The Research of Flipped Class Model Based on Project Driven—Teaching Reform Practice of “Compiler Principle”

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Abstract. “Compiler Principle” is an important branch of Computer Science in colleges and universities, which is a combination of theory and practice. This paper analyzes the teaching status of compiler principle, through the understanding of flipped class model, based on the project driven to carry out the teaching research of compiler principle. Through practice, better mobilize the enthusiasm of the students learning, teaching effect has been significantly improved.

Introduction

The compiler, which was produced in 1960s, has played an important role in the development of computer science and technology. It is an indispensable tool for developing computer application system. To master the principles and techniques of the compiler is one of the most important basic knowledge for the students and the computer software engineering technicians. Compiler principle course introduces the general principles and implementation methods of programming language compiler construction. Through this course, students systematically master the basic principles and related technology of compiler construction and have a deeper understanding of programming language design and implementation, then improving their programming level. Compiler principle courses are recognized as difficulty teaching subject in computer science courses. On the one hand, in theory the basic principle of compiler construction is more abstract, the algorithm is complex. On the other hand, in implementation, requiring students with a good level of program design, having a huge challenging to the logical thinking and programming capabilities of students. Therefore, how to arrange the teaching content of the course reasonably, adopt the appropriate teaching method and improve the teaching effect of the course is the main task to be studied in the course of the course.

In the traditional teaching mode, the teacher is the subject of teaching activities, is the knowledge instruction, the student is the receiver of the knowledge, the media is teaching tools, book is the teaching content, classroom as the main teaching environment completely dominated by the teacher. The teaching activities and teaching structures are built around teachers, too much emphasis on teachers teaching process knowledge, the teaching process is completely teacher-led, student in a state of passive acceptance, which has long been a mainstream model of teaching school. The flipped class model is called to open up new ideas for new teaching model, which is more and more concerned by the education industry.

Project driven Teaching Method

Project driven teaching method is to establish pedagogy in the constructivist learning based on the theory, it will translate traditional teaching philosophy which is mainly to impart knowledge in the past to solve the problem, task-based multi-dimensional interactive teaching philosophy; reproduced into
teaching inquiry-based learning, so that students in active learning state, every student based on their current understanding of the issues, using shared knowledge and experience in their own unique solutions proposed to solve the problem.

Students under the guidance of teachers, closely around the specific project, driven by the motivation to solve the problem, through the active application of learning resources, self-exploration and cooperative learning, and at the completion of the given task at the same time, guides the student to produce a learning practice. In this process, students will continue to obtain the sense of achievement, can greatly stimulate their desire for knowledge, and gradually form a virtuous cycle of a perception of mental activities, in order to cultivate the independent exploration, pioneering and enterprising ability of self-study.

From the teacher's point of view, "problem driven" takes to teach knowledge-based traditional teaching philosophy, into a multi-dimensional problem-oriented interactive teaching philosophy. Changed reappearance teaching mode into the inquiry learning, to enable students to study in the active state, every student can according to their understanding of current problems, using some knowledge and their own unique experience to propose scheme, to solve the problem, for every student to think, to seek, to find, and innovation provides open space, make the process of classroom teaching full democracy, full of personality, full of humanity, the classroom atmosphere really active. Meanwhile, some ideas of students to solve the problem, and will also provide new ideas for the teachers, which is benefited for teachers as well as students.

Flipped Class Model

Flipped class model, which is referred to re-adjust the time out of the classroom, the learning decision transfer from teachers to students, teachers create instructional videos, before student autonomous learning by them which are provided by teachers and discuss the problems in learning process in class. This kind of teaching mode, the theory of knowledge taught by teachers in the pass is no longer occupied classroom time, and for this part of the knowledge students need learn autonomously before class to obtain, teacher imparts more about the contents of specific projects and solve the problem method is discussed in class.

Flipped class model, Students and teachers of roles in traditional teaching mode were flipped, the students' learning time and places were flipped. Flipped class model is not only online teaching video, not without teacher's participation, students are not completely independent learning, but more effectively using spare time, precious limited classroom time accomplishing something more valuable, in the process, teacher's requirements will be higher, not only to appropriate teaching video production, but also to better organize the teaching discussion. While this teaching mode, students can fully mobilize the enthusiasm and maximize mine their potential.

Practice Compiler Principle of Flipped Class Model

Compiler principle is not only strong theoretical, strong practical, it is a combination of theory and practice courses. Course discusses the principles of compiler construction and implementation techniques, theoretical knowledge boring, abstract and difficult to be mastered students. To cope with the curriculum and improve teaching effectiveness courses, group courses carry out teaching practice-based project-driven flipping course for the actual situation of course.

Developing Compiler Principle Online Network Course

Curriculum group according to the actual situation of the course developed compiler theory online course, online courses design from the overall situation, in the design makes full use of the various related resources, for students to provide diversified, multi-level inside and outside class learning materials, including course overview, curriculum and animation, course experiment, testing exercises,
knowledge expansion, reference materials of seven modules, full teaching content, complete teaching system, including the "Compiler Principle" theory of teaching all the content, but also contains the experimental teaching and exercise testing and other aspects of the content, to achieve combination of theory and practice.

**Instructional Video**

Teaching video is a preview of the content of class, the length of the video to be short, straight into the theme, through instructional videos succinct knowledge point clear. Video content lively and flexible, avoid a large number of algorithms to derive, abstract theoretical knowledge through an intuitive way to show.

**Project Organization**

Students before class learning through instructional videos, they already have a basic understanding on the knowledge learned, but this does not mean that students have learned the relevant content. In classroom teaching, you can use the exercises, asking questions appropriate to review what they have learned, to ensure that most of the students have an understanding of the video before the class, then carry out classroom discussions and project analysis.

**Evaluation Method**

In the embodiment flipped class model, the teaching methods and students' learning styles have changed greatly. Take students as the center in flipped class model, emphasis on students' autonomous learning, teachers through teaching video organize teaching, classroom to solve the difficult problems of students, the use of online network courses and students to communicate. All of these decide that the traditional teaching evaluation method can't adapt to the teaching mode of the flipped classroom. You can use the model of study tracking, project implementation, classroom discussion, the final exam combination to construct curriculum evaluation system.

**Conclusions**

In the course of compiler principle, the practice of turning over classroom teaching mode is a new teaching attempt of the course. Changed the traditional teaching methods and philosophy of education, so that students from passive acceptance of knowledge into initiative to learn, and fully mobilize the enthusiasm of students, teaching effectiveness has been significantly improved, this teaching explore will also bring some new thinking for other computer curriculum.

Flipped class model as a new teaching mode, although it can promote the development of students' personality, its development should be a gradual process, now it is a combination of traditional teaching mode and flipped class model teaching mode, when teachers and students are ready, flipped classroom is coming.

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**References**


