students can know the purpose of learning, stimulate their interest in learning, and inspire them to think independently Students' innovative inspiration. When students' scientific research consciousness and innovative thinking are established, they should be provided with the opportunity to innovate. For this reason, the school has established an innovation research fund to encourage students to participate in innovative design.

## References

- [1] Chen Yan-hui, Chen Yue-ping; Experience and Practice of Improving Teaching Quality of Mechanical Drawing[J]; Higher Education Forum; 2009-03.
- [2] Tong Bing-shu, Wu Zhi-jun; The Thinking about Design Education and Engineering Graphics Reform[J]; Journal of Engineering Graphics; 2000-04.
- [3] Liu Nian-shu, YAN Qun; The Practice and Ponderations on the Reform of Engineering Graphics Course[J]; Higher Education Forum; 2000-03.