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Exploration and Research on Teaching Mode for the Basic Courses of College Computer under the New Engineering Background of Colleges and Universities

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ABSTRACT. *In the 1960s or 1970s, Chinese colleges and universities had begun to set up the computer courses successively. In the next several decades, the new information technology is constantly emerging with the rapid development of information technology. As for the engineering colleges, the content and system setting of basic computer courses should meet the development needs of the times and should also meet the specialty needs. The rapid development of engineering and information technology raises new requirements for the computer course teaching of new engineering colleges. Based on the current situation of the basic computer course teaching in Chinese colleges and universities, this paper puts forward some suggestions for the computer teaching mode of engineering colleges.*

Keywords*: Computer course; teaching mode; engineering colleges; new engineering*

1. Overview of New Engineering

Simply speaking, the traditional engineering is a discipline that is set up for combining the principles of such basic courses as mathematics, physics and chemistry with the experience and technology that people have accumulated in the production and living practice so as to meet the engineering and production needs. The representative traditional engineering includes hydraulic engineering, electrotechnical engineering, mechanical engineering, chemical and pharmaceutical engineering, civil engineering and electronic information engineering, etc. Because

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the development of engineering is essentially to meet the production needs, special attention is paid to the cultivation of actual application ability in terms of personnel cultivation. The application ability can be manifested in various aspects such as planning, design, exploration, construction, management and raw material selection in the actual production process of enterprises.

The new engineering is corresponding to the traditional engineering. It originates from the high-speed development of information technology and develops through transformation, reconstruction, upgrading and updating via informatization, intelligentization and interdisciplinary infiltration to meet the future development needs of high technology such as information. The new engineering includes not only the transformation and upgrading of traditional engineering but also the new majors such as artificial intelligence, big data, electronic information and intelligent manufacturing.

In view of the discipline characteristics of new engineering as well as the objective of personnel cultivation, the teaching objective of the basic computer courses concerning the new engineering major should be: let the students majoring in new engineering master the basic knowledge of computer theory, establish the preliminary computer thinking and solve the actual problems frequently seen in learning and life in the information age.

2. Current Situation of College Computer Course Teaching under the Background of New engineering

As the professional emphasis of new engineering is new, the information technology of computer changes quickly and the basic computer course system and course content of the new engineering major in Chinese colleges and universities just follow the traditional teaching, either the course system, teaching content or teaching mode cannot manifest the feature of “new engineering“. It neither keeps up with the specialty nor the times, specifically shown as follows: the course setting is dissociated from the actual needs; various courses lack relevance and systematicness; and the update speed of course content is slow and the old textbooks can't keep up with the development of information technology.

In view of the current situation in Chinese colleges and universities, to further

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meet the development needs of the times and cultivate many high-quality new engineering personnel, it is required to thoroughly change the traditional teaching mode of college computer courses and explore the teaching mode and teaching method that can adapt to the characteristics of new engineering and meet the future development needs.

3. Strategies for Optimizing the Computer Course Teaching under the Background of New Engineering

(1) Optimize the content of computer teaching materials and the teaching system

The teaching materials are the core of teaching and the high-quality teaching materials are the basis for improving the teaching quality, so the basic computer courses must be reasonably set to meet the needs of new engineering and the teaching materials that meet the development needs of the times and the society must be compiled. The computer teaching materials in each discipline should be systematically strict and focused and should also fit in with the times and fully blend with the background of new engineering major so as to let the students know the relations between each computer course and the specialty at the macro level and master the application of related course content in practice at the micro level. The new engineering colleges should attach importance to the cultivation of students' engineering quality and application ability and increase the proportion of algorithm design appropriately.

(2) Build a high-quality teacher team

The teacher team is the core of college teaching and is the guarantee for improving the quality of college teaching. Therefore, the following two points should be achieved:

First, strengthen internal communication between the teachers to exchange what they needs and seek common growth.

Second, expand communication with the outside and strengthen contacts with the other colleges and universities as well as scientific research institutes. By taking the strategy of "invitation and dispatching", the external excellent teachers are invited to share the experience and give lectures and at the same time the related teachers are

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dispatched to the other high-level colleges and universities for learning to introduce the good teaching experience from the other colleges and universities.

(3) Change the traditional teaching mode

Seek the teaching mode that adapts to the discipline characteristics and conforms to the student traits, enhance the interaction between teachers and students, frequently carry out the group discussion between the students, deepen the understanding of the students for what they have learned through mutual help and debate, etc., stimulate the students' learning enthusiasm and cultivate the students' self-learning ability.

In addition, reasonably use the network resources, actively carry out the network teaching, and expand the utilization rate of high-quality teacher resources. Meanwhile, the network is more in line with the age characteristics of students and is favorable for improving the students' learning enthusiasm as a kind of new teaching mode.

(4) Establish a demonstration platform

Only when what is learned can be used, the students can know the significance of learning; and only when what is learned is fully demonstrated, the students' learning enthusiasm and initiative can be effectively stimulated. Therefore, the school should establish an innovation demonstration platform by holding various activities so as to provide a self-expression stage for students and let them experience the significance and important function of learning.

4. Conclusion

The new engineering is the development direction of traditional engineering and a new discipline that combines the traditional engineering with the information technology, so there is much to be done in the era of rapid development of information technology. Meanwhile, many unreasonable and imperfect places still exist in the new engineering as a new discipline, so the related personnel should change the traditional teaching mode according to the discipline characteristics and the needs of the times so as to cultivate more personnel that meet the development needs of the country and the times.

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