

Exploration and Practice of Innovative Teaching Mode of "Engineering Drawing" Course in Universities

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Abstracts: Engineering drawing is a compulsory technical basic course for engineering students. In the new era, in the process of implementing the innovation and reform of engineering drawing courses, colleges and universities, based on the online and offline mixed teaching, improve the course design of online and offline teaching, and give students more comprehensive and complete teaching guidance in combination with flipped classes and rich extracurricular innovative practice activities; In the teaching process, teachers also need to properly integrate the ideological and political elements of the curriculum to ensure that every student can receive good ideological education guidance during their study. This paper analyzes and discusses the innovative teaching mode of engineering drawing course in colleges and universities.

Keywords: Engineering Drawing; Innovative Teaching; Pattern Analysis

1. Introduction

In the new era, colleges and universities should pool their wisdom in the process of innovation, reform and optimization of engineering drawing curriculum, adopt top-level design, and complete curriculum innovation from multiple dimensions and levels. In this link, teachers need to effectively connect pre-class, in class and after class, combine network media and network media, and expand teaching work. At the same time, in the process of teaching innovation of engineering drawing curriculum, teachers also need to clarify various teaching indicators teaching elements, combined with lean and refined teaching control measures, and give students more systematic teaching guidance.

2. Wechat online teaching

In today's era of learning, colleges and universities need to effectively integrate online teaching and offline teaching in the process of teaching reform and innovation of engineering drawing course, so as to give students more comprehensive and complete teaching guidance. Curriculum teaching innovation needs to expand both inside and outside the course. In this link, colleges and universities need to strictly refer to the teaching assessment outline and school running needs, and take students' career development as the foundation, so as to improve the setting of online course teaching content, and enhance students' subjective initiative to participate in learning. At the same time, combining the online teaching mode can also help teachers quickly master students' current learning status. In this link, college teachers need to select the most basic and simple knowledge part of the engineering drawing course, complete the micro course production, and hand over the short videos of such micro courses to students for independent and efficient learning. In addition, teachers also need to improve the refined teaching design. Case analysis and exercise exercises are also introduced into the micro class video, which includes all the key points of the professional knowledge system of engineering drawing. Students can complete the integration of theory and practice learning in combination with the actual case explanation of the micro class short video during the learning process, complete the learning comprehension of the drawing specification, and help students develop a good learning attitude.

Secondly, through the actual case explanation and video teaching, teachers can also effectively demonstrate the mapping steps to students on the network. Students can independently adjust the video playback speed according to the content explained in the micro class video, so that students can stay in places they do not understand for enough time to complete learning and exploration. Therefore, in the process of curriculum teaching innovation, schools and teachers can overcome the disadvantages of traditional teaching work limited by time and space by combining the online micro class teaching mode.

Teachers can also divide the curriculum into three stages: pre class, in class and after class to complete the refined and targeted teaching guidance for students, and can also help students complete their learning and exploration by combining the integrated teaching mode of preview, learning, consolidation practice and summary.

In the part of after-school teaching, teachers can also guide students to summarize and refine relevant knowledge chapters through micro class short videos. However, in this link, teachers should be targeted and clarify the focus and key points of online and offline teaching. For example, in the part of online teaching, teachers should explain basic knowledge to students, while in the part of offline teaching, Teachers should guide students to complete more systematic and systematic learning of relevant knowledge points. Therefore, in the current course teaching innovation process, teachers need to introduce online teaching modules to enhance students' ability to participate in learning independently.

3. Perfecting the construction and construction of flipped classroom

In today's digital and information age, colleges and universities can also improve the depth and breadth of relevant teaching work by flipping the classroom during the construction of engineering graphics and related courses. Under the concept of flipping the classroom, teachers need to effectively integrate pre class, in class and after class, and guide students to complete independent learning with the help of micro class short videos and electronic courseware before class. During classroom teaching, teachers need to divide students into different learning groups, so that students can discuss and exchange learning in the learning groups. After class, teachers need to assign specific teaching videos to students, so that students can complete learning exploration in combination with their own learning situation. Under the flipped classroom teaching concept, students can complete more detailed, systematic and efficient learning of relevant knowledge points, which can meet the needs of students' independent growth and development.

4. Improving extracurricular innovative practice activities

Colleges and universities also need to integrate the teaching elements of the integration of theory and practice in the process of innovative teaching design of the current engineering drawing course. At the same time, they should deeply practice the ideological concept of "the integration of teaching, learning and doing" in Tao Xingzhi's teaching concept, and try to introduce students from the classroom to the work practice as much as possible, so as to enhance students' learning and cognitive ability of relevant knowledge points and deepen students' learning impression. In this link, teachers can assign practical tasks to enable students to complete learning and exploration in the form of group cooperative learning. For example, teachers assign model making tasks to students, and students can complete model design and production by thinking, analyzing and innovating in combination with the course content. At the same time, let the students complete the division of labor drill and learning in the group, and share each others design ideas. The teacher needs to timely detect the students' learning results in this link, point out the design projects that do not meet the standards, and guide the students to complete the innovative practice exploration.

In addition, in the extracurricular practice activities, teachers also need to combine the teaching innovation ideas of the integration of courses and competitions, such as allowing students to participate in design competitions, national and provincial mapping competitions, guiding students to conduct independent and continuous practice and exploration in the learning process, and effectively integrating courses and competitions, so that students can extract the key points and key points of engineering drawing related knowledge, mobilize students' enthusiasm and initiative to participate in course learning. At the same time, teachers can also clarify the key points and key points in the course learning to students through the engineering drawing competition. In addition, teachers also need to integrate digital and information-based teaching elements into the teaching process, such as combining AutoCAD, Solidworks and other advanced drawing software to guide students to complete the production of two-dimensional and three-dimensional models and enhance students' practical innovation and practical design ability. In general, teachers need to appropriately expand extracurricular innovative practice activities, combine the teaching guidance strategy of the integration of class and competition, and use more advanced teaching software and hardware facilities to enhance the teaching effect.

5. Integrating into the ideological and political course

In the current ideological and political environment of the curriculum, colleges and universities also need to fully tap the ideological and political elements in the process of implementing the innovative design of engineering drawing curriculum, so as to achieve effective ideological guidance for students. In the curriculum system of engineering drawing, teachers should clarify the humanistic elements, ideological elements, spiritual elements, moral elements and professional moral elements, and effectively integrate the curriculum knowledge and ideological and political knowledge, so as to deepen students' learning and cognition level of relevant knowledge points. At the same time, in the teaching process, teachers also need to implement corresponding patriotism education in a timely manner to pass on and explain the craftsman spirit to students, in order to help students complete the learning and exploration of knowledge points of relevant disciplines and enable students to have new insights.

6. Implementing diversified assessment and evaluation

In the process of improving the innovation and teaching design of engineering drawing courses, colleges and universities should also integrate diversified evaluation strategies, optimize the evaluation mechanism, and realize the systematic, standardized, hierarchical and differentiated teaching evaluation of students. It can give directional evaluation and control to each student by referring to their learning defects and learning deficiencies in the learning process and in combination with the learning objectives set by each student, to ensure that relevant evaluation work is more targeted and focused. In this link, teachers need to integrate more procedural evaluation contents, change the previous teaching evaluation mode of single basic theoretical knowledge assessment, and combine more practical evaluation elements as much as possible. At the same time, in the process of teaching evaluation, teachers also need to focus on detecting students' professional ethics and ideological and moral cognitive levels, so as to ensure the diversity, integrity and comprehensiveness of relevant teaching evaluation work, and achieve more efficient teaching guidance for students. In addition, in the process of assessment and evaluation, teachers also need to combine diversified assessment and evaluation mechanisms and evaluation strategies, such as allowing students to design and complete the drawing of mechanical drawings by themselves, investigating students' drawing standard level, allowing students to improve the drawing of part drawings and assembly drawings, and focusing on students' spatial imagination and innovation ability. At the same time, the evaluation process can also be combined with group evaluation and students' mutual evaluation to enhance students' sense of competition.

7. Conclusion

In general, in the process of teaching innovation and teaching reform of engineering drawing course, colleges and universities should combine the refined and lean teaching measures, innovate the existing teaching mechanism, and improve the teaching evaluation, in order to optimize the course teaching mode, give students more refined, personalized and hierarchical teaching guidance, and improve the teaching efficiency of engineering drawing course.

References

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