

Researching on the Integrated Teaching Mode of Graduation Project, Internship and Employment for Automobile Major

Wei Liu*, Zhen Cai, Zebin Xu

School of Automotive Engineering, Yancheng Institute of Technology, Yancheng 224051, China

Abstract: With the rapid development of automobile industry in Yancheng, automobile manufacturers demands more and more graduates in automobile major, and pay more attention to their practical ability. Under these circumstances, the integrated teaching mode of graduation project, internship and employment for automobile major is presented. By selecting the topic of graduation project based on job content, teaching with double tutorial method, and establishing the practice platform of school-enterprise cooperation, it is possible for the graduates to improve their ability of combination between theory and practice, and can shorten the distance between school training and social needs. Win-win relationships between graduates and enterprises have been established over several years under this integrated teaching mode.

Keywords: Integrated teaching mode, graduation project, double tutorial teaching method, practice platform

INTRODUCTION

In recent years, with the rapid development of the automobile industry, social needs for vehicle engineering professionals are increasing; many local colleges and universities have opened automobile major [1]. In response to development of automobile industry led by Dongfeng Yueda KIA in Yancheng City, Yancheng Institute of Technology has set up an automobile major in 2010 to meet social needs for automobile professionals. During these years, with the expansion of our automobile major, graduates from Yancheng Institute of Technology have become the main force of Yancheng automobile industry [2]. But because the teaching environment is not perfect and the time of discipline construction is short, graduates usually cannot integrate the theory with practice, so they are required an internship for six months to familiar with their work, which the enterprises do not want to see. So, it is desperately need to improve the competitiveness of graduates by reforming the teaching mode.

I. PROBLEMS IN GRADUATION PROJECT AND INTERSHIP

Graduation project and internships are the most important parts for cultivating students' practice ability and comprehensive quality before graduation [3]. With the rapid expansion of the scale of enrollment, the organization of graduation project and internships

is becoming more and more difficult. It cause the teaching quality cannot be guaranteed. In order to improve this situation, integrated teaching mode for automobile major is presented, and we shall realize the existing problems in the process of graduation project, internship and employment first.

A. Graduation Project with Impractical Topic

Selection of the topic is one of the important links to graduation project which can ensure the quality of graduation project. As the number of students is increasing, there are more and more graduation projects with impractical topic because of teachers' lack of experience in related scientific research subject [4]. These graduation projects just need to do some data collection and analysis, and has nothing to do with the students' job after graduation. Students do not receive comprehensive training, so there's no capability improvement to integrate theory with practice.

B. Internship without Practice

As enterprises restructuring, the training base of Yancheng Institute of Technology has no longer existed, Internships can only rely on the automotive enterprises in Yancheng. With the increase of the number of students, enterprises worry about the internship may interfere with normal order of production and affect economic benefits, most of the enterprises just provide visit chance which will not let the students really involved in production practice,

Corresponding author: singo5151@163.com

students cannot get corresponding professional skills training, and internships tend to be more formal [5].

II. ANALYSIS OF RELATIONSHIP BETWEEN SCHOOL TRAINING AND SOCIAL NEEDS

To grasp social needs for graduates in automobile major, determine the content of school training, arrange the content of graduation project and internship, we conducted an investigation on two enterprises: Dongfeng Yueda KIA and Aoxin new energy automobile company, which have partnership with Yancheng Institute of Technology. The quality that enterprise requires can be summarized as shown in Figure 1.



Figure 1. Requirement for the quality of graduates.

Solid professional skills are the prerequisite for work. Nowadays, academic record is not the only measure of graduates; the enterprises also concern about whether graduates can apply theoretical knowledge to the production practice [6]. To adapting quickly to the work, students in automobile major should master the ability of automobile design and the use of professional software, such as CAD, CATIA, and ADAMS. So they can deal with daily production, research and development needs of the enterprises.

Good team spirit is needed throughout the work. The progress of enterprises rely on teamwork, personal development is also inseparable from the team. Development of a new production needs the cooperation of the whole team, so enterprises attach great importance to the coordination and cooperation between team members. So, we should focus on developing students' consciousness of the teamwork during graduation project and internship.

Innovation consciousness is the core of progress [7]. The automobile enterprises demand general design capacity of automobile in the past, but now innovation is needed as the core of graduates' capacity. Automobile industry is becoming more and more competitive, only by innovation consciousness of the employees can do things no one else is doing. It is the only way to improve the core competitiveness of enterprises which employers want to see.

Based on the three requirements upon, it is necessary to put forward a new teaching mode which can improve the students' practical ability after learning theory knowledge. Therefore, the integrated teaching mode of graduation project, internship and

employment for automobile major is presented. Combining graduation project, internship and employment, the ultimate goal is to make the students familiar with the work after as soon as possible graduation, and improve the comprehensive quality of students. This "pre training" will cause school training and social needs closely linked, to achieve a win-win effect.

III. SYSTEM OF THE INTEGRATED TEACHING MODE

In the past, the graduation project, internship and employment are separated, the fourth grade students have to done these three tasks before graduation, and therefore the students are distracted. To solve this problem, the integrated teaching mode of graduation project, internship and employment for automobile major is discussed. The system of the integrated teaching mode mainly carried on the exploration and reform in the teaching method, as designed, is shown in Figure 2.

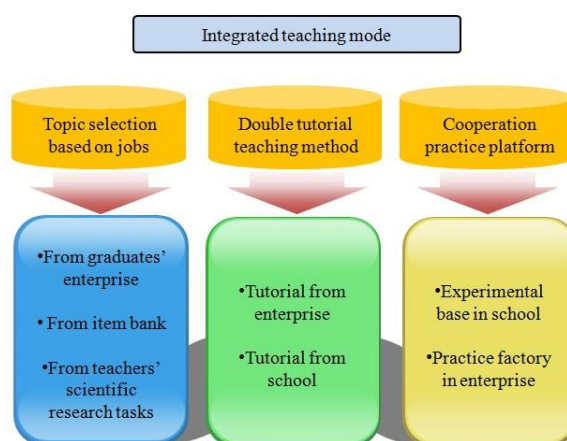


Figure 2. System of the integrated teaching mode.

A. Topic Selection of Graduation Project Based on Jobs

In order to improve the teaching quality of graduation project, we teachers must choose the proper topic of graduation project which close to the actual production based on students' job after graduation. On one hand, proper topic can make students familiar with their work as soon as possible; on the other hand, it also can improve the students' enthusiasm and initiative. Principle of choice of graduation project topic is based on the following conditions:

First, the situation those students have found a job before graduation project. This part of the students' graduation project topics are derived from the enterprise. Under the guidance of the teachers' training, students can apply the theoretical knowledge to

practice ability, and can be familiar with the work after graduation. Five students signed an employment agreement with Dongfeng Yueda KIA in 2009, according to their different positions, different topics such as automobile part design, coating process design, workshop management are chosen. The students realized the importance of graduation project, worked hard and completed the graduation project, played a good “pre training” effect at the same time.

Second, the situation those students have not found a job yet. This part of the students' graduation project topics are derived from item bank, students can choose proper topics according to the employment intention and interesting subjects, which will lay a good foundation for further employment. The item bank consists of graduation projects which topics are representative, practical and comprehensive in recent three years, such as the clutch, the transmission, suspension, etc. Students can be more comprehensive understanding of automobile structure, automobile theory, and automobile design, whose comprehensive quality can be improved.

Third, the situation those students have special interest in teachers' scientific research tasks. Students usually have certain research foundation to the subject; it will help a good teaching effect during graduation project. Yancheng Institute of Technology participated in Formula SAE-China in the past two years; students joined the team for the love of racing, and familiar with design and manufacturing technology of the formula car, these students do further research during graduation project, and usually can obtain excellent graduation project.

B. Teaching with Double Tutorial Method

In order to improve the teaching effect of graduation project and internship, the double tutorial teaching method is presented. It means that teachers from school and tutorials from enterprise guide students together. Most teachers are familiar with professional theory, while tutorials from enterprise are good at engineering practice. Under the guidance of double tutorial teaching method, students can integrate theory with practice better; understand the mode of operation of enterprises, and will strengthen the link between school and enterprises.

In addition, the performance evaluation criteria of double tutorial teaching method have been put forward: students can complete their graduation design in enterprises, and need to report the work progress to teachers regularly. Then teachers evaluate students' achievement according to evaluation of tutorials from enterprise. For the students with slow progress of graduation project, we strengthen the management of the process to ensure the quality of

graduation project and internship, and enable the students to graduate on time.

C. Establishing Cooperation Practice Platform

To improve the students' practical ability, it is necessary to establish the school-enterprise cooperation practice platform to meet the conditions required by the integrated teaching mode. And now there are two modes of the cooperation practice platform: experimental base in school and practice factory in enterprise.

Experimental base is established by Yancheng Institute of Technology, and guided by tutorials from enterprises. School has management right, while enterprises have the right to use. The experimental base can provide flexible conditions, in order to meet different graduation projects. Practice factory is established by enterprises, and supported by Yancheng Institute of Technology. Practice factory is relatively independent from enterprises, but can provide a real operating environment for students. So students can grasp the enterprise production process, while internship does not affect the production order.

Establishing cooperation practice platform can effectively promote the students' innovation ability and practice ability, increase their employment competitiveness.

IV. CONCLUSIONS

In this paper, the integrated teaching mode of graduation project, internship and employment for automobile major is analyzed. Three aspects: principle of topic selection, double tutorial method and establishment of cooperation practice platform has been discussed. The final goal of the integrated teaching mode is to solve the problems that students' lack of practice ability. The integrated teaching mode led a 5% rise in employment under in nearly three years, and enterprises are satisfied with practical ability of the graduates.

ACKNOWLEDGMENT

This article is supported by 2014 education teaching reform project of Yancheng Institute of Technology (JY2014b05).

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