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Research Article

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Research of improving the electrical specialty student's experimental capability in high agricultural university

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ABSTRACT

Institutions of higher learning are the important base of training students with great abilities. Under the current environment of market, improving the student's experimental capability of electrical specialty could cultivate the innovative consciousness and help students obtain employment. In a word, it could benefit for both the students and factory or corporation. To cultivate students to have practical entry level engineer, it initiates the "311" Credit System of undergraduate talent cultivation model in Agricultural University of Hebei. The "1+3+N" Pattern builds a "one center, two cycle, three levels" of practical teaching system. Aiming at the practical things of our electrical specialty, the necessity of electrical teaching was definitudes, and the approaches of improving the electrical capability of the student were explored. From the implements of the innovative countermeasures, it can make students' better development and improve their ability.

Keywords: Market environment, experimental capability, innovative consciousness.

INTRODUCTION

With the development of market economy, the education system must adapt the requirement of social development and demanding. Corresponding to the market, choose the personnel training to achieve the best re-sources. Engineering undergraduate basic education goal is "to cultivate students to have practical entry level engineer". Talent cultivation is the fundamental task of the universities; quality is the lifeline of the school. To cultivate applied talents, reforming practical teaching to improve the experiment ability is the key. The laboratory is to train the frontier innovative talents; improving experiment ability will benefit students for life, to the electronics students more so. Since 2002，the undergraduate students of Agricultural University of Hebei, the implementing the credit system teaching management system, the construction of the "311" Credit System of undergraduate talent cultivation model, as shown in Fig. 1, in accordance with the " 1+3+N" Pattern and the construction of teaching system, building a "one center, two cycle, three levels" of practical teaching system [1].

From the obvious can see the special status of practice in Agricultural University of Hebei. The practice teaching is to promote the knowledge structure, ability structure and scientific thinking cross composite effect, in the cultivation of students' comprehensive qualities in extremely important position. Strengthen the ability of experiment played a crucial role in training students' innovation consciousness, improving the ability of analyzing and solving problems [2].

EXPERIMENTAL SECTION

Existing Problems

The "electrical" including professional electrical engineering and automation, electronic information engineering, agricultural electrification and automation, automation , measurement and control technology and instruments etc, in the college of mechanical and electrical engineering of Agricultural University of Hebei. A considerable number of

courses in the professional teaching programs need more practice, such as circuit, analog electronic technology, digital electronic technology foundation, electrical control technology, Programmable Logic Controller , motor and drag, signal and system, Electronics Design Automation Technology. Only relying on the classroom, theoretical teaching cannot meet the requirements; more practice teaching can enhance students' experimental ability. However, the teaching process exist a lot of defects. For example, students lift up his hands and ask the teacher for help without any thought when debugging circuit has any problems, if the teachers help, the students will be not initiative to resolve. So educators must make students produce dependence; in addition, the students operation sequence is not standardized, arbitrary, equipment damage does not say, lack of security awareness on future work safety no protection at all; as the electricity class student, do Alternating Current experiment on "Electrochromic", virtually restricts students' experimental ability. Both teachers and students have a responsibility for the existence of these problems [3].

Necessity of the Experimental Teaching

Experiment teaching is not only o simple test and complement for the theoretical teaching, but the main part of the

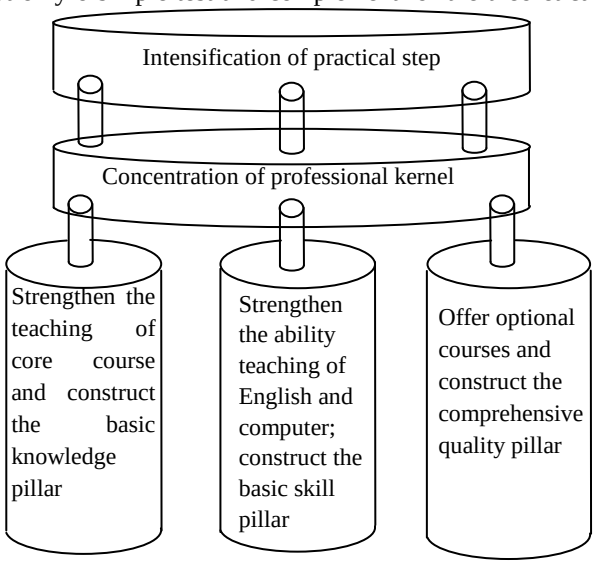

Figure 1. The construction of the "311" Credit System of undergraduate talent cultivation model

teaching. Theory teaching and experiment teaching are two systems not only interdependent but also supporting. Most colleges pay more attention on the theoretical teaching, experimental teaching in a smaller proportion. In this way, for the limited experimental class, students can only arrange experiment for testing. Ignoring students' experimental ability training, students' experimental skills, students' understanding of practice. When graduates go to work, many college students find it difficult to adapt to the production activities of enterprises, the enterprises let graduates to have specialized job training and practice, which not only increases the personnel cost of enterprises, also delayed the college students' employment time. In addition, the market conditions, enterprises play the bottom to spend a lot of manpower, financial capacity to do the work, are likely to face a new danger, students will find other jobs.

Experiment teaching can make students abstract in-formation into three-dimensional image thinking, is a process to improve the quality of learning, learning interest to improve, but also can put the theory into practice; Experiment is the source of innovation, to cultivate the students' comprehensive quality has distinct effect; Experimental teaching helps to cultivate students' innovation consciousness, improve students' practical ability as well as the analysis problem, problem-solving ability, to pro-mote students' knowledge into ability and high efficient transformation, enable students to improve the quality, we must pay attention to experimental teaching.

RESULTS AND DISCUSSION

The Methods of Improving the Experiment Capability is below.

Adding Comprehensive Experiment Design

By the foundation, verification experiment, students can master the use of the equipments; deepen the under-standing of the knowledge learned in the class. Comprehensive experiment design will combine the students' theoretical knowledge and experimental skills and can solve some complex problems. Comprehensive experiment design will put forward the experiment project ac-cording to the laboratory equipment status, with practical principle by the members of the project group. For students to choose, students will be independent to design debug. Of course, students can also

design their own experiment, but must pass through the teachers' argument, if the design is reasonable and feasible, they can carry out the experiment. As a professional basic course" circuit", we set the two order RC network frequency characteristic, a series resonant circuit, linear system frequency characteristic and comprehensive experiment design. On the comprehensive design experiment, students need to de-sign programs by computer simulation, through the simulation to determine the connection mode and the choice of parameters, to be correct after the actual connection, complete content, avoid unnecessary waste. Comprehensive experiment design to cultivate students stand on one's own thinking ability, improve the design level, practical ability and the ability of solving problems independently [4].

The Implementation of Independent Experiment Assessment System

Now, university students generally despise training experiment skill, existing problems have grandiose aims but puny abilities, most of the students do experiment only to deal with the matter. We found that: in the process of experiment, many students are accustomed to "follow", do not pay attention to conduct independent operations training, even though the automatic hands only "according to fill a prescription" knows its, however did not know why; in addition, for many people to complete the experiment together, students lack the necessary division, mutual dependence, or act as a recording member role, moreover simply aside "to watch"; preview report copy books, experimental report copy your classmates. Therefore, only by experimental complete sequence and experimental reports given experimental results obviously exist some uncertain factors, easy to give up the experiment fans enthusiasm, make some students to experiment with boredom, sloppy. Examination reform is imperative [5].

In order to evaluate the students' experimental ability objectively, we must develop and perfect experimental results evaluation system. For example, in electrical engineering and its automation and agricultural electrification and automation specialty of electrical control technology and Programmable Logic Controller curriculum, 16 hours experiment in the teaching plans. We put the experiment examination divided into grades and two of your final grade, respectively 60% and 40%. For the verification experiment and some relatively simple design experiment as usual experimental results, to training students the basic experimental skills. The final examination, students from the test database draw lots to decide the content of experiment, within the time specified in the field operating independently, by teachers or experimental teachers on the spot marked, gives the assessment results. Practice has proved that: through the assessment methods, the students begin to attach importance to experimental teaching, help to improve students' learning enthusiasm.

Actively Participated in the Various Competitions

"Knowledge innovation is the impetus of the social progress". Learning knowledge from books is important, but the students' innovation ability training is more important. Central Committee of the Communist Youth League, Ministry of education, Ministry of information industry organization hold a series of contests, such as the National Undergraduate Electronic Design Contest and the" Challenge Cup" national university student extracurricular academic works of science and technology competition, to improve the students' practical ability, innovation has a great help.

National Undergraduate Electronic Design Contest is the Ministry of education and the Ministry of information industry jointly sponsored by the division of personnel for college students' mass scientific and technological activities, students' innovation ability. Aim to the close combination of teaching practice, emphasize the basis, focus on the forefront of principle, to promote electronic information specialty and curriculum construction in higher school, guide in teaching and training the students' innovation ability, cooperation spirit; to strengthen the training of students' practical ability and training in engineering practice, enhance students' practical problems of electronic design, production of integrated ability; to attract, encourage the students to actively participate in extra-curricular activities in science and technology, talents for talent showing itself to create the conditions. Our school leaders and educational administration department and other related departments should fully realize the electronic design contest in the cultivation of innovation ability the important role, have been the three funded Institute of electrical and mechanical services participated in the tournament, won the "Hebei division first prize", "Hebei division second prize" and " successful participants" number. Although obtained some results, but because of lack of experience, achievement is not very prominent. Organizing students to participate in electronic design contest, students' ability, innovation ability, psychological quality, team spirit has been improved, also promoted the reform of experiment teaching and teachers' comprehensive quality enhancement, embodies the "innovative education" concept of talent; increase the market situation the employment competitiveness of students.

"Challenge Cup" national university student extracurricular academic science and technology work competition is by the Communist Youth League Central Committee, China Association for science and technology, Ministry of education, the National Union of students organize by college students extracurricular academic science and technology activities are oriented, demonstrative and mass contest. Our school students actively participate in, he won

the third prize, the excellent organization prize number. The school, electrical and mechanical engineering departments have also organized a series of games, such as" running the remote control car" production com-petition, not only enrich the students' extracurricular life, but also improve the experiment ability.

Open the Laboratory to Students

Open the laboratory, is refers in the experimental teaching, open, make students become the user, to pro-vide students with the initiative to obtain knowledge and skills with a good environment. Open laboratory, not only equipment can give full play to the role of using, to be able to exercise students to give full play to the independent thinking, the ability to analyze and solve problems, to cultivate students' autonomous learning ability. Opening laboratory should highlight student's main body status, emphasizes the students' active participation, research and diligent hands. Students according to their own time to arrange experiments, according to its own development direction, interests and hobbies to choose experiment, study and grasp the initiative, stimulate learning enthusiasm can improve students' ability and their innovative consciousness.

The Establishment of Training Bases

To establish contact with Agricultural University of Hebei Logistics Group hydropower management center, that students can practice conveniently in school internship. In addition, also established a number of off-campus practice base (such as thermal power plant in Baoding, Wuqiang Bureau of prefectural electric power, Electric Power Automation Research Institute), for students to practice and create a good campus environment. Students by taking part in practice base for production management, management, testing, operation and other aspects of the work understand the base work contents, management methods, the scope of business and other aspects, students open vision, enhance the sense of responsibility [6].

CONCLUSION

Experimental teaching is very important for professional teaching in high agricultural universities. Under the market form, the students' experimental ability will directly affect the quality of talent, to the schools, units and individuals have played a decisive role. We must guide well, pay attention to the students' experimental ability; teach students according their aptitude, training their hard-working spirits. Continuous innovation, reforming of experimental teaching mode can make students' better development and improve their ability.

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