New Technology Help Creation in Mechanical Engineer Training

Chunhui Lu

ABSTRACT

People do effort to get career base by studying in universities. With the continuous development of human society, it can be found that difference fatal is most based on the training results. Many students are good at design by software on computer, but they aren’t good at using Engineering theory in their working processes. To change this state in mechanical engineer major, new technology which did not appeared in textbooks was used and training projects made students not only got high theoretical level but also practice experience. The students learned new technology and got cooperation spirit in team work and independent thinking in creation project training. New technology leads the students realizing the direction of the society progress, and the creation training is made sense to people in project.1

KEYWORDS

New technology, mechanical engineer training, creation, theory and practice together

INTRODUCTION

Nowadays, in area of mechanical engineering, new technology is a great power to lead industry goes ahead, especially to make in China 2025. University

1Chunhui Lu, School of Mechanical-Electronic Engineering, Hohai University 200, Jinling Beilu Road, Changzhou, China.
department supplied engineering professors and students with new technology equipment to help them solve problems.

New technology leads the students realizing the direction of the social progress, and the advanced technology applied good chance for people who prepared for the professional career. To widen student’s field of vision, make the principles they learned into operation feeling, students shall practise in project. That is a method of ‘theory and practice together’, which helps students learn more like in factories in university. This concept was put forward by Yangming Wang, a famous philosopher in China in Ming dynasty.

Many Chinese students seldom think about something out the textbook. They can calculate difficult equations and draw models with software. [1] But this is not the correct state to a mechanical engineering student. If a person learned theory but no experience, he will cost long time to be an engineer. [2] Practice trains mechanical engineering students graduated confidently. After they analyzed to projects, compare mechanisms, they can feel interest in the study period come to truth. [3]

NEW TECHNOLOGY IS A POLE OF MODERN INDUSTRY

In this decade, technology goes to new generation faster than before. The sooner one grasps new technology, the better he can do. New instruments and facilities appeared in campus constantly. If projects need use some expensive facilities, the researcher can ‘borrow’ these facilities in cooperation companies to try, such as solar-energy test or other new technology. Major research can simulate a model by software, but the results often not the same as it showed on computer. So mechanical engineering research needs real objects and fit all parts together to prove the design is good. For instance, the 3D Modeling technology and numerically-controlled machine tool belongs to expensive facilities 10 years ago, while was widely adapted by research institute and colleges now.

Many students know how to write a perfect answer, how to get the highest scores in a test. What’s more, people who only master theory could not work very well in job. As the Excellent Engineer Plan was carried out, students must face to practice in college projects in campus or factories. Students can give assistance to the lecturers out of class, too. They learned assemble parts or realized the principles about machines and familiar new technology what is a representative of the progress to times.

At the same time, students had new idea and they want to finish their design. New thoughts must come true as fast as it can be. They applied a series of national or provincial creational projects which were set for university students. Some projects were very practical, which associated with some troubles not solved. Students have no example to copy, thus they used principles they can remind, thought all sorts of ideas to make the products by themselves as a team. If the affection is not as design, students will redo until the works is perfect.
NEW TECHNOLOGY AND ‘THEORY AND PRACTICE TOGETHER’

In America, students study theory in class, practise in project, and they learn a lot in teamwork. [3] This is good to students who need more practice. The creation activity course out of class adapted this method in our college. John Henry, a famous educator of UK, thought the really education has a foster talents and intelligence intention. [4] A project is a long term work. Students often debate, design and finish the metal cutting. They learn knowledge not just repeat and remember it but make theory and practice together. [5] Almost every student in project learned operating machines and design 3D models by software. They will have one more certificate except courses, which is Engineer Certificate. But this certificate is not essential for the Bachelor’s degree. All sorts of training made students known about the engineering profession, made them gotten technology, while is not repeat just for skill. [6][7]

In national or provincial creation projects, one or two professors will guide them finish these projects. Students can learn advanced technology and grow up as a good engineer. Some competition needs students finished all parts by themselves and cut some parts in site to check the technology level of them.

New Technology in Training

For example, the 3D Modeling technology can make parts easier and rapidly in laboratory. So many projects use the lab before took part in competitions. Nowadays, the 3D Modeling technology is widely applied in many fields so that the 3D printers are cheaper than 10 years ago. It can be used to show a new mechanism or exhibit a new thing with small size rapidly. The 3D Modeling technology is thought as the most suitable way to make models in engineering area while prevents wrong design cost more fund. By the way, parts shaped by the 3D Modeling were cheaper and faster than use the numerically-controlled machine tool. One shortcoming of these cheap parts is the material of 3D Modeling technology often has low strength. So these parts can be exhibiting in some competitions but can’t be used long time in facilities. Students in this lab can learn 3D Modeling technology and other technology in help doing tests by spend large quantity time. They knew more advanced technology with professor who had chance to grow up as a good engineer in the future. In the end, students in projects can use these 3D printer familiar, and they conducted parts with numerically-controlled machine tool in an easy manner. Some national competition needs students finished all parts by themselves and cut some parts in site to check the technology level of them.

As the practical necessary, some robots were put into these projects. Students researched program and operated the robots won many prize in competitions in the world.
Creation in Projects

Projects will arouse people’s creation capability. In the progress, students were obliged to learn and to think a series of questions. So independent thinking is the most important characteristic to have a creation activity. All the practice not had a goal to train people’s familiar operation, but for talents who can solve complex problem. [8] For training the creation talent, the students had a target that they must find a new thought or a new plan not same as old one when they analyze the project or a problem. Each month the professor would hear about the progress, and students must prepare for questions. After being trained like this, students can afford high pressure when they go for an interview or to adapt themselves to new circumstances of work. After discussion in group and show the models on computer, the final plan was done exactly. When the plan is worth to finish, most time the group will apply for a patent to protect the thought.

Everyone in the group shall get high score after they finished creation and pass the project course. Thus, when students began their career or pursued a master’s degree, they all were welcome.

CONCLUSION

Compare to training in one decade, there is a great advance in mechanical engineer major. Finally, engineering students trained in project is better than who didn’t do. Independent thought and useful training help students to grasp main points in knowledge and solved problems. This method made students learn theory to practice and got a lot of production. In past 5 years, the number of patents applied by students is growing up about twice than the beginning. Last year (2017), the patents belong to students attained to 23 and they took part in 70 patents in college. More than 50% students in the group went to pursue the master’s degree. So new technology prompts students to invent and create very effectively.

REFERENCES