

## **Reform Strategy of Single Chip Microcomputer Principle Course Based on the Training Mode of Applied Talents**

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*Abstract: Single chip microcomputer principle course is a required course of electronic information specialty in Colleges and universities, and it plays a fundamental role in training students' ability of computer control application and chip application program development. Single chip principle course of practice is strong, through the single chip microcomputer principle of learning, master computer control theory, and the development of the corresponding products. The current university of curriculum teaching of microcomputer principle focuses on the theoretical study, cannot meet the demand of cultivating application oriented talents, the need for education reform in the curriculum, autonomous learning platform, through project driven training platform to enhance students' comprehensive use of SCM principle knowledge ability to solve practical problems of scientific research projects, promote the mode of generating training application talent. In the new training mode, through the development of network teaching and experiment teaching, integration of teaching resources, to provide effective learning platform for students, improve students' mastery and use of SCM principle curriculum knowledge ability to solve the problem of application of computer control in the project.*

*Keywords: applied talents, curriculum education, single chip microcomputer, reform, autonomous learning platform*

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### **1. INTRODUCTION**

With the continuous development of computer control technology, the use of single-chip microcomputer for micro control will play an important practical value in real-time industrial control, communications equipment, navigation systems and smart home and other fields. The single chip microcomputer is also called the single chip micro controller, which is the completion of a logic function of the chip. As an important branch of the field of SCM with the development of computer control technology, it has been favored by small volume, light weight, and low price in the aspect of artificial intelligence control. Single chip microcomputer principle course is a compulsory course of electronic information specialty in Colleges and

universities, which is a general class of computer control and electronic information courses, and play a fundamental role in cultivating students' program development capabilities in computer application and control chip application. Through learning the course of single chip microcomputer principle, the basic principle of the computer and the micro processing chip control can be mastered. The students, who learn the basic chip architecture and programming language, develop and practice the corresponding intelligent control product, can grasp the design and application of microcomputer technology and lay a good foundation for the future employment<sup>[1]</sup>. The research of the teaching reform of the single chip microcomputer principle course based on the students' autonomous learning platform for the control of the computer courses promotes the teaching of Single Chip Microcomputer Principle to effectively meet the needs of the rapid development of the IT industry,<sup>[2]</sup>. In the environment of cultivating applied talents, this paper analyzes reform strategies of single chip microcomputer principle course based on the training mode of applied talents, which are to build a learning platform for computer control courses, to carry out practice teaching mode-- "students as the main body, teachers as a leading role", and to create conditions for students to learn single chip microcomputer principle course. The design of autonomous learning platform driven by project can strengthen the students' ability to solve practical problems of scientific research projects with "Microcomputer Principle" knowledge, promote the teaching management department to perfect the "Microcomputer Principle" teaching mode, optimize the teaching content and method, improve the students' enthusiasm and creativity of learning this course, and rise to a new level to promote the development of SCM "principle" course teaching.

## **2. THE IMPORTANCE AND REFORM DIRECTION OF SINGLE CHIP MICROCOMPUTER PRINCIPLE COURSE TEACHING**

With the continuous development of computer control technology application, integrated intelligent control product development using single-chip micro to process chip is more and more mature, and the course of single chip microcomputer principle has received increasing attention in the practice course in Higher Education.

Through the Microcomputer Principle course, a large number of integrated intelligent computer control products can be developed. Thus, the "Microcomputer Principle" course has its own advantages in cultivating the practical ability of scientific research and innovation for college students. As a fundamental course for colleges and universities, it has opened for the computer and electronic communication specialty. It is difficult for beginners to learn because the course has a strong logic and is applied widely. The teaching mode of microcomputer principle needs to be further reform. Because "Microcomputer Principle" knowledge is widely used in the future work and study, the course needs a lot of practice and it is difficult to teach. In many colleges the course is dominated by the theoretical teaching, and curriculum practice is weak. It is unable to meet the demand of cultivating application oriented talents. There are still

some problems for the current "Microcomputer Principle" course teaching mode—the educational concept is out of date, textbook is not perfect and lack of teachers etc [3,4].

Through learning and practicing this course, the students' the ability of using computer control theory to solve practical problems can be truly improved. Under the training mode of applied talents, the course should be reformed; under the guidance the national education reform and development, the curriculum should be reformed. Talent training cannot do without course, so the curriculum reform is one of the cores of education reform. Through the reform and innovation of "Microcomputer Principle" course, the computer control system of education courses should be improved, computer control specialty, type, structure should be optimized, and the foundation should be laid for the creation of the application type, compound type, the skilled personnel training mode [5-7]. In the training mode of applied talents, the main contents of the teaching reform of the course of single chip microcomputer principle include the following aspects:

First, teaching content and teaching practice of single chip microcomputer principle should be optimized. The current teaching content and teaching focus of "SCM principle" course on the collocation distribution is not reasonable, because of the characteristic of strong application. So the teaching contents should be reconfigured with the combination of theory and practice teaching, and the mode of talent cultivation should be innovated, teaching and curriculum structure should be optimized, the practical teaching of MCU, experimental course and supporting facilities should be strengthened. What's more, under the innovative and applied talents training mode of teaching, the teaching of the "microcomputer principle" course can be reformed in the curriculum system, ability training, evaluation system and practice teaching system.

Second, the teachers' training and teaching platform construction should be reformed. In China, the teachers, who can teach "Microcomputer Principle", and teaching resources allocation is not enough. The course needs attention to hardware investment. And the teaching content and teaching mode can be optimized with the combination of the research projects related to SCM practice teaching. Through the computer controlled autonomous learning platform, practice and project design can be integrated into the teaching evaluation system according to the characteristics—more practical, fewer class hours.

Third, teaching and self-learning mode of the Independent Institute of independent learning platform of the "SCM" course should be explored. For the practical knowledge online quiz of SCM application and after-school mutual communication can be realized through autonomous learning platform, under the students' autonomous learning platform for the control of the computer courses, technological knowledge can be strengthened, and students' ability of comprehensive application of SCM principle can be cultivated. At the same time, focus on the importance of knowledge cross different courses and highlight the importance of the application of operation.

On the basis of the above analysis, this paper takes the reform direction and content as the breakthrough point, and carries out the teaching reform practice of the principle of single chip microcomputer in the mode of innovative and applied talents training.

### **3. THE ANALYSIS OF "SCM" COURSE CURRENT TEACHING**

"SCM principle" course teaching has great importance in promoting the cultivation of computer control application talents and generation. With the continuous development in the information industry upgrade and IT industry, there is still a gap among the current independent colleges "teaching" Microcomputer Principle in the application of personnel training. The urgency of the reform for teaching SCM principle course is obvious, because of historical factors and educational environment. At present, the teaching of "Microcomputer Principle" has some shortcomings and problems:

First, teaching objectives on the principle of SCM course in the current independent colleges are not clear enough. Because SCM principle course plays the central role of control subjects in the electronic information and computer, the Independent College has more emphasis on theory learning, ignoring the characteristics of the Independent College of applied talents. Thus, the teaching objective is not clear, and positioning not accurate. Another reason is that the application and practice of MCU Course is not strong enough, and the teaching content is not related to the cultivation of applied talents demand matching. Therefore, the current Microcomputer Principle training course and application ability is not high; it can not reach the teaching aim and requirements.

Second, the teaching mode of SCM principle course is relatively simple. Teachers always use teaching methods of explanation, and the integration of teaching resources is not enough. The investment of network teaching resources integration and making is not enough, so it can not effectively establish a conducive the students' autonomous learning and practice of MCU Course learning platform. Thus it cannot effectively exercise the students' ability of using knowledge and ability.

Third, the characteristics of SCM principle course teaching discipline are not obvious and the allocation of teachers' strength is still relatively weak. At present, the independent college does not attach great importance to the teaching of "Microcomputer Principle", for example, they put more energy and money into the teaching of basic courses, instead of the application of "Microcomputer Principle" practical course. Teaching methods can not keep pace with the times and the cultivation of students' the ability of practice to promote discipline advantage is not obvious.

#### **4. SPECIFIC STRATEGIC INITIATIVES OF SINGLE CHIP MICROCOMPUTER PRINCIPLE CURRICULUM REFORM**

Curriculum is one of the cores of higher education, and talent training is inseparable from the curriculum. So the curriculum reform is one of the centers of education reform. In view of the existing problems and disadvantages in the current independent colleges "Microcomputer Principle" teaching, this paper discusses the teaching reform of the course in the training mode of applied talents to optimize teaching mode of SCM, promote the cross and integration of multi- discipline, and improve students' practical ability and innovation ability. According to the current application of talents training background and the situation of university policy, teaching reform of the course of computer control should focus on improving the quality of higher education, the quality of personnel training, and the level of scientific research, enhancing the social service ability, optimizing structure and running characteristics. The teaching reform of "Microcomputer Principle" course is based on the guiding ideology and direction, aimed at developing the orientation of Applied Undergraduate Colleges for talents. In the course of innovation practice for "Microcomputer Principle", it needs to strengthen the new technology knowledge, the importance of knowledge of different cross curriculum, bold innovation and the improvement of the traditional teaching mode. The traditional teaching mode of talent training constraints old ideas and methods should be reformed, based on the applied talents training mode, with the combination of theory and practice methods of cultivating creativity. Single chip microcomputer principle course teaching reform specific measures can be attributed to the following aspects:

1. To strengthen the importance of ideology and establish a new concept of practical training. Attitude decides everything, thinking decides the future. In the course teaching, the Department in charge of teaching should pay more attention to the course. The relevant functional departments should strengthen organizational leadership, strengthen the thinking and understanding, straighten out the course Microcomputer Principle's important position in the promotion of computer control talents, pay attention to the quality of teaching and improve the teaching platform. The relevant departments should increase the construction of learning platform for MCU Course. Through a combination of research subjects to create practice, develop the students' learning initiatives and enthusiasm.

2. To innovate teaching methods and to explore the teaching mode of "single chip microcomputer principle". In the course teaching, innovative training model will be created, combined with the actual projects in the field of computer control, strengthening the new technology knowledge, and building a training mode of Applied Talents based on the computer control class autonomous learning platform for students with the "Microcomputer Principle" curriculum content, multimedia teaching resources, learning experience and Curriculum practice project the schedule. In the applied talents training mode, to reform the teaching mode of "Microcomputer Principle" course, it can be divided into three stages: the first stage is to combine traditional theory with experiment. students' overall level of mastery of the

curriculum theory can be enhanced in the completion of "Microcomputer Principle" curriculum theory through communication online learning platform; the second stage is to combine different computer and electronic information courses through the MCU learning platform, according to different research projects in practice of development and problems of enlightening guidance to solve the practice problems in SCM application research and innovation in the project of experimental course. And after the actual operation the problem can be solved, so as to satisfy the enterprise or company's needs and meet the requirements of training applied talents; the third stage is to cultivate students' ability of project management through learning platform. "Microcomputer Principle" course is usually used in the design of large integrated intelligent control system, so this requires a team with certain scale to develop cooperatively. In the practice platform, the students' ability of team work and comprehensive ability can be improved through the reform of the course teaching mode.

3. To deepen the communication between teachers and students and implement the policy of cultivating students. The Microcomputer Principle course teaching can combine with the practice course in the experiment and research projects, train skills, play the enthusiasm and initiative of students to grasp the knowledge of MCU development and application in product development further, and improve the learning interest and enthusiasm. In the learning platform and project environment, more conducive to the interaction of teachers and students, through in-depth understanding of the students in the course of application of "Microcomputer Principle" in the practical application problems, teachers can better targeted for answering and explaining, mining the students' interest in learning, and effectively organize students for academic study, so as to promote students' ability of innovation and creation, both in ideology and in practice.

4. To improve the online learning platform, and promote the reform of teaching. Through the construction and completion of online self-learning platform, teacher-student interaction is no longer confined to the classroom; combined with the use of online learning platform, the students can make full use of their spare time and do mutual exchange. In the classroom teaching of the theory, form and practice in the form of additional multimedia room can deepen the student to learn the course. Combined with online mutual learning exchanges, operating and using the actual project, through the actual project and the convergence of social science and technology, the students can grasp more practical skills and teachers can be more convenient to guide students to improve their ability to master the knowledge and application of knowledge through autonomous learning platform.

In conclusion, through the research of the multi-position of Microcomputer Principle course learning platform and teaching system, application-oriented talents can be cultivated; through a combination of research subjects, the students' professional skills, thought occupation morality, scientific research innovation ability can be cultivated. Schools and education departments are actively studying the new teaching method of "Microcomputer Principle". With the intervention of new technology and new knowledge of multimedia and network environment, it can promote the cultivation of students' innovative ability. Through the construction of

innovative practice teaching platform, it can actively guide students to constantly find problems and contact the use of new technology to solve problems. Let independent college students apply their knowledge, so they can adapt to the needs of social development.

## **5. CONCLUSION**

Regarded the real problems faced with the teaching reform of "Microcomputer Principle" course as the starting point, curriculum teaching reform and practice of strategy analysis can be made through application-oriented talents training objectives and requirements and in-depth understanding of changes in the requirements of the demand of enterprise and the knowledge structure of talents. In the new training model, through the development of network teaching and the establishment of experimental teaching, autonomous learning platform can be established for the integration of teaching resources. Combined with the current information age of computer control personnel needs, an effective "Microcomputer Principle and application" course for the students' learning platform can be established, so as to further consolidate the basic knowledge of students, enhance students' practical ability, and cultivate a high level of social talents with innovative ability, practice ability and organization ability.

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