Study on Teaching Mode of Non-traditional Machining Course based on Integration of Theory and Practice

Min Zeng

School of New Energy Vehicle, Nanchang Institute of science & Technology, Nanchang, 330108, China

ngzengmin@163.com

Abstract. In order to make the students more quickly enter the working state of the enterprise and achieve the seamless connection between colleges and enterprises, colleges should need to pay attention to the reform of integration of theory and practice. On the basis of elaborating the relevant content of integrated teaching, this paper deeply analyzes the main problems of non-traditional machining course in the traditional teaching mode, and also explores the teaching mode of non-traditional machining course based on integration of theory and practice. This aim is to promote the quality of non-traditional teaching and cultivate machining talents with rich theory and strong practical ability.

Keywords: Non-traditional Machining, Theory and Practice, Teaching Mode.

1. Introduction

With the development of socialist market economy, enterprises are facing a very complicated market environment. In order to maintain a dominant position, the enterprise should pay attention to the promotion of core competiveness, which essence is to introduce talents. In other words, for the enterprise market competition, the essence is the talent competition [1-2]. Therefore, as the front-line training of skilled personnel, it is necessary to combine with market demand and strengthen the reform of the integration of theory and practice, so as to transport a large number of skilled application-oriented talents for the development of enterprises [3]. However, as far as the current teaching situation of non-traditional machining in the colleges and universities is concerned, a series of problems has been appeared in many aspects, which makes it difficult for non-traditional machining teaching to cultivate a large number of application-oriented talents. So, it inhibits the development of machining industry to a certain extent [4-5]. This paper deeply analyzes the teaching mode of non-traditional machining course based on integration of theory and practice from integration of the course syllabus, module design and organizes the implementation process, so as to provide some valuable suggestions for the teaching practice of the integration of establishment non-traditional machining course based on integration of theory and practice.

2. The Existing Problems of Non-traditional Machining Course in the Traditional Teaching Mode

The non-traditional machining course is an application-oriented professional course, which cannot abandon the traditional teaching mode because of some factors. However, there are obvious differences between the traditional teaching mode and the training objective of talents [6]. With the development of the teaching mode of integration of theory and practice, the traditional teaching mode cannot meet the requirement of many students. In the face of continuous improvement of students' comprehensive quality in the enterprise society, it is necessary to innovate the teaching mode of non-traditional machining course. Next, the author will analyze the main problems of non-traditional machining course in the traditional teaching mode.

2.1 The Difference between Textbooks and Social Requirements

Nowadays, most the textbooks of mechanical processing major have edited down by the content of undergraduate textbooks. However, these textbooks lay more emphasis on theoretical and logical

reasoning. More importantly, the content of textbooks is relatively simple, which makes it difficult for students to connect it with other contents. It is difficult for students to understand independently. In term of content, the selected case pictures are also outdated pictures. More importantly, the presented way of these pictures is a two-dimensional way. However, some students are weak in spatial imagination. In the face of such textbooks, they will naturally show blindness, which is difficult to enhance students' interest in learning and is not conducive to the cultivation of mechanical processing talents. In addition, with the continuous improvement of China's machinery manufacturing process equipment, the case of textbook highlights its obsolescence. At the same time, with the constant improvement of requirement, the enterprises hope to achieve a seamless connection with the colleges and universities. In other words, the enterprises hope that the students can quickly adapt to the production environment of enterprises after graduation, so as to reduce the training expenses of enterprise.

2.2 The Old Fashioned Teaching Mode and Teaching Idea

Today, the application of the teaching mode based on integration of theory and practice is deeply rooted in the heart of the people. Owing to many subjective and objective factors, some teachers have resisted the teaching mode reform of integration of theory and practice, and they have still implemented the pure theory teaching. This kind of teaching mode cannot meet the individual needs of the whole class. The reason is that teacher often copy and explain the content of teaching materials, and don't fully consider the actual situation of students, so as to limit teaching mode in accordance with their aptitude. In addition, there are lack of some advanced teaching mode in the class teaching, it is difficult to mobilize the initiative and enthusiasm of students learning, so as to affect the teaching result of non-traditional machining course.

2.3 The Disunity between Theoretical Learning and Skill Training

The theoretical teaching of non-traditional machining course is mainly based on the explanation of concept and principle. In the classroom teaching, pure theoretical teaching is bound to affect the creation of active atmosphere in the classroom, so that the classroom will become boring. At the same time, it will also affect the improvement of students' interest in learning. In addition, students don't want to participate in the classroom teaching activities to organized by teacher, which affects the smooth development of teachers' teaching activities, then affects the improvement of teaching effect. In addition, the skill training of non-traditional machining course is only to complete a part of the processing process design and tooling design. If students don't interest in the theoretical learning, they will have a firm grasp of theoretical knowledge, so as to affect subsequent skill training. In other words, the theoretical knowledge of students is not enough solid, the corresponding skills training can only be completed on paper. In this way, it will be difficult to give full play to the role of skills training in a real sense, which is extremely unfavorable to cultivation of diversified skills talents.

3. Analysis on Teaching Mode of Non-Traditional Machining Course based on Integration of Theory and Practice

From the above analysis, it can be seen that there are many problems in the implementation of the traditional teaching mode of non-traditional machining course. With the rapid development of the enterprises, the society puts higher requirement for non-traditional machining talents. In this context, there is a huge contradiction between teaching and enterprise demand. In order to ensure the demand of talents for development of enterprises, it is necessary to actively carry out the exploration of the teaching mode of non-traditional machining course based on integration of theory and practice, so as to give fully play to the existing equipment and promote the development of machining course.

3.1 Formulating Syllabus based on Integration of Theory and Practice

The teaching syllabus based on integration of theory and practice is formulated in accordance with the actual situation of students and the actual labor demand for enterprise. Only in this way, can you

ensure the rationality of the integrated syllabus. At the same time, after the completion of the development, you need to modify the syllabus in accordance with the actual situation. The teaching object of the non-traditional machining course based on integration of theory and practice is the students, who are about to enter the enterprise. The module course should be designed to be five weeks in a cycle. As for the selection of module content, it usually takes the actual products of the enterprise as the blueprint. Under the effective guidance of the teachers, students should complete the process of product.

3.2 Designing the Course Module of Integration of Theory and Practice

Before teachers start implement the teaching of the non-traditional machining course based on integration of theory and practice, teachers should carry out enterprise research work, so as to investigate the product types and production situation of the internship enterprises and collect relevant information. Then, teachers organize students to study in group in accordance with class size. Each group has a team leader, whose main responsibility is to assign and coordinate tasks within the group and complete a set of products through group cooperation. In the first project, teachers need to explain the knowledge points and relevant mechanical processing technology in accordance with the specific task of the project. In the second project, teachers need to explain the knowledge of the non-traditional machining course in detail. In the third project, the main task of students is to implement specific machine processing in accordance with non-traditional machining file. In the fourth project, according to special task, students are required to complete the assembly, repair and adjustment of parts in accordance with assembly requirement of the project.

3.3 Designing Evaluation Process of Course

In order to strengthen the teaching process management of the non-traditional machining course based on integration of theory and practice and effectively enhance students' interest, teachers should increase the proportion of skill training evaluation in course evaluation in accordance with the special situation of the non-traditional machining course. In addition, in the selecting appropriate evaluation way, the students will be evaluated comprehensively by combining process evaluation with paper evaluation. After the project is determined, the team will work together to complete the project, the teacher will evaluate the comprehensive grade of the product according to the overall situation of each group. The comprehensive evaluation of the project is divided into two parts. Firstly, students are divided into groups for mutual evaluation. The average score of the mutual evaluation is calculated as 30% of the total score. Secondly, evaluation score of the integration of theory and practice takes up a greater proportion, that is, the product comprehensive evaluation of 70%.

3.4 The Practical Significance of Integration of Theory and Practice

In the actual the non-traditional machining course teaching, teachers have made great efforts, but there is some distance between students' professional ability and training target of the non-traditional machining. During the process of non-traditional machining course, teachers always pay attention to the non-traditional machining theory, but seldom concern the combination of theory and practice. The teachers usually explain the mechanical processing operation without interpreting the theoretical knowledge, which results in the students' insufficient understanding of the theory. Once the theoretical teaching and practical teaching are separated and completed in different time and space, the theoretical teaching will be separated from the practical training. The direct result is that the theoretical course is free from skill practice, and the practical operation cannot be supported by professional theoretical knowledge. This single teaching mode is applied in the classroom, which is difficult to simulate students' interest in learning, so as to directly affect the teaching effect of non-traditional machining technology. The teaching of non-traditional machining course based on integration of theory and practice requires teachers to focus on the practical needs of improving the students' vocational ability, and complete the typical work tasks in accordance with requirements of enterprise vocational posts. In addition, teachers should integrate theoretical teaching and practical training organically, so that students can consolidate theoretical knowledge and enhance practical

ability. At the same time, teachers should make use of systematic skill practice training to consolidate students' theoretical knowledge and practically improve their practical ability.

4. Summary

To sum up, with the rapid development of the non-traditional machining industry, demands of application-oriented talent has been increased. Therefore, as an important base for training first-line technicians, it is necessary for colleges and universities to pay attention to the reform of the non-traditional machining based on integration of theory and practice, so as to cultivate a large number of talents in line with practical. However, there are some problems in the process of teaching reform development. So, it is necessary to explore continuously and find the best solution, so as to promote the reform and development of the non-traditional machining course based on the integration of theory and practice.

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