

The Cultivation Way of Computational Thinking in Higher Vocational Computer Teaching

Yang Wang

Sanmenxia Polytechnic, Sanmenxia, Henan, 472000, China

Abstract: *Different from undergraduate education, students majoring in computer technology in colleges and universities have more advantages in application ability, but students' computational thinking ability is poor. Therefore, from the consideration of the value of computational thinking training, this paper expounds the problems existing in the process of computer teaching in colleges and universities, and puts forward the idea of shaping the computer's logical thinking ability, and is committed to improving students' computational thinking ability.*

Keywords: *Computational Thinking, Higher Vocational Education, Computer*

1. Introduction

The ancient Greek philosopher Thales bought a household oil press on a large scale and cheaply according to the weather changes in the coming year. During the harvest the following year, Thales rented out a domestic oil press at a high price and made a huge profit. At this stage, there are many people with monthly salary of more than 10,000 yuan in Chinese enterprises, and there are also more graduates majoring in computer science. Computational thinking is not only a computer science major, but also an indispensable ability of social economics and social sciences, and also plays a vital role in social and economic development.

2. The concept of computational thinking

Computational thinking is mainly defined as follows. 1. Carry out relevant thinking activities including reasonable computer science, etc., with reasonable basic insights in computer science, including problem processing, system planning, understanding of human behavior, etc.; 2. Computational thinking is a problem-handling program, analyze, display data information, design, identify, analyze, implement solutions, and how to migrate problem-solving procedures. Computational thinking attaches great importance to the rational layout of students' cognition, and is not limited to a single declarative knowledge and skill training. The above concept of computational thinking reflects its characteristics. This is the habit and quality of thinking, which is manifested in the process of dealing with problems, focusing on the quality of summarization and logical reasoning.[1]

3. The importance of computational thinking to computer teaching in higher vocational colleges

3.1. It can help students find ideas quickly

As an indispensable ability, measurement ability has long been the foundation of many science and engineering majors, and it also contributes to the innovative spirit of students. In the more professional teaching of computer in higher vocational colleges, students are taught more or less calculation methods to help students get rid of many problems and quickly find ideas. For example, in the teaching of C language, university teachers establish the key use value of computer thinking from the organization of programming. Some project designs should attach great importance to the connection of knowledge points and improve the training of computer logic thinking quality.

3.2. To enable students to acquire the skills of using computers to solve processes

The ability to use a computer to handle things is divided into three levels. The first aspect is the actual operation, which is a difficult problem performed by commonly used mobile phone software; the second

level is the summary application, which can master various software and operation modes and solve the difficulties; the third level is usually the ability of APP to create, that is, to write a New software and corresponding processes to address specific challenges. In university computer teaching, students' specific abilities are only up to the second level. Students can only choose suitable software development technology to deal with things, and they are skilled in actual operation, unable to understand its basic concepts and methods, and lack the ability of independent innovation in transaction management. However, attaching great importance to students' computational thinking may enable students to achieve higher-level skills, better solve practical problems, and become managers of computer technology.[2]

3.3. Be able to simplify computer professional problems

Students may encounter various problems in the process of learning the content of computer courses, and their professional knowledge involves high-end specific content such as discrete mathematics and calculus. Only by making complex problems simple and establishing corresponding solid models can students quickly solve difficulties and stand out among many students. For example, some computers will explicitly put forward the problem of monkeys eating peaches, and use C language to let students solve the problem by themselves. The first to get a lot of peaches, eat half and one a day. On the 10th day, only one peach was found. This problem can be reduced to a loop structure. The retrieval required by the loop system must be performed gradually from the moment count0 is reached. According to the operation on the first day and the second day, the formula can be used to calculate $t1=(t21)*2$. Using simplistic puzzles, students' computational thinking will grow incrementally.

4. Inadequate Computational Thinking Ability in the Process of Computer Teaching in Colleges and Universities

4.1. Teachers and students do not have adequate understanding of computer logic thinking

Influenced by China's exam-oriented education, in the process of teaching knowledge to students, teachers usually attach great importance to the introduction of basic courses, and pay little attention to students' operational ability. Computer technology majors at universities have the same problem. The effect of many colleges and universities in cultivating talents is only to hope that students can complete the credit system, rather than attaching great importance to the employment opportunities upon graduation, the mastery of computer professional knowledge and future development trends. Regarding the computer's thinking ability, students just explore by themselves in their spare time. College and undergraduate are not the same. Students have a short learning and training time and cannot master all professional skills. Many problems must be explored at work, so it is necessary to shape computer thinking.

4.2. Teachers' teaching lacks the guidance of computational thinking

Among many computer courses in universities, the lack of computer literacy education is mainly due to the positioning of teaching objectives in universities. The purpose of the university is to cultivate professional talents, so that many college graduates can quickly integrate into the workplace after graduation. Higher education attaches great importance to application, and does not attach great importance to modern education like undergraduate education. If higher education places too much emphasis on application, many computer graduates will have work expertise limited to theoretical knowledge acquired during college. As we all know, the response speed of computer chips doubles every 18 months. Therefore, under the premise that experts teach students their professional abilities, the shaping of students' computational thinking should not be ignored. Computational thinking assists students to go further in their careers after graduation.[3]

4.3. The teaching resources of computational thinking cannot be shared

In recent years, the term "sharing economy development" has become more and more popular, and new things such as "shared bicycles" and "shared mobile power sources" have gradually entered the public's attention. Although different higher vocational colleges have different teaching characteristics, not all higher vocational colleges also publish the content of computer teaching courses. Many high-quality computer video teaching cannot be shared, and some computer courses are outdated and unable to keep up with the latest technological development trends. If the teaching strategies between colleges

and universities are not better communicated, it is essentially the outflow of educational resources.

5. Countermeasures for building computer thinking in the process of computer teaching in higher vocational colleges

5.1. Infiltrating computational thinking in computer courses

Students in higher vocational colleges are busy in school, and their computational thinking cannot be independently established as professional subjects, but should be carried out during class. From this point of view, university teachers must infiltrate computer logic thinking into the content of computer courses. Computer teachers can also expand the education system from the extension of knowledge by improving students' homework checks and focusing on practical projects. In the specific learning process, some students are not very interested in acquiring knowledge, and teachers can promote students to participate through the connection of knowledge and network security knowledge. Teachers can also infiltrate programming courses such as C language, C, and Python into the course content. For example, the C language has a classical algorithm problem. There is a pair of little rabbits, one rabbit is born every month gradually in the third month after birth, and one rabbit is gradually born every month in the third month. If the rabbits don't die, how much is the number of rabbits per month? This situation can be solved by having students type the code themselves.

5.2. Introducing Computational Thinking into Computer Project Teaching

Project teaching method refers to the planned learning and training within a certain time frame. Project teaching method needs to integrate project tasks and knowledge points, and students play a key role in promoting them. For example, in C programming, the course objectives can be divided into new projects, practice projects, and practical projects. The person in charge of the first demonstration project is a computer technology major, and the exercises that students play an auxiliary role are usually experimental projects, which are carried out by the students themselves. The training projects are mainly designed and carried out by the students themselves. In the whole process of construction and development of the Project Execution Law, whether it is the division of labor or the implementation measures of the work, problems must be solved from the actual implementation. At the end is the project evaluation. According to the way of mutual evaluation between working groups, master the project content between different working groups and shape computational thinking.

5.3. Build an interactive teaching service platform

With the rapid development of the mobile Internet, they can form their own computer professional skills forum during the university. The content of computer courses in colleges and universities is included in the community forum, and experts from other colleges and universities are encouraged to evaluate the course content, and the teaching content of community forums is gradually enriched. At the level of teacher-student communication, colleges and universities can also give students the opportunity to independently control. In the context of rich resources in programming and website design, students' practical ability will be rapidly improved, and computer logic thinking ability will also have a great development trend.

5.4. Case teaching

Case teaching is a way to guide students to learn based on individual cases. Case teaching is a teaching method full of exploratory spirit, which can promote the development of students' thinking. Higher vocational college computer major should be good at applying case teaching. For example, in the teaching of "graphic design", teachers can select some typical cases and let students think about them, so that students can get more knowledge.

5.5. Innovate teaching methods

With the deepening of curriculum reform, more and more new and effective teaching means have been introduced into the vocational education, computer professional teachers according to their own actual situation, choose and design suitable for their own teaching methods, can let students get exercise in practice, and can improve their thinking level.[3], for example, in the process of web production, the

teacher can through the form of case, choose phoenix, sina, Xinhua News Agency and other major news sites as a reference, guide students through comparative analysis and comparison of various web production methods, and complete the problem in the form of case, analysis and solution, so as to strengthen thinking in the induction and summary.

5.6. Organize exploration and learning

In today's rapid computer technology, teachers can not put all the new knowledge into the classroom, therefore, teachers must pay attention to the students' learning, stimulate their learning enthusiasm, make them remain sensitive to the development of computer technology, so that they are in the process of learning, constantly improve their learning ability. In higher vocational computer education, teachers to cultivate students' exploratory learning way, for example, in the production of electronic data table, the teacher can be divided into several groups, using inquiry tasks to guide their independent learning, enable them to think independently in participation, and through the collaborative communication, so as to complete the inquiry learning.

5.7. Combined with the actual operation

Higher vocational and technical colleges attach great importance to the cultivation of practical skills, especially the need for practical skills. In improving students' thinking ability, internship plays a very key role in improving students' thinking level.[1] In computer education, teachers should start from the perspective of theory and practice, try to give students full opportunities for computer study and learning, and make it fully penetrate and guide in practical work; in the teaching process, teachers should also set up innovative teaching tasks, to break through the traditional teaching methods, so that students can use the knowledge to think independently, so as to stimulate students' innovation and inquiry ability.

5.8. Strengthen training and assessment

In higher vocational computer education, schools and teachers should actively promote the reform and innovation of vocational evaluation system, so as to achieve the goal of comprehensive education and training, and promote the development of students' computer thinking. In the evaluation and evaluation, teachers should pay attention to the test of students' computer theory and practical operation ability, especially in solving problems to pay attention to the ability of independent thinking, to detect the development of students' computer thinking, and put forward the corresponding solutions, so as to improve the quality of teaching.

5.9. Give full play to the main role of students

How to effectively cultivate the students' computer thinking ability in the higher vocational computer teaching, it must be taught around the students, giving the initiative of the classroom to the students, so that they can acquire the knowledge independently. For example, in the "web page making" course, teachers can design corresponding teaching tasks for students to do them themselves. Encourage students to learn how to make websites through their own study, show their own works to everyone, and explain them according to their own works. In such a class, it can stimulate the students' enthusiasm for learning, cultivate their thinking ability, so that they can skillfully use computer technology.

5.10. Build a relaxed classroom environment

In the computer education of higher vocational schools, to improve students' thinking ability, it is necessary to create a good classroom learning atmosphere according to the characteristics of students. Teachers should respect, encourage more, scold less, and can use humorous language to adjust the classroom atmosphere. In the class, the teachers should be treated equally, especially for the students with a poor foundation, to let them rebuild up their confidence, and actively put into the classroom, so as to achieve an effective classroom teaching effect.

6. Conclusion

The shaping of computational thinking ability in the process of computer teaching in colleges and universities is very important, which is not only beneficial to students in school, but also helps students

go further in the workplace. Therefore, college teachers should actively introduce computational thinking problems into courses and project courses, actively communicate with students, and help students quickly become more professional computer talents.

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