Relying on the Graduate Student Curriculum Construction to Improve the Training Quality

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Abstract. Graduate education is an important symbol of the national education and the level of developmental of science technology, also bears the important task of training high level talents. For the graduate student education better to adapt to the needs of economic development and social progress, and to keep good ability to adapt, innovative consciousness and innovative ability. This article takes the curriculum construction of modern design theory and method as example, and analyzes and discusses the quality of graduate education from the perspective of curriculum construction.

Introduction

With the development of modern mechanical industry and the progress of science and technology, and constantly updated products, the market competition is increasingly fierce. In order to adapt to the progress of technology and the demand of the market, the producers should shorten the product design cycle, improve the design efficiency, and reduce the product cost, etc. As a result, the traditional product design, manufacturing and management method already cannot adapt to the requirement of the modern science and technology or market competition, we must adopt new method and new technology, so that comes out the modern design theory and method.

Modern design theory and method is one of basic core curriculums for graduate students of mechanical engineering. The task of this course is to make students master the traditional design theory, on the basis of understanding and mastering the part of the modern design theory and method, to set up using the modern design theory and method to carry on the design and analysis of the concept, to master the basic related knowledge of modern design theory, to understand the new product development process, to grasp the method of creative thinking in product development and design, to broaden students' horizon, to enhance the purpose of students' innovation consciousness, and to lay a solid foundation for future study and research.

Since the modern design theory and method is a new and comprehensive discipline, it involves more design method, theory and practice. Through the course construction and teaching reform, it becomes a problem for teachers to depth think and discuss. This paper discusses from the following aspects:

The Construction of the Teaching Content

Teaching contents and curriculum system construction directly reflect the teaching objectives and training target. It is the core of talent quality training and improving the quality of education. The construction and reform of teaching contents and curriculum system are the emphasis and difficulty in curriculum construction and teaching reform, also the actual embodiment of deep teaching reform. In the course of modern design theory and method construction and teaching reform, the emphasis is on building conforms to the graduate student knowledge structure and the innovation ability training course system and teaching content.

Combined with the actual students to build mastering the traditional design methods, the modern design methods and paying attention to practical engineering applications are strengthened. On the
setting of the course content, it becomes a comprehensive system with step by step and gradually planning course content, making the course has the characteristics of clear and system connected, also facilitates students as a whole for learning and understanding of the system. In this way, it makes the focal points stand out, also covers the full, and avoids the simple repeat with other courses. It connects other courses also relatively independent of modular curriculum system, and makes the student to gain the knowledge of modern design in both depth and breadth.

The modern design theory and method involves many contents and has a focus on the purpose of teaching in enhancing the teaching effect, considering the secondary important content, to gain the purpose of using common modern design methods to solve some basic problems in engineering practice. Focus around the mechanical optimization design, the mechanical reliability design, reverse engineering design, design of mechanical vibration, the finite element method, mechanical and electrical integration technology, mechanical system design, green design and 3d printing and other special discussion, and the requirements of postgraduate education on the course content and characteristic.

The Renewal of the Teaching Concept

The development of the society needs to have innovative consciousness and ability of creative, the special status of graduate students’ education determines the direction of the teaching reform must adapt to the needs of social development. Graduate teaching aims to train students' ability to apply the theory to find and solve problems, to cultivate students' innovative consciousness and creative ability as a starting point, to ensure that the student's main body status. Adopting diversified classroom teaching mode, to mobilize students' learning consciousness and enthusiasm, to promote the development of student ability to learn and improve, and to maximize the realization course set by the basic teaching goal. Therefore, advanced teaching concept is the guidance of the teaching method reform. Graduate teaching should keep pace with the time, and teachers should change teaching idea, by giving priority to inspired and guide, paying attention to the inquiry-based learning, arousing the enthusiasm of students' autonomous learning. Making sure innovation in learning and changes in the teaching.

Except adopt the method of heuristic teaching methods, exploring, also should according to the actual need of course content and teaching, the "case teaching" "the teaching with discussion" and "subject teaching" integration as a whole, trains the student to obtain knowledge, apply knowledge ability to solve problems, summarized the practice experience of discovering new knowledge ability, team work ability, ability to communicate with people, and the innovation ability.

Case Study

Case study is an effective way of training to improve the students’ ability. The purpose of implementing case study is in order to make the students as the main body of teaching Through self-study and group discussion, it makes students discover consciously, summary analysis, disposal and solve the specific problem. The specific function of case study is characterized by: case study is the best way to translate knowledge into skills, and it can deepen the students gain of knowledge theory system, and it also can be the instrument of theory with practice. Therefore, teachers can make use of case study to improve students' participation in the initiative and enthusiasm, and promote the improvement of teaching quality.

This kind of teaching method can promote the improvement of students' initiative, enthusiasm, co-operation consciousness. On the other hand, it can further improve the students' thinking ability and innovation consciousness. Also it requires teachers to draw lessons from the new knowledge, and improves their teaching ability to sum up experience and to adapt to the new education situation. The good teaching effect of case study teaching mainly depends on the student learning initiative, enthusiasm and participation enthusiasm.

In the teaching of "modern design theory and method", the application of case teaching method must be closely combined with the actual conditions of mechanical engineering, and apply the typical perfecting teaching case, to show the principles and methods of modern design. Teaching
case has the characteristics of objective reality, truthful and accurate, to guide students to understand, analyze and explore the method to solve the problem, to improve students’ ability to find problems, analyze and solve problems.

Discussion-Based Teachings
Discussion-based teaching will help students to discuss with each other. Questions between teachers and students are kinds of group discussions, and also contain the content of the individualized teaching. It is easy to create a two-way cycle of interaction between teachers and students. On one hand, it urges teacher diligently keep scholarly research, on the other hand, by designing the mentor it also can arouse the students’ learning and study enthusiasm, to cultivate the students’ self-study ability, independent study ability and interest in learning.

Students under the teacher's guide and help could master the methods of theoretical research as much as possible, and gain the ability to choose their own research topic, the judgment ability on comprehensive study problem, the ability of design research methods, logical thinking ability and innovation ability of science and technology and practical ability in scientific research. Through the interaction and communication with the organic combination between teachers and students, it can make teachers improved greatly and make the teachers’ role in the process of education to develop properly. At the same time, it helps students to gradually expanding and deepening of the theory of knowledge, so as to achieve depth and effective link between teaching theory for knowledge, and to form specially the knowledge structure with depth. In order to achieve through the teaching process of gradually in-depth to cultivate the ability of their independent choice of research topic, combination of knowledge, judgment ability to study problem overall, ability of design research methods, logical thinking ability, and words ability.

Project-Based Teaching
Project teaching is mainly combining with the teaching content and the development of mechanical discipline frontier problems, choosing suitable discussion topics for classroom teaching, using literature retrieval, literature review, class discussion and extracurricular practice approach to a discussing teaching mode. The students could be interested in the problem of discussion. In this way could deepen students' understanding of the teaching content, enlarging the application scope of theory, and applied to the topic ready in the future.

The Improvement of Students' Learning Interest
Teaching is a bilateral activity. The teachers in the teaching process should pay attention to the interpretation of theoretical knowledge and analysis, also should arouse the enthusiasm of students. As is known to all, no matter how carefully a teacher's explanation, it is also a failure for students don't participate into it. In the teaching process, teachers should arouse the enthusiasm of students to participate in, to make the teaching process as a wisdom game between teachers and students. In the process of teaching, teachers also can stimulate students' learning enthusiasm by academic lectures.

Regularly to Organize Academic Lectures
The academic lecture is the most effective way of learning for the graduate students to improve their knowledge and ability. Besides academic report, in the process of teaching practice, we also could hire famous teachers to get to the classroom, or employ well-known experts and professors and enterprise engineering experts to give lectures or classes about the technology in the field of development history, present situation, development trend and combined with its own scientific research, introducing the academic frontiers of knowledge, development prospect, and so on and so forth, the students showed great enthusiasm and high attention, so to get good communication between teachers and students.
To Attend Exhibitions That Reflect the Frontier Technology

We should make efforts to create opportunities for students to visit some modern design departments and to participate in the exhibitions and expositions, to give the students more chances to contact with the frontier technology and products in the development of modern science, to expand students' knowledge and make them to realize their own gap and ability, finally to stimulate the learning initiative and self-consciousness.

Graduate students’ education should give priority to self-study. Self-study ability is the basis of access to knowledge, as a mentor to guide is complementary. Graduate student's learning is not passively accept knowledge outside, but a kind of creative learning. It’s mainly in the study to find problems, to solve the problem. So the teachers should strengthen to guide students independent learning and research, so as to cultivate postgraduates to have stronger self-study ability and pay attention to the accumulation of students' knowledge, quality and ability enhancement, enable them to adapt to the rapid development of social needs.

Conclusions

Quality of graduate education is a long-term system of engineering and the graduate student’s course construction and teaching reform is an eternal theme. In graduate students’ cultivation, course construction and reform process, the class should be constantly given new content and vitality, to deeply and continuously perfect. To improve the ability of graduate students themselves, we should promote the combination of the course learning and the scientific research, strengthen innovation ability training, and explore the training mode of forming different characteristics, so as to improve the level of graduate education and to cultivate students' innovation ability, and finally make them outstanding contribution to the society.

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