

The Design and Research of the “University Computer Foundation” Course Based on Flipped Classroom

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Abstract

With the rapid development of computer technology, the teaching concept and teaching mode of computer basic course in universities have not been able to adapt to the development of the times, and need to be updated and reform. In this context, flipped classroom teaching model will make a great contribution to the reform of the curriculum. This paper expounds the problems existing in the teaching of basic computer courses in universities and colleges, and explores the effective ways of the reform of basic computer courses in universities.

Key words: Flipped classroom; University computer foundation; Curriculum reform; Problem; Approach

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INTRODUCTION

At present, China has entered the “13th Five-Year” economic construction period, with the development of computer technology and the rapid development of social information, computer based education in colleges and universities has entered a new development period.

The computer foundation teaching in university faces the need to study the knowledge too, the classroom teaching and the practice time are limited, the student extracurricular self-study effect is not good and so on many difficulties. Therefore, we must carry on the reform and the construction to the university computer foundation curriculum according to these characteristics, the entire and enhances the university computer basic teaching level and the quality has the important significance.

1. PROBLEMS IN THE TEACHING OF COMPUTER BASIC COURSE IN UNIVERSITY

1.1 The Base of Students’ Computer Is Different, Whose Interest Is Different

College computer basic level is uneven, learning interest can not be generalized. For example, some students already have a certain computer foundation, can be familiar with the system operation, the general network application operation, the use of simple office software, etc. Even they have mastered a computer language. But other students because of family conditions, limited access to the computer, so the computer level is not high. Needless to say, this situation of college students has increased the difficulty of teaching, a direct impact on the quality of university computer basic course teaching.

1.2 Teaching Content Is Too Single, the Lack of Leading Edge

University computer foundation is the basic subject of learning computer knowledge for college students, which are to meet the students’ learning of computer knowledge, and it should also highlight the openness, dynamic nature and the times. But in my school nearly five years of university computer basic course teaching situations, the teaching content is monotonous, boring and these are

the important factors that hinder the teaching reform and development. For example, the calculation of the basic curriculum requirements of practicality and technology is relatively high, but the content of course teaching can not meet the technical development and practical needs. In order to make the students master more and more comprehensive and updated contents, we should update the development timely.

1.3 Teaching Methods Can Not Keep Pace With the Times

From the present situation of the teaching of computer basic course in our university, still we use the old teaching mode “teacher talk, students practice”, which can not be a good way to stimulate students’ learning interest and confidence. The single teaching method has become the obstacle of the university computer foundation course reform. Of course, after the teaching method of the problem found in some teachers, they are explored in practice, the hierarchical teaching method and flip classroom method. The application in different level teaching, and achieves the purpose of complementary advantages.

2. THE FOUNDATION OF RESEARCH

Flipped classroom is a new type of teaching mode. That is, students can watch video instead of the teacher in the classroom to explain. In the classroom, they focus on the completion of the practice and the exchange of teachers and students. This approach is a subversion, which reverse the traditional model that “The teacher teaches in class and the students finish their homework after class”. The original idea of the flipped classroom was on Jonathan CJonathan Bergman and Aaron Sams these two chemistry teachers in American Woodland Park School. In 2007, they used record screen software to teach them to use the courseware to explain the recording into a teaching video and spread to the Internet for those unable to attend class students use tutorial. With creative teaching practice of two teachers, this method becomes a new teaching mode, and gets more and more attention from teachers.

The flipped classroom teaching mode is different from the traditional teaching model. First, it reverses the traditional teaching idea. The flipped classroom emphasizes student collaborative learning and teacher directed instruction in class, so it can provide a way for the implementation of the “student centered”, teachers can really do use different teaching methods according to the different level of students. Second, it subvert the traditional teaching process. The model requires that students learn the new knowledge before class. In the course of the class, the students take the group cooperation and the teachers answer questions. So what can help students to master the knowledge before the class; at the same time, it reverses the roles of teachers

and students. In the flipped classroom, it is different from the traditional classroom, the students become active learners. The teachers are a guide to the study of the students, and the provider of resources, the organizers of classroom activities, who are responsible for individual guidance and answering questions. Along with the turning of the classroom teaching mode, the micro curriculum has become a hot topic in educational circles. Micro curriculum is the main carrier of flipped classroom. It often takes the form of micro video as an important resource for students to teach themselves before the class. The design, development, teaching, evaluation, management, experience summary of the micro class has become the production of the flipped classroom video and made a practical and theoretical basis and material resources. Micro curriculum has the following characteristics: Short time, clear objectives, it can be repeated learning, emphasizing knowledge fragmentation. However, teachers should pay attention to the fragmentation of knowledge, although it is helpful for students to understand, but do not ignore the link between knowledge.

The perfect combination of flipped classroom and micro curriculum, that bring us a new idea for the classroom teaching. The teaching mode of flipped classroom as a humanized classroom strategy, which provides students with personalized learning space and a variety of learning ways to achieve the sharing of resources, virtually expanding the amount of teaching information. At the same time, the development of cooperation and exchanges and other activities can also provide opportunities for cooperation between teachers and students and students. It can stimulate students’ learning motivation to a great extent, and improve students’ autonomous learning ability. So it can also promote the improvement of teachers’ teaching level and educational technology ability.

3. THE MAIN CONTENT OF THE RESEARCH ON THE FLIPPED CLASSROOM TEACHING MODE

MOOC and “face to face” combined with the flip classroom, what realize the reform of classroom teaching model in the true sense. In the flipped classroom teaching mode teachers make videos and after class students learn the knowledge by watching video. Then they do their homework in class and discuss each other. A lot of people think highly of this model, it is the class system to take into account the teaching and personalized teaching mode, to maximize the promotion of personalized learning. In the flipped classroom, as students have already completed the process of imparting knowledge before class, according to their own habits through watching the form of teaching video, in the class the teacher can have more time to participate in the student’s study group discussion.

And according to the specific situation to understand the teacher can answer the students in the learning process of the specific problems encountered. In case of necessity, the teacher can organize the students who have the same problem to set up a group or hold a small lecture. Using this kind of flipped classroom teaching mode, the specific research contents include the following aspects:

(a) Flipped classroom teaching mode mainly make the high level of teaching video as the core, to improve the supporting resources for the auxiliary and to explore its curriculum teaching through video resources.

(b) Understanding the difference between the use of flipped classroom assisted instruction and the previous online video. Flip the classroom in addition to teaching video, what can also face to face interaction time, with the students and teachers interested in learning activities.

(c) According to the MOOC concept, we re build the university computer basic course system, which can be divided into four parts: the outline of computer system, the basis of computer problem solving, the common technology of computer application, and the computer security.

(d) MOOC teaching model according to Bloom’s classification of educational objectives, which makes the problems that need to be designed from simple to complex. Which can also be in accordance with the requirements of the learning objectives, points to the problem, so as to further enhance the MOOC mode of interaction and testing capabilities.

(e) Research is aimed at different disciplines, different majors, as well as the different applications of computer knowledge in professional. Besides that, according to the different requirements of students the teaching content and teaching methods of the MOOC model are realized.

(f) On the basis of the MOOC courses offered in the university computer foundation, we build the MOOC curriculum for computer skill training. In this way, students can make use of the history of computer to process, display and exchange information.

(g) Based on the flipped classroom teaching model, the classroom needs to think about what can be taught outside of MOOC. The teacher is no longer simply to impart knowledge, but to teach the method of learning and thinking. So it puts forward higher request to the teacher’s professional quality and innovation ability.

4. THE APPLICATION DETAILS OF THE FLIPPED CLASSROOM TEACHING MODE IN THE UNIVERSITY COMPUTER FOUNDATION COURSE

4.1 Realize the Visualization of Teaching Content

In order to achieve the goal of “flip”, teachers in the “University Computer Foundation” teaching before

the teaching content should be recorded into the corresponding video, so that teaching content is visual to enable students to learn before class. At the same time in order to improve the pertinence of video content, teachers must be carefully prepared. Teachers should be on scientific arrangement of teaching content and each video length is moderate. And does a small test at the end of the video to check students’ learning effect. For example, the lesson of the “computer hardware and software foundation”, the teacher record the video before class, what allows to integrate more new content. So the teacher can take the current popular operating system as an example to explain such as introduce the function and principle of operating system. Simultaneously, in order to expand the knowledge can be used for other types of operating system to a simple introduction, you can compare the different versions of the operating system to make students master the concept and principle of operating system.

4.2 Realization of the Modularization of Teaching Contents

In the flipped classroom teaching mode, the university computer foundation is divided into a lot of content modules. The each content module is a basic learning unit. Then according to the requirements of the new teaching syllabus, the content modules are divided into two parts, the basic content and the content selection. The basic content is a compulsory part of the whole school, the choice of content can be based on the needs of different disciplines, to achieve the choice of learning.

In order to solve the problem of class limitation, the modularization of teaching contents can be realized by turning over classroom teaching mode. The teacher may modify the teaching content appropriately, will decompose the curriculum reasonably, divide into the different module for the student to carry on the choice. So through resource sharing, video recording and other ways to open more comprehensive module for students to take, which can provide students elective. It realizes that the teaching content of the module can ensure that video content is not too long, does not affect the enthusiasm of students learning. For example, for Photoshop graphic design software if the detailed introduction, it needs to complete a semester to explain. Therefore, it can be divided into simple use, image synthesis, processing, drawing, advanced applications, such as an integrated module. So that students according to their own level, a reasonable choice of the content of the study which meets the different needs of different levels of students.

4.3 It Realizes the Opening of the Teaching Content

With the rapid development of information technology, teaching content is likely to keep up with the needs of

the times, teachers need to be record video. Teachers can introduce the latest technology for computer applications, the course content and the actual environment, so that it can stimulate students' interest in learning. If the teacher does not have enough energy, you can also invite other teachers to come to record video. In the teaching mode of the flipped classroom the teaching content can be recorded before class, so other professional teachers can also participate in the course teaching process. For example, you can ask professional teachers to record the contents of the "3D animation foundation" and so on. In this way, the professional level has been greatly improved, so that the students are more clear, so that they can be taught independently or as a selective course. If you have a good open class video, you can also be allowed under the conditions of the corresponding teaching content, providing students with learning.

4.4 The Combination of the Virtual Reality and the Virtual Reality Is Realized by the Teaching Arrangement

When we apply the flipped classroom teaching mode, we must choose a teaching platform. A suitable teaching platform can enable students to self-study, students can access the Internet to ask questions. Then in collaboration with other students, teachers can use the Internet to answer questions and understand the students' learning situation. Through statistical software teachers can master the students learning courses and browse the web page, so that lay the foundation for teaching. Therefore, in the course teaching of "University Computer Foundation", which realize the effective combination of virtualization and reality.

CONCLUSION

The flipped classroom teaching mode of University Computer Foundation Course based on flipped classroom is a new teaching mode. It subverts the traditional teaching model and is the combination of extra-curricular video source and face to face classroom teaching. It re adjusts the time in the classroom, and transfers the right of decision from the teacher to the student. This requires training students to self-discipline and initiative so that students from the traditional teaching of passive learning to "flip the classroom" active learning. It promotes the sustainable and efficient development of resources, and promotes the construction and sharing of teaching resources of computer basic courses in colleges and universities. So it makes the university computer basic education to a wider and wider direction of development, and further lay the foundation for the computer based teaching to deepen reform.

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