



# Engineering Drawing Teaching Exploration and Reformation in Xinxiang Medical University

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**Abstract:** Engineering drawing is a technology course of engineering students. The main content of it is how to get the accurate relationship between objects and drawings. The Engineering Drawing course was set for biomedical engineering, bio-engineering and pharmacy profession students now in xinxiang medical university. After our investigation it is found that engineering students in medical schools are lack of the interest in engineering courses. Therefore, it is necessary to carry out teaching exploration and reform of engineering drawing course to continuously improve the teaching quality of this course and the students' interest. Aiming at teaching status and learning content, the exploration of teaching methods has been put forward. In this exploration the combination of theory and practice has been executed. Next, based on theoretical teaching the computer drawing software will be used as a tool in the reform of engineering drawing course.

**Keywords:** *Engineering drawing; Teaching exploration; Reformation; Computer software*

## Introduction

Recently, with the development of national economic and society the health and hygiene have been focused too. More and more fields of natural science are involved in the development of modern medicine. The development of medical science not only depends on itself but also on the development of other disciplines. Therefore, the integration of medicine and other disciplines has become the inevitable trend of medical development and it is also the ultimate goal of medical science. Biomedical engineering is a typical engineering discipline in the field of medical development and it has a pivotal position in medical field. As a basic course in

biomedical engineering, engineering drawing course is an obligatory course for this professional student. Therefore, in order to further improve the teaching quality of this course and strengthen the students' interest in the course in medical college, the teaching reform of engineering drawing has been explored in this paper<sup>[1-3]</sup>.

## 1. Engineering drawing current situation

At present, the engineering drawing course in xinxiang medical university is mainly opened in the second semester. Due to the lack of faculty and funds the development of this course is arranged as follows: total 72 classes with 42 theory courses and 36 laboratory courses. The assessment method is written examination (Written test scores takes up 70% and experimental results takes up 30%). Through investigation and research of the students in biomedical engineering, bioengineering and pharmacy professional most students considers that the problem of engineering drawing course is that the teaching content is more but the classes are lack. And they have difficulty in learning it, thus they can not master the course perfectly which may largely dispel the enthusiasm of the students in the further study. There are also some students who think that the engineering drawing course is not much useful for their future work and life. So the learning interest is not high of them. On the whole, the current engineering drawing course in xinxiang medical university has not yet fully achieved the expected results in the teaching process. According to the above problems, the biomedical engineering college will carry on the following reform to the engineering drawing



course from now on.

## 2. Teaching content reformation

In order to improve students' interest and efficiency, the teaching content needs to be increased right away. Then the teaching mode should be changed. The aim of this reformation is allowing students to participate in class. Furthermore, it can make a single course into a multi-disciplinary integration the teaching platform<sup>[4-5]</sup>.

### 2.1 Increase English reserves

Computer software is needed to engineering drawing. And commands are often used in drawing software but the current mainstream drawing software comes from abroad. Many students are limited in English study. Therefore, learning more English vocabularies is the key to study the drawing software well and quickly. Not only can it save the time spent in drawing but also it improves the students' English language proficiency<sup>[6]</sup>. On the other hand, university freshmen are just from senior middle school and they have poor computer operation skills. Therefore, some basic operations and precautions need to be taught to them. These basic skills not only enrich the classroom content but also improve the students' interest in study. The hardware facilities are utilized too<sup>[7-8]</sup>.

### 2.2 Increase model and drawings analysis

The traditional teaching model is full of boring content on the textbook. In order to make students understand the drawing better and enhance the space imagination, it needs to increase the explanation of the models and show how to draw it to students so that the students can observe each line's location and type truly and closely. The explanation of the drawings allows students to better understand the application of engineering drawing courses in life and improves students' interest in learning.

### 2.3 Content update

To eliminate the old knowledge the teaching content should be updated in time. Teachers should avoid using the same

courseware by many years and the courseware content must be compatible with the development of the times, especially in the era of rapid development of information now in China. Due to the rapid innovation in various fields of technology, updating the teaching content timely can not only allow students to keep in line with society but also be conducive to the teachers to develop a responsible attitude in course teaching. At the same time, the hardware facilities should be updated by school timely to provide better service to our students.

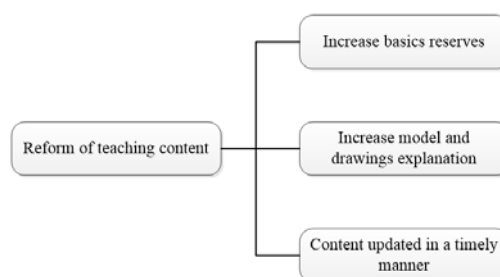


Fig 1. Teaching content reform measures

## 3. Exploration of teaching methods

At present, the main teaching method is mainly based on multimedia teaching. This is a major development in modern education. But it also has the problem of information amount large and teaching speed high. Basically students do not have the time to digestion. Through the statistics and analysis, most of the students have a little knowledge in the construction of the drawing. They can't complete the operation on the computer alone out of class too.

### 3.1 Improving students' initiative

Interest is the best teacher all over the world. In the process of education the cultivation of interest should be paid attention to in the further education. During the teaching process, teachers should give the classes to students so that they can participate in the course and become the real masters of the classroom. At the same time, it will increase the amount of lecture in the laboratory course, and move more theoretical knowledge into the experiment class. Then the students can find problems, put



forward and solve problems in practice. All of this will increase the interest of the students and finally they can have a better grasp of knowledge of engineering drawing.

### 3.2 Combination theory and Practice

In the process of teaching, theory and practice should be combined. For example, in orthographic views drawing of a cone a real one can be used for the class. So the line and point can be closely and clearly explained to students. At the same time by means of the virtual three-dimensional animation in the computer by computer software, it can make the students understand and recognize the 3D projection clearly. The combination of theory and practice by dual teaching allows students to understand the theoretical knowledge more clearly. As a result, through this method it can enhance students' interest in learning and improve study efficiency.

### 3.3 Establishment of interested groups

In response to the development concept of our university interest groups can be established. So that students in the spare time can really devote themselves into the engineering drawing study. In the classroom there can be a small range of competitions among various groups so as to enhance the enthusiasm of students. Therefore, some small games or small activities such as 3D modeling can be held so that each student can participate in the games. This not only enriches the students' after-school life but also allows students to learn more knowledge in the entertainment. Letting students learn happily in a pleasant environment is also our universities development philosophy and purpose.

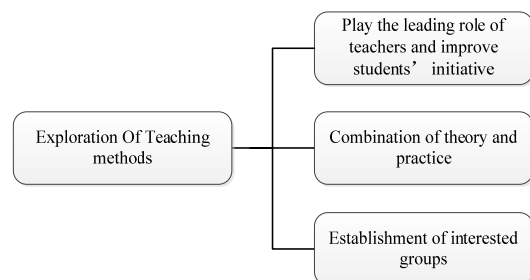


Fig 2. Teaching methods reformation



Fig 3. Student participate in engineering drawing

## 4. Conclusion

In engineering drawing teaching, it is necessary to combine the theory and practice closely. Take the theory teaching as the center and make the practice teaching as the basic point to carry on the dual education goal. Besides the foundation and the practice should be paid attention in order to make our university graduates can have a good development in the biomedical engineering field.

Finally, in medical universities the teaching reformation of engineering drawing course is a long-term arduous task. How to combine the medical and engineering closely, highlight the idea of medical engineering integration still has a long way to go for teachers and students. The teaching reformation and exploration should be carried out step by step in the future. Continuous research and summary should be done in the teaching practice.

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