Analysis on the Cultivation of Students' Innovation Ability in Computer Courses of Colleges and Universities

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Abstract: In the education system of colleges and universities, the computer course has become a lesson being valued by teachers and students. With the implementation of quality education, college teachers pay more attention to the cultivation and promotion of students' innovation ability. In recent years, college teachers have made positive exploration on cultivating students' innovative abilities. This paper studies and analyzes how to cultivate and improve the innovation ability of college students in the process of teaching computer science.

1. Introduction

At present in our country, the computer science courses in colleges and universities are dull and boring. The teaching content is out of touch with the social development; the students cultivated cannot meet the needs of social development after entering the society. With the development of society, enterprises demand more practical talents; some positions require employees to have certain operating experience. Therefore, colleges and universities, as bases which provide talents for the society, need to combine the teaching of computer science and knowledge with the development trend of the times, and focus on the cultivation and improvement of students' innovation ability on the basis of imparting them professional knowledge.

2. Current Situation of the Computer Course in Colleges and Universities

2.1 Teachers Do Not Pay Attention to the Cultivation of students' Innovative Ability

In view of the current situation of computer teaching in colleges and universities, the concept of cultivating students' innovative ability hasn't attracted the full attention of teachers. In the higher education system, computer is a relatively basic subject, but it plays an important role. It is a subject that students must learn in the new era. However, in the process of teaching computer lessons, teachers do not take the cultivation of students' innovation ability as a key task. In terms of the current form, in some colleges and universities, the computer curriculum and the overall teaching content have not been adjusted according to the development of the times, which limits the improvement of teaching quality, and has a negative impact on the improvement of students' comprehensive strength. Many computer teachers in colleges and universities still use the traditional teaching mode to carry out teaching activities, and take the cultivation and improvement of students' test-oriented ability as the key task of education. In such teaching environment, students gradually develop the habit of only paying attention to the improvement of scores, but do not care whether they have learned the knowledge they need. They do not to pay attention to the improvement of their learning ability, and cannot master many practical operation skills. Finally, colleges and universities can only train a group of students who can do well in exams but can't actually operate the computer skilfully.

Fundamentally speaking, the knowledge of computer science has strong application value. Therefore, in the process of practical teaching, teachers need to pay attention to the improvement of students' manipulative ability and the cultivation of practical operation ability, and constantly promote students to establish innovative consciousness. Teaching only by means of knowledge infusion will reduce the comprehensive quality of talents. Students will not be able to adapt to the

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society, or show strong competitiveness in the working environment, which will blow to their self-confidence. The computer teachers in colleges and universities need to take the cultivation of students' innovative consciousness and the improvement of their innovative ability as a teaching goal. Under the guidance of such education and teaching ideas, teachers in colleges and universities can better carry out teaching activities.

2.2 Institutional Constraints

At present, some systems and mechanisms in China are still relatively traditional, which has become one of the important factors limiting the cultivation and promotion of students' innovation ability. In addition to the influence of the teaching system, the quality of computer teaching is also affected by the education methods used by teachers. Generally speaking, the lack of students' innovation ability is related to the constraints of the institution. The restriction of the system is mainly reflected in the teaching evaluation system. In the overall teaching structure of our country, although some articles require teachers to continuously innovate the teaching process, there are a large number of teachers who still carry out relatively basic teaching activities in accordance with the syllabus. They make efforts to improve students' scores in examination, since higher scores can lead to better results in teachers' assessment. The phenomenon seriously restricts the teaching innovation. In order to complete the established teaching tasks within the prescribed time, some university leaders dare not carry out reform activities. They set up a lot of regulations in the school, limit the teaching activities in the framework, and restrict some good teaching ideas. This kind of behaviour has great negative impacts on the cultivation and promotion of students' innovation ability.

2.3 Lack of Professional Contents in the Computer Course

At present, some colleges and universities have not set clear teaching objectives for computer courses. The characteristics of this major have not been highlighted; the content and setting of the course have not been adjusted in accordance with the needs of the society, which makes the computer teaching system in colleges and universities lack rationality as a whole. Students cultivated under that course system must have problems of low professional level and weak comprehensive competitiveness, which are very unfavourable for the future growth and development of students in the society. At the same time, most teachers and schools do not have a strong awareness of cultivating compound talents, which leads to the phenomenon of blind expansion of specialty provision. In addition, compared with the rapidly developing computer science and technology, the computer teaching system in many colleges and universities is relatively backward. The teaching method is unreasonable; funds invested in colleges and universities are limited. Students they cultivated do not have the comprehensive ability which can fully meet the needs of computer technology development.

2.4 Attach Importance to Theoretical Teaching

Teachers of different subjects often attach importance to the imparting of theoretical knowledge rather than the cultivation of students' practical operation ability. At the same time, a large part of the contents of the computer experiment are about the confirmatory experiment. As a whole, the experiment contents are not comprehensively designed; computer students usually lack the ability to solve practical problems. This is mainly because, in the process of acquiring knowledge, they do not carry out the effective practical operation which is of great significance to the comprehensive strength of students. The phenomenon restricts the improvement of students' professional levels on computer science. In fact, the teaching of computer science not only includes imparting theoretical knowledge. Teachers also need to pay attention to the improvement of students' comprehensive strength, so as to promote students' all-round development and lay them a good foundation to use the computer knowledge they have learned in the future.

The existence of above problems limits the cultivation and promotion of students' innovative ability. The talents cultivated by colleges and universities are out of touch with the needs of the society. In order to cultivate talents matching the needs of social development, colleges and

universities need to actively make adjustments, update the teaching contents, adjust the teaching modes, strengthen the promotion of teachers' innovative awareness and ability, and actively explore the cutting-edge knowledge of computer science, in order to better cultivate students' innovative ability.

3. Teaching Strategies for Cultivating students' Innovation Ability

3.1 Strengthen teachers' Awareness of Innovation Training

First, computer teachers in colleges need to have strong professional abilities and strong sense of innovation in order to improve their awareness of teaching innovation. When preparing the teaching contents, teachers should be able to excavate the innovative elements in teaching materials subconsciously, so that they can convey the knowledge and contents full of innovation to students in the classroom. That is the premise of cultivating students' innovation awareness and improving their abilities. In order to continuously improve the professional quality of teachers, colleges and universities can introduce talents with higher professional quality outside the campus, and constantly improve the overall level of teachers. In addition, colleges and universities also need to regularly train the professional skills of computer teachers, help them to improve themselves on the basis of the existing knowledge level and realize the re-promotion of their professional levels.

Second, it is also very important for students to improve their innovative ability. Teachers are the organizers of classroom activities; they also guide students' learning behaviours at all times. In order to fundamentally improve students' innovation literacy, first of all, teachers need to have strong innovation abilities. Colleges and universities need to take the cultivation and improvement of teachers' innovation ability as a key project, actively encourage teachers to carry out teaching innovation, and regularly evaluate and reward teachers with excellent performances. This measure has strong incentive effects; teachers of colleges and universities can actively participate in the research of new topics on the basis of completing their own work. At the same time, teachers can also actively go out of the campus, carry out cooperation and communication projects with enterprises, and explore new subjects. In the whole process, teachers' innovation ability can be effectively improved.

Third, the innovation of teaching method is one of the effective ways to improve students' innovation ability. Traditional teachers often teach modern students through indoctrination, which limits students' innovative thinking and restricts the improvement of their innovative ability. The teaching method is not conducive to the future development of students after they enter the society. With the deepening of curriculum reform, teachers need to constantly update their own education concepts, innovate teaching models, actively use heuristic teaching methods in the classroom, guide students to explore cutting-edge computer knowledge and stimulate students' enthusiasm to acquire knowledge. They also need to use innovate teaching methods which can lay a solid foundation for the improvement of students' innovation ability.

Fourth, the innovation of examination method is the guarantee of improving students' innovation ability. Today, most colleges and universities adopt the traditional assessment method in computer courses. For example, the comprehensive performance of students in this semester is assessed by the final examination. However, this kind of assessment method is one-sidedness; it can not show students' ordinary performance in the classroom, and can not fully reflect the fairness and impartiality of the assessment. In order to make the teaching assessment fairer and implement the concept of quality-oriented education, teachers need to reform and innovate the assessment methods. First of all, scores of students' usual classroom performance should be added into the comprehensive assessment system. Through that way, students can maintain sufficient enthusiasm in the whole learning process; the phenomenon of cramming for tests can be prevented. Second, in the final examination, the part of practical operation should be added; the proportion of written examination should be adjusted reasonably. In that way, students can attach some importance to the practical operation of computers, and avoid the phenomenon of cultivating students with high scores and low abilities. This comprehensive assessment and evaluation system helps students to

acquire computer knowledge at different levels. It can improve students' comprehensive skills, and lay a good foundation for the improvement of their innovation abilities.

3.2 Cultivating the Innovative Thinking Ability of College Students

Innovation is the foundation of national development. Contemporary college students are the future of our country, so it is very necessary to cultivate and improve the innovation ability of college students. Cultivating students' innovation ability can bring great value to the whole society. Of course, the innovative thinking systems of most people are formed through training. In junior and senior high school, students mainly gain basic knowledge. Therefore, in colleges and universities, teachers need to focus on cultivating students' innovative thinking abilities, and promote them to establish an innovative thinking system. That is the focus of education practitioners in the university.

3.2.1 Establishing the Independent Thinking System

Computer teachers in colleges and universities need to focus on cultivating students' sensitivity and thinking independence. In order to improve the acuteness of students' thinking ability, teachers can improve students' typing speed and debugging speed. This kind of systematic training can help students to fully activate their thinking and improve the sensitivity of their overall thinking ability on the basis of learning computer operation skills. In order to cultivate students' independent thinking ability, teachers can guide students to complete the tasks of computer programming, debugging the machine and operating the equipment independently. They are all effective means to cultivate students' independent thinking ability.

3.2.2 Cultivating Intuitive Thinking

For college students, the cultivation of intuitive thinking is the basis of cultivating their innovative thinking. In other words, intuitive thinking provides the precondition for the improvement of students' innovation ability. Many creations and inventions need the function of intuitive thinking. In the process of teaching subject knowledge, some students may produce innovative intuition and ideas on the basis of existing knowledge. Under that situation, teachers need to actively encourage and guide them, and urge students to create actively. No matter success or fail, students can accumulate some effective experience to deal with practical problems. On the whole, the level of computer technology will change with the changes of the times; it shows a trend of continuous development. Therefore, the knowledge of computer science is endless. Computer teachers in colleges and universities need to constantly encourage students to imagine, practice their ideas, and explore the knowledge effectively. In addition, teachers also need to actively guide students to use their knowledge, and guide them to make some software or program independently. With the help of invention and creation, students' intuitive thinking can be effectively cultivated.

4. Conclusion

At present, China's innovative education is still in the initial stage; the working system is still immature. In the education system of colleges and universities, computer science is one of the basic and necessary subjects. It is a subject that students have to learn in the new era, and the key subject to improve students' computer operation levels. Computer teachers in colleges and universities should actively guide students to carry out independent innovation, make necessary adjustment and optimize the curriculum settings, increase the proportion of practical courses, and create conditions for students' hands-on operation and active questioning. These methods can improve students' self-awareness and innovation abilities, and lay a solid foundation for the improvement of their comprehensive quality.

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