

Research on the Flip Teaching Practice of Cloud Computing Technology

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Abstract: The teaching process of the traditional cloud computing technology course is mainly taught by teachers, students lack a sense of classroom participation and after-class reflection, and the course assessment method is lack of standardization and science. In view of the above problems, this paper explores the flipped teaching practice of "learning as the center and teaching as the leading", and adopts the classroom teaching and course examination method of "flipped classroom plus project achievement acceptance", which aims to improve students' interest in learning and improve the efficiency and quality of teaching.

Keywords: Cloud Computing Technology; Flipping Teaching; Learning-centered; Project-based Acceptance.

1. Introduction

In the new round of examination and evaluation, the classroom teaching of "learning as the center and teaching as the leading" and the curriculum assessment model guided by students' learning achievements have become important evaluation indicators. At present, the teaching methods adopted by teachers in many colleges and universities are still teaching-centered, teachers have become the center of the classroom, and it is difficult for students to participate in them, resulting in low teaching efficiency and quality. With the development of teaching reform, discussion and interactive teaching represented by flipped classroom is popular in many colleges and universities. In the flipped classroom teaching mode, students can complete the preliminary study by means of video self-study before class, and in classroom teaching, students play part of the role of teachers to demonstrate, explain and discuss the course [1]. To a certain extent, it avoids the situation that teachers "run around the house" and students are "difficult to learn" in the traditional teaching mode.

Cloud Computing Technology is an optional course offered by the School of computer Science, Guangdong University of Science and Technology, which aims to understand the current development frontiers of cloud computing and information technology, and lay the foundation for a service-oriented application model. realize the transition of students from theoretical learning to enterprise development. Because the theoretical knowledge involved in this course is tedious and meticulous, and there are many professional words and difficult to understand, the traditional teacher-centered teaching model is no longer suitable for the classroom teaching of this course. Therefore, combined with the current teaching situation of cloud computing technology course in Guangdong University of Science and Technology, this paper explores the application of flip teaching in cloud computing technology course, in order to provide practical reference for the teaching reform of this course.

The application of flip teaching mode in cloud computing technology courses can provide a more flexible and personalized way of learning. By allowing students to learn relevant knowledge independently before class, they can choose learning materials and learning methods according to

their own learning progress and interests, so as to improve their learning autonomy and enthusiasm. At the same time, students play the role of a teacher in the classroom, showing and explaining the course can deepen their ability to understand and apply the knowledge they have learned. This interactive teaching method can stimulate students' thinking and cultivate their innovative ability and problem-solving ability.

In the flip teaching mode, class time can be better used for interaction and discussion among students. Teachers can guide students to carry out activities such as group discussion, case study and practical operation, so as to promote cooperation and communication among students. This way of cooperative learning can cultivate students' ability of teamwork and communication, and improve their ability to solve practical problems. At the same time, teachers can give timely feedback and guidance to students to help them correct their mistakes and improve their learning methods. Mallya[2] attempt to analyze the impact of mobile cloud computing on learning competencies of engineering students. The main intention is to experiment whether mobile learning using cloud technology has an impact on student's performance by investigating the influence of this innovative teaching technique on course outcomes. Nowadays, the application value of Internet, cloud computing, big data and artificial intelligence has become increasingly prominent in the field of education. Against this backdrop, colleges and universities should actively use the information technology represented by the Internet to reform the traditional physical education teaching model and actively construct a physical education teaching model based on online to offline collaboration[3]. Fidalgo-Blanco[4] proposes an ontology knowledge spiral model, which combines ontology and time dimensions. This integration can transform personal knowledge into organizational knowledge by editing the resources created by students several times in the training process. By studying 28 interviews, Nguyen[5] puts forward a conceptual definition of reverse teaching from the perspective of students and divides it into three dimensions, which expands our understanding of the construction.

In the course of cloud computing technology, project-based achievement acceptance can be used as an effective way of course assessment. By giving students a practical project task,

requiring them to use the knowledge and skills they have learned to solve practical problems, and finally showing a result, we can better evaluate students' practical application ability and innovative thinking. This way of assessment can stimulate students' interest and motivation in learning, so that they can get more comprehensive training in practice.

To sum up, the application of flip teaching in cloud computing technology courses can improve teaching efficiency and quality. Through the student-centered and teaching-oriented teaching model, students can participate in learning more actively and improve their interest and motivation in learning. At the same time, the curriculum assessment method based on students' learning results can better evaluate students' practical application ability and innovative thinking. In the cloud computing technology course of Guangdong University of Science and Technology, the adoption of overturning teaching model can provide practical reference for teaching reform and train talents to meet the needs of the current cloud computing industry.

2. Analysis of the Problems in the Traditional Teaching Mode

2.1. The Teaching Model is Outdated

The traditional classroom teaching model mainly depends on the "imparting paradigm", and the core idea of this model is "teacher-centered". In this model, teachers are regarded as the transmitters and receivers of knowledge, their role is mainly to teach students knowledge, while students mainly play the role of passive acceptance of knowledge. In this kind of teaching process, the interaction between teachers and students is often ignored, it is difficult for teachers to understand the learning situation of students in real time, and students also lack the necessary active thinking. However, B. Hooks, an advocate of relational pedagogy, believes that there are great problems with this traditional teaching model. He believes that in this teaching model, the relationship between teachers and students is too single, teachers put too much emphasis on the transfer and acceptance of knowledge, while students are regarded as passive acceptance of knowledge and lack of necessary active thinking. It is regarded as a "container" for accepting knowledge, ignoring the interaction with students. This kind of teaching method often makes students feel depressed and can not stimulate their learning enthusiasm and creativity. At the same time, this teaching model can not meet the needs of talent training at the present stage.

In the traditional teaching mode, teachers usually devote most of their time and energy to teaching knowledge, while neglecting the personalized attention and guidance to the students. This kind of teaching method often makes students feel boring and difficult to generate interest in learning. In addition, due to the less interaction between teachers and students, the problems encountered by students in the learning process are often not solved in time, which has a negative impact on students' learning effect.

In order to change this situation, many education experts began to advocate the adoption of new teaching models, such as inquiry learning, cooperative learning and so on. These new teaching models emphasize the interaction between teachers and students and encourage students to actively participate in the learning process and give full play to their initiative and creativity. In this way, teachers can better understand the learning situation of students, find students'

problems in time and give guidance, so as to improve the teaching effect. At the same time, this teaching model also helps to stimulate students' interest and creativity in learning and cultivate their ability to think and solve problems independently.

2.2. Students do not Pay Enough Attention to the Classroom

In the modern higher education system, the status of elective courses is relatively low. Compared with compulsory courses and professional compulsory courses, optional courses are often regarded as a kind of auxiliary courses, the main purpose of which is to enrich students' life experience, broaden their knowledge horizons and cultivate their interests. However, there are many reasons for the low recognition of such courses among the student community.

First of all, some students choose optional courses only to get credits, not really out of interest in the content of the course. This mentality of mixed grades leads to their lack of prudence in course selection, which affects the teaching quality of elective courses. In addition, due to the relatively high failure rate of these courses, some students are not even afraid to fail, so they do not attach great importance to these courses.

Some students think that optional courses are of little significance to their personal development, so they often do not give priority to these courses. This concept may be due to their lack of clarity about their career plans, or their lack of awareness of their interests and strengths. This negative attitude may lead to their lack of enthusiasm and initiative in the learning process, thus affecting the teaching effect of elective courses.

The attendance and classroom participation of optional courses are usually low. On the one hand, because of the relatively low credit requirements for these courses, some students may not feel the need to devote too much time and energy to these courses. On the other hand, because the students do not pay much attention to these courses, their participation in the classroom is also relatively low, which will undoubtedly affect the teaching effect of elective courses.

In a word, although the status of optional courses in the curriculum system of colleges and universities is relatively low, they still play an important role in cultivating students' comprehensive quality and interests. In order to improve the teaching quality of optional courses and the learning effect of students, educators and students themselves need to face these problems squarely, strive to change the status quo, and make optional courses really become an important force for students' personal growth and development.

2.3. The Form of Curriculum Assessment is Single

According to the talent training program developed by the college, the class hours of the course are allocated as theory teaching hours. This means that students will learn relevant knowledge mainly through classroom explanations, reading textbooks and reference books. The final examination is in the form of an open-book assignment, which requires students to submit an assignment related to the course content within a specified period of time. However, there are some problems with this method of examination.

The content of the final assignment is almost all basic theoretical knowledge, lack of practical ability and teamwork development ability. This may make it difficult for students to

apply what they have learned in practical work and can not meet the needs of enterprises for talents. The college should pay attention to this, adjust the curriculum and increase the practice, so that students can learn and grow in practice.

The goal of "realizing students' transition from theoretical learning to enterprise development" in the curriculum goal seems to be out of touch with the current examination methods. In order to achieve this goal, students need to have certain practical ability and teamwork development ability. However, the current examination method is very difficult to comprehensively evaluate these abilities of students. The college should re-examine the curriculum objectives to ensure that the curriculum and examination methods can effectively promote the development of students' ability.

In addition, the college should also strengthen cooperation with enterprises to understand the needs of enterprises for talents, in order to better adjust the curriculum and teaching content. In this way, students can be closer to the actual work and improve their employment competitiveness in the process of learning.

When formulating the talent training plan, the college should fully consider the actual needs of the curriculum to ensure that the curriculum and examination methods can effectively cultivate students' practical ability and teamwork development ability. At the same time, the college should also strengthen cooperation with enterprises in order to better meet the needs of society for talents. In this way, we can train more outstanding graduates with practical working ability and contribute to the development of the society.

3. The Flip Teaching Practice

In view of the above problems, based on the teaching concept of "learning as the center and teaching as the leading", this paper explores the flip teaching practice in the teaching of cloud computing technology, and puts forward the way of project-based achievement acceptance in the course examination.

3.1. Pre-class Guidance

The pre-class guidance stage is the guarantee for the smooth implementation of the flipped classroom teaching model, which directly determines the teaching quality and effect. The pre-class guidance is divided into three stages: (1) knowledge and experience analysis. Students' meaningful learning lies in that students can connect the teaching content with their own cognitive structure, and students' new knowledge is more based on the old knowledge. Therefore, in the process of learning guidance, we should first understand the cognitive starting point of the students, and combine the contents of the pre-curriculum, at the same time, guide the students to keep in close touch with reality and strengthen the relationship between textbooks and actual needs. (2) Analysis of learning interest. The teaching materials selected for the course are divided into six chapters to explain the basic theory and application of cloud computing technology from different aspects. From these six aspects, the students can be divided into six groups, forming teams according to their learning interests, pushing the group leader within the group, teachers stipulating the range of the number of groups, and pertinently issuing pre-micro-class learning videos, teaching plan design, guiding students to make lecture PPT and preparing classroom interaction test questions and so on. (3) Analysis of learning strategies. Classroom learning strategies can be described as the model of "student lecture + student score,

teacher evaluation + teacher score + teacher summary and assessment", so that students can fully participate in the classroom and evaluate the classroom effect in time.

3.2. Practice in Class



Fig 1. The scene of students' flip classroom teaching

Practice in class is the process of internalizing knowledge. The practice in the class is divided into three main parts. The first part is given by the students according to the preparation of the class, and the content of the lecture is the chapter content pre-assigned to the group before the class. During these 30 minutes, the group can arrange the members of the group to give lectures according to the situation, and guide the students to interact with the students and answer questions about theoretical knowledge with the help of information media (such as learning skills). In the second part, the lecture group is scored by students and teachers through "Learning pass". The total lecture score of this group is divided into "self-evaluation score of 20% + student score of 30% + teacher score of 50%". The total score is included in the classroom performance assessment of the members of the group, which is scored in groups. The teacher comments and summarizes, comments on the specific performance of the students, including pre-class preparation, teaching content, student-student interaction and so on. In the third part, the teacher combs the important and difficult points of the chapter, answers the students' problems encountered in the self-study stage, and reviews the relevant basic and theoretical knowledge in the form of knowledge competition. This part of the content is carried out by means of rush answer, personnel selection and classroom practice. The result of the total score of the students' lecture plus the score of the theoretical knowledge contest is the source of the classroom performance score of the members of the group. In addition, for cases where you can't concentrate in class, such as playing with your cell phone or sleeping in class, the performance scores of all members of the group will be deducted if the circumstances are serious. This method forms a healthy competition mechanism among groups and a cooperative

"community with a shared future" within the group, which can improve students' sense of classroom participation and attach importance to the course to a certain extent. to achieve the classroom teaching goal of "learning as the center". Fig.1 shows the scene of students' flip classroom teaching.

3.3. Consolidation after Class

After-class consolidation is an important part of the implementation of flipped classroom teaching and the guarantee of healthy operation. This part is mainly divided into two aspects: First, feedback on the situation of students' lectures, and the problems encountered or suggestions put forward by students in the course of lectures and lectures are collected in the form of "Learning pass" online questionnaire, and feedback is given to students in time. It is helpful to correct the difficult problems encountered in the flipped classroom teaching in time and ensure the healthy operation of the teaching model. Secondly, in view of the problem that the form of course assessment is too single, project-based results acceptance is adopted to assign assignments, which involves the relevant core technologies of cloud computing technology, such as the construction and use of Kubernetes cluster management system in container technology, OpenStack cloud computing management platform, etc., and the server virtualization practice can be carried out through Fusion Compute provided by Huawei ICT Industrial Institute, which is completed by students after class.

4. The Advantages of Overturning Reform

The combination of flipped classroom and project-based achievement acceptance can improve the teaching quality and students' learning effect to a great extent. It is embodied in the following aspects: Improve students' autonomous learning ability. Flipping the classroom allows students to study the course content independently before class, which is helpful to cultivate students' autonomous learning ability. The project-based achievement acceptance requires students to complete the project tasks within a specified period of time, which requires students to have a strong autonomous learning ability. Cultivate students' innovative ability. The flipped classroom encourages students to discuss, solve problems and practice in class, which helps to cultivate students' innovative ability. Project-based achievement acceptance requires students to use what they have learned to solve problems in practical projects, which also requires students to have a certain innovative ability. Cultivate students' team spirit. The flipped classroom emphasizes the interaction and cooperation between students, while project-based achievement acceptance requires students to complete project tasks in a team. This helps to cultivate students' team spirit. Improve students' project management and communication skills. In the process of project-based achievement acceptance, students need to arrange time, assign tasks and coordinate

teams reasonably, which helps to improve students' ability of project management and communication. Make teaching closer to reality. The combination of flipped classroom and project-based achievement acceptance makes students pay more attention to practical application in the process of learning and make teaching closer to reality. The combination of flipped classroom and project-based achievement acceptance will help to improve teaching quality and students' learning effect, and cultivate applied innovative talents with innovative ability, teamwork spirit and practical working ability.

5. Conclusion

When the traditional teaching method is adopted in the course of cloud computing technology in colleges and universities, there will be some problems, such as outdated teaching model, it is difficult for students to participate in the classroom, it is difficult to reflect students' learning achievements, students do not pay enough attention, the form of assessment is too single, and so on. The practical research shows that the classroom teaching and curriculum examination method of "flipped classroom + project-based achievement acceptance" can better solve the above problems, improve the students' interest in learning and improve the teaching efficiency and quality. it is in line with the goal of cultivating innovative talents, and can also provide reference for other similar curriculum reforms.

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