

Study on the Application of Mooc in the Teaching of Material Mechanics

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Abstract

MOOC is the development and breakthrough of the open movement of curriculum resources, which greatly promotes the transformation of curriculum open educational resources from simple auxiliary resources to curriculum and teaching. The traditional teaching mode of mechanics of engineering materials has been unable to keep pace with the times, rigid teaching mode can not stimulate students' interest and enthusiasm in learning, can not give teachers the motivation to teach, resulting in the loss of vitality and vitality in the classroom, thus students weary of learning, conflicting feelings. At present, the development of Internet and information technology has gradually penetrated into all fields and levels of education. MOOC arises from the online education curriculum platform in Western countries. Applying MOOC to the teaching of mechanics of engineering materials in Colleges and universities can better guide the reform and teaching of mechanics of materials. This article mainly from the basic overview of MOOC and the application of Engineering practice, to provide new ideas for curriculum reform.

Keywords

Material mechanics, Mooc, assessment model.

1. Introduction

Since 2011, MOOC has developed rapidly in the world, which has aroused widespread concern of people from all walks of life. So that most people start to examine the traditional education and teaching mode, thinking about how to reform teaching and how to develop education. It marks the beginning of education to truly move towards modern civilization and enter the era of network information digitalization. The rise of MOOC has a strong impact on the traditional teaching methods of material mechanics in Colleges and universities, especially in engineering. In 2008, the Director of Network Communication and Innovation of Prince Edward Island University of Canada first mentioned MOOC in related research projects, which marked the birth of MOOC Terminology. In 2012, Harvard University, Stanford University and Massachusetts Institute of Technology set off a storm of education in the field of education, which aroused the attention of all sectors of society.

Since 2013, the MOOC Movement in China has developed rapidly. The concept of micro-curriculum is the cornerstone of the development of MOOC. With the continuous research and discussion of experts and scholars at home and abroad, the curriculum design, learning links and background operation of MOOC have gradually matured.

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2. The Basic Connotation of MOOC

The so-called MOOC is a Chinese transliteration of the English acronym by Massive open online course, which means a large-scale online development course. M stands for massive, meaning large-scale, large-scale, large number of registered people, rich curriculum resources, not just one or two courses. Open stands for openness; online points to the carrier of the open class, namely the Internet. It is also because it is in a network environment that large-scale and open features can be realized. MOOC is a learning course that can be obtained through the Internet. It does not charge for large-scale people. Anyone who decides to study MOOC can log on to the website and register for study.

In addition to the traditional online courseware, in addition to the video courseware resources for learning, MOOC also provides an interactive community for learning the corresponding topics that users use to discuss MOB learning content. This online course, designed for large-scale student interaction and online open source access, brings together people who are interested in learning and experts who want to help others learn, so that thousands of people can choose at the same time. Learn a course. At the same time, there is no threshold for the MOOC, the study time is relatively free, and the learning environment is not limited.

The MOOC is based on its theoretical foundation, which mainly includes the MOOC in Connectivism and the MOOC in Behaviorism Learning Theory. The connectivity opportunities of knowledge depend on the commonality of connectivity knowledge. The more commonalities, the more connectivity opportunities, the stronger the connectivity, the deeper the new connected knowledge connections generated, and the more efficient learning depends on the flow of knowledge in the network environment. Sex. The more opportunities there are to connect between node knowledge, the more connectivity knowledge will be generated and the more efficient the learning will be. Behaviorism is a classic genre of Western psychology. It advocates the use of objective observations and experimental methods to study human behavior. Behaviorists argue that learning is a stimulus-response connection, and that the learning process is a trial and error in the stimulus scenario until the correct response is found. In the teaching process of engineering material mechanics in colleges and universities, we should pay attention to the connection of the basic concepts of mechanics through the MOOC, and learn the extension of knowledge. In addition, for the issue of openness, pay attention to the theory and practice, optimize the teaching mode, and use teaching methods. diversification.

Main Features of the MOOC.

2.1. Large-Scale

The large-scale nature of the class is first reflected in the number of participants in the course. From the perspective of the number of participants, the traditional teaching method requires many courses of the class to be completed online at the same time through the class. The large-scale class of MOOCs is also reflected in the large number of online courses available in almost all disciplines. For engineering materials mechanics, a large number of engineering examples can be demonstrated and taught on the MOOC platform to enhance students' understanding.

2.2. Network Openness

With the rapid development of the network, resource sharing of the network platform can be realized. This openness is conducive to the rational use of resources for education. It is precisely because of the rapid development of the MOOC, the opening of the network enables students to learn the high-level teachers of the first-class university on the material mechanics course and various valuable engineering examples in the online classroom. This will not only deepen students' understanding of the basic concepts of material mechanics, but also improve their engineering practice.

3. The Particularity of Material Mechanics

Among the teaching programs of many universities, the material mechanics course is a very important professional basic course, which has a bearing on the subsequent structural mechanics, steel structure, basic engineering and other courses. The teaching effect of material mechanics directly affects the future development of students. In recent years, with the continuous improvement of various materials in the project, a variety of new materials have emerged. As a professional basic course, the material mechanics course has certain requirements for students' self-motivation skills. The axial tensile and compression, shearing, bending, torsion and other tests are the basic content of this lesson. The mechanical properties of the material are based on the test. Comprehensive and design experiments can help students better grasp the theoretical knowledge they have learned and motivate their enthusiasm and initiative. Material mechanics mainly studies the mechanical properties of materials. It involves a wide range of topics, complex content, trivial knowledge points, and the interconnection of chapters, which makes the students' understanding difficult.

4. Combination of MOOC and Material Mechanics Courses

The instructor will deepen students' understanding of the material mechanics course by adopting the teaching method of the MOOC. First of all, in the classroom, heuristic teaching interactive questions are used, and students are self-study-led, guiding students and inspiring their curiosity. For example, when explaining the concept of deflection, you can introduce a lot of students' interest in learning by enumerating a large number of practical examples of accidents caused by excessive deflection of horizontal components.

5. Conclusions

MOOC is one of the latest changes in the development of online education. A solid concept system of material mechanics is the foundation, and good mechanical computing ability is the basic requirement. However, students participate in the practical problems of engineering, to be flexible, and to use the book knowledge learned by the university to solve unknown engineering problems. It is necessary to raise the theoretical knowledge to a complete framework of mechanics knowledge through the method of MOOC.

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