Cultivation of Computational Thinking in College Computer Basic Teaching

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Abstract: Cultivating college students' computational thinking is an important teaching plan in computer basic teaching in university stage. Teachers should integrate the teaching content according to the level of computer basic knowledge and ability of college students, classify the basic teaching contents of college computer scientifically and increase the part of experimental teaching in the college computer teaching classroom. Using scientific computer teaching methods can improve students' computational thinking effectively, so that the comprehensive ability of college students can be improved.

1. Introduction
With the process of college computer basic teaching task which is formulated by the Education Department, cultivating students' computational thinking has become an important goal in college computer basic teaching. Therefore, teachers should actively innovate their own computer classroom teaching methods, and develop scientific computer teaching methods according to students' learning abilities and learning characteristics, so that the students' abilities get exercise by using computer knowledge to solve various professional problems, which is beneficial to cultivate computer innovative talents in colleges and universities.

2. the Meaning of Computational Thinking
Computational thinking requires people to use the basics computers knowledge to answer computer problems. It also involves the design of systems and the study of human behavior and other categories of computer science breadth. To fully master computational thinking, the first thing to do is to have a sense of computational thinking. Computational thinking which is not proposed in recent years belongs to a kind of scientific thinking, but a thinking activity that has always existed in human mind. People are unconscious when they're doing computer activities, so the tutor has to turn this unconscious computational thinking into conscious and active computational thinking through scientific guidance. Students can use computational thinking to solve difficult computer problems efficiently. The computational thinking can even be used in all walks of life. After having a sense of computational thinking, students should also master the method of computational thinking through teachers' teaching and understanding of engineering methods. When the content of college computer basic course is developed, the writer integrates each method of computational thinking into the concept of computer basic knowledge, for example, a parallel outsourcing method is included in the multi-core processor in the calculation of the basic course. After students have the sense of computational thinking and master the method of computational thinking, the last thing to do is to improve their computational thinking abilities. The main purpose of students' learning computational thinking is to solve the problem of computer application, for example, using computational thinking can design a perfect database application system, and create an e-commerce operation platform.
are the advantages of computational thinking. Students are not only able to have computational thinking by learning a course, but are familiar with mastering all college computer basic courses to improve their computational thinking skills. The exercise of students' computational thinking ability should also rely on a series of computer application courses. Teachers should also describe and expand the knowledge of college computer basic courses to enable students to understand, learn and familiarize themselves with the meaning of computational thinking.

3. The Present Situation of Computational Thinking in College Computer Basic Teaching

At the current stage, the training goal of computational thinking in computer basic teaching in many colleges and universities is still unclear. Even some colleges and universities do not integrate computational thinking into key teaching goals. Many deep problems of computational thinking cultivation have not been solved. But with the relation of the content of college computer basic teaching course, these basic teaching courses also influence students' computational thinking in a subtle way. Although there is no obvious requirement in the Education Department for the teaching of computational thinking in the regulations proposed by the basic computer teaching in colleges and universities, but in all the provisions, it can obviously reflect the teaching direction of computer thinking. Education Department provides for basic computer teaching for students, so that students can master the related knowledge of computer, and solve problems in real life. Students can also use the college computer basic teaching knowledge to solve problems in other professional fields. Promoting the development of the computer industry is also the embodiment of computational thinking. However, many teachers do not see the embodiment of computational thinking in the basic computer teaching of college, so there are many missing parts in the basic computer teaching of students in the reality:

3.1 Passive Computational Thinking Teaching

Many teachers do not incorporate the cultivation of computational thinking ability into the teaching plan. Because the purpose of learning basic computer knowledge is to solve computer problems, this is consistent with the teaching goals set by teachers. Therefore, most teachers only pay attention to the exercise of students' computer application ability, but neglect the cultivation of students' computational thinking. Many teachers are unconsciously in the cultivation of students' computational thinking "imperceptible", so that the computational thinking of students does not have the right direction, coupled with the lack of standardized guidance. Students' understanding of computational thinking is too vague.

3.2 Failure to Recognize the Importance of Computational Thinking for Talent Development

Influenced by traditional computer basic teaching, many teachers think that computational thinking is only the ability of computer application. They do not realize the computational thinking is a combination of theory and thinking and experiment. Teachers do not fully grasp the application characteristics of computers in the 21st century, and ignore the transformation and development direction in the field of computer science. Students can change the direction of development in other fields when they have computational thinking, Therefore, teachers should improve their own understanding of computational thinking, and take the cultivation of students' computational thinking as a basic computer skills to teach, promote the change of students' computational thinking effectively.

3.3 Ignore the Ideological Teaching

The aim of students' learning the basic computers knowledge is to develop a software or a system. Therefore, in the course of daily computer basic teaching, teachers pay attention only to the teaching of software system application technology, and pay less attention to the details and processes in the software or system development process. Computational thinking in the computer field is not applied to the teaching classroom. The application technical knowledge of computer software and systems is very dull, which leads to the decline of students' interest in learning and thirst for knowledge. Therefore, teachers should improve their own ideological teaching, do not blindly focus only on the
description of applied technology. They can exercise students' ability to calculate thinking, display the content of basic computer teaching comprehensively, and promote students' understanding and learning of computational thinking.

4. the Way to Cultivate Students' Computational Thinking

4.1 Cultivation of Students' Consciousness of Computational Thinking

By studying the basic teaching course of computer in university, students can effectively cultivate their own computational thinking, and change the understanding of computational thinking from germination to gradual understanding and mastery of state. Teachers should make scientific and effective teaching methods according to the present situation of middle school students' computational thinking ability. Teachers can enrich and innovate their own computational thinking teaching in combination with the experience of cultivating students' computational thinking in computer basic teaching in other colleges and universities. Teachers should actively collect and integrate the contents of computer basic teaching in colleges and universities. Take the innovation of computer basic teaching method as a new breakthrough point to promote the understanding of students' computational thinking. First, teachers should choose the content of computer teaching reasonably. Second, teachers should be good at classifying and summarizing the knowledge system of each unit in each course. Third, they explain the computational thinking contained in each unit to the students scientifically. For example, the following figure, teachers should organize the contents of each plate scientifically.

Figure 1. Computer Thinking Coverage Diagram

Besides, teachers should also evaluate the rationality of the knowledge points embodying computational thinking so that students learn the correct content of computational thinking. Because computational thinking is one of the necessary qualities of computer talents in the present 21st century, teachers should also improve the traditional computer basic teaching methods according to the characteristics of the current era. Because the update speed of computer basic teaching content in colleges and universities is slow, teachers correctly judge the feasibility of the basic teaching content of computer, and take the knowledge points of each unit as a clue and describe the computational thinking contained in the knowledge points. It improves students' ability to use computational thinking to solve computer problems constantly in reality. Computer basic teaching classroom from knowledge
explanation to thinking ability exercise classroom will perform. For example, at the beginning of the class, teachers should explain the two storage structures of the data so that students can easily integrate into the classroom state when teachers tell the content of computer data structure in the classroom. For example, when explaining the process content of the operating system, teachers can take the process of program execution as an example. Students understand the transformation process between different processes through multimedia teaching equipment to display the schema form system. Through this teaching method not only promotes students' mastery of the key knowledge of the process content, but also enables students to cultivate their own computational thinking mode in the process of knowledge learning. Students understand more deeply the computational thinking embodied in this application technology.

4.2 Focus on Cultivating Students' Practical Consciousness
For non-computer majors, learning the basic computer knowledge is a means of assisting them in learning their own knowledge. Through studying the basic computer knowledge, this kind of students find common ground for this expertise and the basic computer knowledge. Students expand the basic computer knowledge they have learned to solve their major problems. Therefore, when teachers carry on the basic teaching of computer, they should thoroughly understand the psychology of students' learning basic knowledge of computer, and arrange the teaching content of computer basic knowledge reasonably. Teachers can give more examples of reacting to computational thinking in the computer basic teaching classroom. The computational thinking described can better solve the problems encountered by students. Through the explanation of the examples of computational thinking, teachers can correctly guide students to establish computational thinking, so that students are able to apply skillfully to the ability of professional practice. Each student has computational thinking to solve practical problems and improve students' practical consciousness. In explaining the knowledge of network structure, teachers can use the separation method to position the teaching focus on the key contents such as the composition, structure and application of the network. Teachers can organize students to explore and learn three kinds of common network structure connection mode, and cultivate computational thinking by students' independent learning. Students' extended thinking space has been continuously improved, which can effectively stimulate students' cultivation of computational thinking and understanding of other application methods, so as to carry out a series of practical activities smoothly.

4.3 Cultivating Students' Computational Thinking by Means of Experiment
The most effective way for students to carry out computer basic experiment teaching is to make students improve their comprehensive ability and computational thinking in the process of continuous experiment. In practical experiments, students can continuously improve their ability to deal with problems and the proficiency of using computer technology. But in the course of traditional computer basic course teaching, computer experiment is completely attached to the content of textbook theoretical knowledge. Therefore, in order to make students can effectively cultivate their own computational thinking, we must break the situation that the experiment is attached to the traditional theoretical knowledge, experimental teaching and theory teaching shoulder by shoulder and harmonious development. Teachers should make full use of the advantages and effects of experimental teaching, so that students can use computational thinking to solve practical problems to get continuous exercise. First of all, in the basic normative experiment, we should fully embody the computational thinking. Because basic normative experiments can make students fully familiar with basic knowledge points in the course of operation. When planning the content of the experiment, teachers should integrate the existing knowledge point content into the computational thinking and help the students to feel the computational thinking in the basic experiment. When students carry out structural experiments, teachers should focus on guiding students to use abstract thinking to construct common digital models so that students can use computational thinking to understand the construction process of digital models. In addition, teachers can also add more exploratory experiments in which the setting
of content can meet the needs of other specialties, but also includes computational thinking to cultivate students' computational thinking, teachers should make the experimental results uncertain and diverse when they make the experimental result. To a certain extent, this can promote students’ desire to explore the improvement, so that students' practical ability and hands-on ability get exercise. Students can learn the research ability and innovation ability of computer technology effectively in the process of experimental operation. These are the effective ways for students to cultivate computational thinking.

4.4 Evaluate Students' Computational Thinking on a Regular Basis

At present, the examination mode of college computer basic course is mainly the combination of machine test and written examination. The content and forms of assessment are basically in line with the standards set by the education sector. Examining students' basic computer knowledge regularly is also conducive to promoting the exercise of students' computational thinking. Teachers should weigh the contents of the examination over and over again. For example, in the written test, teachers can expand single-topic topics into multiple-choice topics and increase the proportion of multiple-choice topics. In the process of answering multiple-choice questions, students' thinking space is extended, which is beneficial to the exercise of students' comprehensive ability of computational thinking. In designing the blanks, teachers should focus more on the combination of computational thinking and computer basic knowledge, and construct the key points of thinking and knowledge assessment. In addition, teachers should scientifically formulate the assessment requirements for students' comprehensive ability. At present, the assessment of students' comprehensive ability also includes the student's attendance status and the completion of the homework experiment. This kind of assessment method is simple, but has certain randomness. Therefore, teachers can increase the proportion of homework experiments in the comprehensive quality assessment, so students can focus on the norms of the cultivation of computational thinking.

5. Conclusion

With the increasing demand for computer talents at this stage, in the basic teaching of computer, cultivating students' computational thinking has become the key content of computer teaching in colleges and universities at present. Teachers should attach importance to the influence of computational thinking and constantly innovate their own teaching means according to students' learning ability and learning status. So students' computational thinking can be effectively exercised and cultivated, the all-round development of students can be promoted.

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