

The Construction of Innovation Oriented Talents Training Model for the Automation Specialty in the Civilian Run Colleges and Universities

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Keyword: Civilian run colleges and universities, automation; innovation; training mode; reform.

Abstract. Cultivating innovative talents is the core goal of higher education, and it is also the key point of the research on the education reform in Colleges and universities. This paper analyzes the restricting factors of automation specialty education in Colleges and universities for cultivating innovative talents, from the curriculum system, theory teaching, practice teaching, reform the teaching evaluation mechanism and training mode of innovative automation professionals.

1. Introduction

China's "Higher Education Law stipulates:" the task of higher education is to cultivate talents with innovative spirit and practical ability. The CPC Central Committee, the State Council "on the deepening of educational reform, comprehensively promote quality education decision pointed out:" higher education should pay attention to cultivating students' innovation ability, practical ability and entrepreneurial the spirit of ". Therefore, cultivating innovative talents is the core goal of higher education, and it is also the key point of the research of the education reform in Colleges and universities.

2. Current situation of Automation Specialty Education

Automation specialty is a strong adaptability, wide application of engineering technology disciplines, with a wide range of disciplines, extensive extension, the characteristics of comprehensive cross. Our country in the field of automation technology research started earlier, but the real automation as a professional education into the university classroom is relatively late, there are still some unfavorable factors restricting the automation of thick foundation, wide caliber, versatile, cultivating innovative talents of comprehensive.

First of all, in the curriculum, the basic course of automation specialty basic courses and other professional electrical information is basically the same, the curriculum setting is single, automation does not reflect the broad requirements; theoretical courses and experimental settings, and engineering practice of the course from the students, the heavy theory, light practice, practical ability and the ability to solve practical problems is not strong. Second, in theory teaching, basic pattern of "cramming" is still in the classroom. Students focus on the teachers of ready-made knowledge, begins with the problem based on the discovery, research and reflect the subjectivity of teaching atmosphere, the quality expansion stage not broad, innovation ability is not enough[1]. Third, in the teaching practice, the course of the corresponding experimental courses between the lack of independence, comprehensive application of the experiment; experiment to verify the theoretical content, difficulty is low, too detailed instruction, students rely on teachers, lack of independent analysis and problem solving ability; the relative concentration of curriculum design time, unable to meet students at the same time to practical operation and debugging, can not achieve the desired results. Fourth, in the teaching evaluation mechanism, examination is still the main way of evaluation, the evaluation mechanism cannot accurately reflect the teaching effect and teaching quality, can accurately measure the students' real ability and quality, more stifling the students the spirit of active learning and creative ability.

3. Reform of innovative talents training mode in Automation Specialty

Innovative talent training mode is the basic orientation of the education system under the guidance of the new educational ideas and the new educational theory, in order to cultivate the comprehensive development of innovative ability[2]. The following only from the automation of professional curriculum system, theory teaching, practice teaching, evaluation system and other aspects of the reform, the construction of automation professional innovative talents training mode.

3.1 Reform of curriculum system

The curriculum system stipulates that students must learn the content, determines the student's knowledge level and knowledge structure, determines the student's development direction, and affects the realization of the educational purpose[3]. To cultivate innovative talents of automation of the curriculum reform is according to the regional economic status and the advantages of professional school characteristics, and combined with the students' interest and future development requirements, realize the professional direction of the diversity and unity of the system. Because of the increasingly close relationship between automation and other related professional, it is necessary to have a wide knowledge system. Therefore, in the automation and basic courses of the curriculum group can adopt the way, such as the "motor and drag", "power electronics technology", "motion control system such as motion control courses;" the factory electrical control technology ", " programmable controller ", " power plant "as a kind of industrial control course group;" digital signal processing ", " automatic test system ", " automatic detection technology "as the control class course group, also can set the information of course group, NC machine and human courses, which reflects the system in each direction. Students can choose according to their interests in a curriculum group and in one or more courses, this major reflects the depth, increase professional knowledge through the minor, achieve the thick foundation, wide caliber requirements.

After the reform of the course system for automation specialty has the following characteristics: one is the automation is composed of a number of professional direction, a professional direction and is composed of a number of courses, one of which is a major curriculum group, supplemented by other courses group (optional); Other (optional) repair course group; two is each course group represents a professional direction, require each professional direction of the course group must be few and fine, so that students can get into more areas; Three is the curriculum group of the main, secondary division of the relative, under certain conditions can be transformed into each other.

3.2. The reform of theoretical teaching mode

Innovative automation professional training in the teaching mode, to advocate individual guidance and teaching, emphasizes the teaching focus from how to teach to how to learn, prominent ability and intelligence based on knowledge.

In the reform of the theoretical teaching mode, we must first emphasize the teachers' subjective initiative. Generally speaking, the requirements of the material products are standardized, and the spiritual products are required to be personalized. Because each teacher's thought, temperament, knowledge structure, aesthetic interest and teaching ability is different according to different practical teaching materials and students, will have a choice and emphasis on the teaching methods, different teaching characteristics and teaching style can be parallel, should not be embedded in a box, as long as the effect is good, high quality. Is a good method. Second, only to change the teaching materials, students do not study practice. According to the students' learning attitude, learning ability, learning method for guidance, the implementation of happy teaching, fully mobilize the enthusiasm of the

students, let the students grasp the key to learning, let the students not only "learn", more it is important to "love to learn, learn, learn".

(1) Strengthening the matching of teaching materials and courses is the basis of high quality teaching

Nowadays, there is no lack of the teaching process in Colleges and universities. Some people have noticed that after graduation, they don't know what is the use of the book. This to a certain extent, the performance of a teaching curriculum is not perfect, "there is no class book" is a waste of knowledge. Teaching material is the basis of teaching, the cultivation of innovative talents in the automation process, obviously cannot do without this foundation as bedding. Colleges and universities in the curriculum process, attention must be paid to the match involved planning courses and curriculum, so that each student can get the most basic reserves.

(2) Perfecting teaching management system is the way to cultivate innovative talents

A college teaching management system, a direct impact on the quality of teaching in Colleges and universities, effective standardized teaching management system in a subtle and also improve the quality of teaching. In order to develop a "thick foundation, wide caliber, heavy capacity, innovative talent quality, students should do the training and assessment module, a practice, a practice test. On the one hand, from the teaching work of the teachers' teaching standard and strengthen the rationality of curriculum setting; On the other hand, from the students' professional assessment, until the final graduation practice and graduation design have developed a corresponding teaching management system, from many aspects to ensure the quality of the professional personnel training.

(3) Breaking the single teaching form, improving the quality of classroom teaching

The spirit of "wide caliber, meet the requirement of cultivating innovative talents, University Teachers in the teaching process teachers should break the traditional", students listen "teaching form, reflect the teachers and students in the classroom, learning interaction between students and students, actively use multi media teaching methods to stimulate students' interest. In order to stimulate the spirit of innovation.

3.3 Reform of practical teaching mode

Practice teaching mode reform, the first is to pay more attention to the practice teaching, the practice ability training is as important as theoretical knowledge education. Automation specialty has the characteristics of combining theory and practice, innovation comes from practice, from the cultivation of students' innovative spirit, practical teaching is more effective than theoretical teaching, and it can stimulate students' creative potential. Second, for such as circuit, analog electronic technology, digital electronic technology, electrical engineering and other basic courses of the validation experiment, the need for students to master, in order to accumulate practical experience, solid basic skills; Third, in the high grade stage, in mastering professional and professional knowledge on the basis of offering some skills test, make students able to complete their own debugging from the design, manufacture, testing, all the students. Fourth, set up some open laboratory, let the students to design some comprehensive, closely combined with the practical engineering problems, large scale test has certain properties, this kind of experiment is not attached to a specific course, but many kinds of knowledge fusion, according to the different topics of the students, with different interest the independence of the distinctive, can stimulate students' creative thinking, improve research skills. Fifth, encourage and support the students actively participate in school activities, such as the "second classroom": college challenge cup contest, electronic design contest, to exercise their practical ability, innovation ability and team cooperation consciousness.

4. Perfect practical curriculum, stimulate creativity

Practice teaching plays an important role in automation, not only to practice teaching, but also to improve the practice teaching. Not implemented or is not fully implement the engineering practice teaching, like "empty talk", is of no use. In the process of College automation professional personnel in the personnel training quality, and practice of curriculum setting and situation have a great relationship. The combination of the actual situation of the current teaching practice, made the following recommendations:

(1) Strengthen the students' main courses and laboratory practice innovation, so that students in the course of the curriculum have a more profound understanding;

(2) In practice course, should pay attention to the application of advanced equipment in the industry to the practice of teaching, so that practical courses to keep up with the pace of modernization;

(3) Teachers should strengthen the practice teaching content set, the specific application to make students better understand the course content in practice. Do the "double" mentor will be linked to a complete professional courses, so that students have a overall understanding of the professional of innovative practice;

(4) To encourage students to participate in extracurricular work internship activities, the school applied to practical work to exercise their ability to work, so as to stimulate the spirit of innovation, to lay the foundation for after graduation and the unit of "zero docking".

5. Reform of teaching evaluation system

Automation is a strong professional practice, the teaching evaluation mechanism to diversity, in addition to the traditional closed book and book examination form, should be added to the curriculum design, oral defense practice operation and writing form, concrete can be selected based on the characteristics of different courses. In the evaluation of the content, not only contains the basic theory, basic knowledge and basic skills, but also to be involved in analysis and solution to the actual problem; in the evaluation form, less objective questions some of rote learning, more subjective, comprehensive questions, in order to give full play to students' subjective initiative in the evaluation of time; don't focus, once at the end of the course, but in the teaching of middle section at the end of the stages. In this way, not only can reflect the true level of the students, but also reflects the innovation ability of students.

6. summary

Cultivation of innovative talents of automation is a systems engineering, needs of students, teachers, the participation of the management of the need to continue to explore and summarize the experience, and summarizes the experience to be out of traditional mode and only continue to explore, to cultivate more innovative talents to meet the needs of society.

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