

# Exploring the Application of CDIO Concept in Computer Introduction Teaching

Weifang Zhai

Baoding University of Technology, Baoding 071000, Hebei, China

**Abstract:** In computer science education, computer introduction, as one of the major professional entry courses, and its main teaching goal is to help computer major students to better understand and get familiar with the professional knowledge that they need to learn effectively. This paper mainly analyzes some problems existing in the current computer introduction teaching, discusses the strategies and methods of applying the CDIO concept in the computer introduction teaching, and brings some reference to the relevant teachers.

**Keywords:** CDIO concept; Introduction to computer theory; Teaching philosophy

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## Introduction

In the related majors of computer science, students should first learn the professional course of computer introduction. This course mainly introduces computer architecture, expertise, information technology, operating system, design language and software engineering. Through this course, students can have a more comprehensive understanding of the computer professional system, fully stimulate students' desire to thirst for knowledge, and help students build up self-confidence. Computer introduction course can not only reflect professional theoretical knowledge and technical knowledge, but also play a very important role in establishing professional ideas and constructing learning methods. In addition, the course can also effectively cultivate students' scientific thinking ability, innovation ability, and the ability to analyze and solve problems.

## 1. Teaching Status of Computer Introduction Course

Introduction to Computer is a new basic course for students in computer science and technology. The effective use of CDIO model in this course can carry out effective changes and improve the teaching efficiency.

### 1.1 Main views and contents of computer introduction research

In the computer introduction course, the main teaching goal is to let students have an effective understanding of computer expertise, and also use these knowledge to solve problems. Learning the computer introduction course can make the computer major students realize what they want to learn and how to learn. As a qualified computer major university graduate, they can also know what the quality and ability they should have through learning this course. In the process of carrying out the computer introduction course, the main teaching contents mainly include a brief history of computer development, typical problems in the computer field, computer professional knowledge system, computer basic knowledge, computer discipline methodology and other very important knowledge contents.<sup>[1]</sup>

### 1.2 Problems existing in computer introduction teaching

In the traditional teaching process, the computer introduction is mainly based on theoretical knowledge, but through the experimental operation of homework, on the computer is a form of auxiliary teaching. Introduction to computer This course is mainly the introduction of the theoretical knowledge involved in the computer major, mainly to help students to expand the scope, rather than the depth of knowledge. This requires computer teachers to choose more appropriate teaching methods in the actual teaching process, to help students to improve their interest in learning, and to guide students to take the initiative to understand the overall content of the course. In the process of teaching, effectively stimulate students' learning initiative and interest in learning. However, in the background of traditional teaching methods, there are still some problems in the current computer introduction teaching, which has an influence on the teaching effect.<sup>[2]</sup>

#### 1.2.1 Textbook selection

Up to now, teachers can choose many computer introduction textbooks. The content in these textbooks is relatively abstract, boring, difficult to understand, and even a large length of repetitive content, coupled with backward technology, has not keep up with the development and changes of The Times. However, the development of computer technology in China is very rapid, and science and technology is also constantly innovating and progressing. In such circumstances, it will have an impact on the students' interest in

the learning process, resulting in the students' learning effect is not very ideal.

### 1.2.2 Teaching method

In the previous computer introduction teaching process, the main teaching content is still mainly theoretical. Therefore, there are not many opportunities that students can have real access to computers. When choosing teaching means, they still use the traditional multimedia courseware method or even the blackboard writing method. However, the theoretical content of the computer introduction course itself has a large amount of information and technical knowledge, many of which have never been contacted by students. Especially in the face of conceptual and principled knowledge, even if the teacher has already spoken in class, it is difficult for students to fully understand and master. Moreover, in the actual teaching process, the students mainly listen to, and do not fully reflect the students' main position of it, which can not better stimulate the students' creativity and imagination.

### 1.2.3 Practical teaching

In the traditional computer introduction teaching, teachers mainly guide students to complete the practical content of computer introduction through homework. This form not only can not effectively guarantee the completion quality of the homework, but also makes the students ignore the practical content, and think that the practical content is not important. But in fact, computer introduction has a strong practical, many of the teaching content is very complex. Only through repeated operation, can we master the knowledge learned. However, under this traditional teaching mode, it is difficult to ensure the practical operation quality of the students, and it is impossible to practice the theoretical knowledge that they have learned in the classroom.

## 2. The Application of CDIO Concept in Computer Introduction Teaching

### 2.1 Select the appropriate computer introduction teaching materials

In the process of choosing textbooks, teachers should choose the latest computer introduction textbooks, whose content should be more novel and can keep up with the development of computer technology. Compared with traditional computer teaching materials, it will add some new teaching content, will not only include a brief history of computer development, computer operating system, computer typical problems, computer discipline methodology and other content, in addition, can also join some use of office software, computer virus principle and prevention, computer system security knowledge, common system tools and system maintenance knowledge, these knowledge can effectively help students expand knowledge.

### 2.2 Reform of teaching methods

In the process of choosing the teaching methods, the relevant teachers can effectively use the modern multimedia teaching courseware, and fully use the modern network teaching resources in the actual teaching process, so that the students can be more interested in it, and their learning effect can be significantly improved.

For example, when teachers explain the brief history of computer development to students, teachers can download some relevant pictures to students in advance. For example, China's most original computing tool "abacus", Babbage's differential computer, to the current handheld computer, through the way of pictures, the development process of the computer is shown in front of the students. In this process, it can not only fully stimulate students' interest in learning, but also guide students to take the initiative to actively study and explore computer technology.

In the actual teaching process, teachers can not only use pictures for teaching, but also effectively use video resources. For example, when teachers explain the structure and manufacturing process of CPU to students, they can play the animated video of CPU production process in class. Through a more vivid and intuitive way, students can see the production process and process of CPU, help students better understand the relevant content, and replace the traditional boring text explanation. In This way, students' interest in learning can be effectively improved to concentrate students' classroom attention.

### 2.3 Carry out effective practice

Computer introduction teachers should fully pay attention to the practical content in the practical teaching process, carry out practical teaching as normal teaching tasks, and change the traditional teaching mode. The completion of practical content has an important impact on the basic knowledge and basic theory that students learn in class. Therefore, teachers in the process of developing practical teaching, we should closely follow the theoretical content.

For example: in the process of theory course teaching, computer teachers in the knowledge of computer hardware, can effectively carry out practical courses, guide students to practice disassembly abandoned machine, carefully observe the composition of the hardware such as motherboard, to let the students further effective understanding of the hardware inside the chassis. Moreover, in the process of developing practical teaching, teachers can also take the form of group. Take groups as a unit, set students to complete tasks, as well as collective completion content. After the course, ask the students to submit the report in a group, and reflect the division of labor of each student. In this way, it can provide students with more opportunities to conduct hands-on practice, help students to further understand the theoretical content, and fully stimulate students' interest in learning, and effectively enhance the team awareness and collective cooperation spirit.

Conclusion: In a word, CDIO, as a new teaching mode, is not a long time, but it can show a very strong vitality. This paper mainly analyzes some problems existing in the computer introduction, and then further discusses how to use the CDIO teaching concept to improve the teaching effect. In this process, they will have a very deep impression on the students, and lay a solid foundation for their subsequent study of computer professional courses.

## References:

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- [1] Guo Wei. Reconstruction and measurement of software engineering professional curriculum system [J]. Experimental Science and Technology, 2015, 13 (2): 169-172.
  - [2] Yao Xudong. The Computer Introduction Curriculum Teaching Reform Based on the CDIO Model [J]. Technology wind, 2015 (5): 216-216.