

Research on Blending Teaching of Metacognitive Strategy in MOOCS Era

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ABSTRACT: Massive open online course (MOOCs) is a new teaching and learning mode appearing in the current education field. It has aroused the extensive concern of all walks of life with its "giant" students scale, its "diversity" of students' identity and its "people-oriented" teaching model. Metacognitive strategy refers to that during which students use the knowledge obtained in the cognitive process, set up the learning goals and plans, and monitor the learning process and evaluate the learning results and so on to effectively monitor and control their learning process. This paper puts forward a blending teaching scheme based on the theory of metacognitive, the background of MOOCs, the computer culture and the purpose to improve students learning. Meanwhile, the scheme has also been theoretically evaluated and experimentally proved. It is reasonable and effective.

KEYWORD: Curriculum; MOOCs; Metacognitive Strategy; Blending Teaching

1 INTRODUCTION

The global trend of MOOCs, is a profound educational innovation and learning revolution. It will promote the college curriculum system and learning mode into the information age, force colleges to re-examine their value and mission, remodeling an open and inclusive college spirit and culture and have a significant and profound impact on traditional college teaching reform, innovation and development. Therefore, it is the core content and basic direction of China's higher education teaching model reform and innovation under the background of MOOCs to develop the MOOCs curriculum in China, to strengthen the international cooperation, to make full use of the advantages of traditional college teaching and MOOCs teaching, to innovate learning evaluation theory and method and to promote the construction of MOOCs certification system[1].

In recent years, metacognitive strategy has become a hotspot of research. Metacognitive strategy means that in the whole process of cognitive activities the subjects take their ongoing cognitive activities as the object of cognition and mentality and constantly, actively and consciously monitor and adjust those activities. For college students, they can learn more efficiently with the help of metacognitive strategy[2]. It is worthwhile to discuss how to use the theory of constructivism and metacognitive

strategy to guide the network and classroom teaching activities, to design a blending teaching mode, and to achieve the integration of autonomous learning and teachers' guidance through the students' full use of their subjective initiative in the teaching process.

The article takes the course of college computer basis as an example and combine constructivism theory, metacognitive strategy and MOOCs teaching mode to explore a teaching program suitable for college students to learn computer basis course.

2 BLENDING COURSE DESIGN

The emergence of E-learning has changed people's traditional way of learning. With no constraints of time and place, it has the advantage of much more learning autonomy, which can not be compared by traditional classroom teaching. However, this teaching method also exists some disadvantages, like not convenient for face-to-face communication between teachers and students, for teachers to learn about the students' learning progress. According to the actual situation that students are at different levels and the class is at too large size in college computer basis class, document[3] applies reversed-class to college computer basis course to change the traditional teaching mode of "teachers teaching, students listening". Thus, people began to try to combine the digital learning and the traditional

teaching methods to construct a new blending teaching mode to effectively play the role of various teaching modes and to promote the teaching optimization. That is to say, the leading role of teachers' guidance, inspiration and controlling should be presented and the students' initiative, enthusiasm and creativity as main body of learning in the learning process should also be presented.

2.1 Hybrid teaching module

In order to help students grasp the computer basis through teachers' guiding and students' autonomic learning, first, a stereo learning exchange environment of the combination of classroom and network should be set up to provide adequate learning resources, to provide students with a full range of video learning; secondly, a practical situation and network platform which can help students communicate with each other should be set up through diverse classroom activities, on-line group activities, self organization of learning activities to create opportunities; finally, activities that can help students to test their ability should be designed through the response from class and autonomic learning to help students to fulfill meaning construction and meanwhile to guide them raise questions to be answered through the use of metacognitive strategies, the setting of learning objectives and the scanning of reading materials. What's more, students can analyze how to complete learning tasks, follow the important points in reading, ask themselves questions about the material, constantly adjust the following learning according to their actual learning so as to plan, monitor and self-adjust the whole learning process[4].

During the whole learning process, we should follow that students are always the center, autonomous learning is the most important, face-to-face teaching and online tutoring are only supplements. The process is divided into collective learning and students' autonomous learning, and decomposed into one after another short time learning tasks, guiding students to have some self-planning and self-adjusting under the guidance of teachers. Through a series of autonomous learning, face-to-face teaching and online teaching tasks, it can enhance the students' understanding of the computer basis, can help them be familiar with the basic knowledge and skills to solve some subtle problems in the computer basis course, can help them practice language and develop their consciousness and quality in the course of computer basis. In the specific implementation of teaching, the course is divided into individual learning, that is, two modules of students' autonomous learning and collective learning, including students' autonomous learning in individual learning, face-to-face teaching

in collective learning and online teaching. The two modules of three forms are not mutually separated, do not exist with no common things existence, but mutually penetrate, coincide and complement each other in a whole.

2.2 Students' autonomous learning Module

In this module, teachers establish an outside classroom self-learning situation by providing students with learning supporting serves such as adequate and systematic autonomous learning materials and autonomous learning guidance and question-answering to guide the students to complete a series of reading, audio-visual and communication tasks through exchange and cooperation. And students complete the construction of meaning based on their existing knowledge with the help of teachers and students and the learning materials given be teachers or chosen be themselves, mainly including reading text materials, the completion of formative assessment, browsing the relevant resources on line and interact with teachers by e-mail and telephone counseling etc.

Because in this learning module study is mainly completed by students' self-study, so in addition to textbooks and supporting audio and video materials, the construction of teaching resources on line also plays a crucial role to students' self-study after class. On the one hand, teaching resources construction must have guidance and pertinence, can help students understand the characteristics of the course, curriculum framework and curriculum learning difficulty and key point. On the other hand, the construction of curriculum teaching resources also can help students to construct a three-dimensional outside classroom learning environment and give students a full range of language stimulation.

In the process of autonomous learning, students make study plans according to their preview of the teaching material, control learning effect through after class review and formative assessment feedback. The use of multiple learning channels and media can improve students' sensitivity to language by a variety of senses to the relevant data, accelerate students' understanding and absorption of language, more important, it can provide a very intuitive English culture background knowledge for students.

2.3 Collective learning module

Collective face-to-face teaching form: In face to face teaching, in addition to the explaining and question-answering of difficulties and key points, students should mainly be provided with face-to-face communication opportunities to practice enough to make up for the communication deficiency in long-distance open education. Teachers should give

students a full range of emotional stimulation by construct a stereo classroom communication environment of combining visual and auditory stimulus, input and output. A practical situation which can help students to communicate with each other should be set up through diverse classroom activities, such as dialogues, role play, group discussion, and class discussion and so on to create opportunities. Teachers should help students to fulfill meaning construction through constantly developing their strong points and working on their weak points based on learning response and language accumulation. In teaching practice, the mainly used ways are typical example analysis, simulation exercises and homework commentary etc.

In the tutorial, teachers can test autonomous learning effect through classroom learning, and reflect on learning problems by homework comment. Students are also the center in tutorial. Teachers guide students mainly around students' activities to stimulate students to use the basic knowledge of computer to communicate, to express interest in learning, to improve computer operation ability, and to make up for the defect of lacking face-to-face communication opportunities in long distance learning.

Online study guiding activity: Online study guiding is divided into real-time and non real time, mainly including pre-school instruction, special topic discussion and question-answering, practical operation and the final review guiding. In the real-time online guiding, through setting up online discussion platform to create another outside classroom communication learning situation, teachers guide students to finish a series of on-line discussion and communication through interaction and collaboration, make students solve problems through the peer collaboration and mutual help to so as to achieve the purpose of meaning construction. In online discussion, according to the layout and distribution of knowledge points, key points and difficulties of the course, emphasis should be put on the key points and difficult points of the unit and at the same time basic knowledge should be expanded and guidance on examination should be given. Students can have self-evaluation through comparison with peers in on-line discussion and develop their strong points and work on their weak points through non-real time question-answering to control and adjust their learning at any time.

In online guiding, through the guidance of teachers, peer interaction and mutual aid, it can cultivate students' operating ability in the course of computer basis, can encourage students to have hands-on operation, and to improve their communication and speaking skills and the ability of cooperative learning[5].

2.4 *The change of teachers' role*

In blending teaching environment, teachers can exist both in the classroom teaching and network teaching, which makes teachers' behavior in diverse - teachers can present their role both in real school and virtual networks.

Classroom teaching is the main element of the blending learning. Teachers directly face the students in the teaching environment, using face-to-face teaching mode to construe the learning contents and explain thoroughly difficult points, giving full play to the advantage of teacher's personality charm, the charm of language and timely emotion exchange and the advantages that other media do not have, and designing elaborately the classroom teaching into activities that adapt to cognitive psychological rules, That is the embodiment of the leading role of a teacher.

In addition to the traditional classroom teaching, teachers should carry out a series of teaching activities in the network, for example, web course-designing, online question-answering, organizing students to carry on autonomous learning activities online, providing learning resources and so on. Teachers transform from the traditional pure knowledge initiators into students' learning guiders, curriculum developers, group collaborators and designer and requestor of information resource, etc. Equal information resource access removes teachers' hegemony" over knowledge. The relationship between teachers and students converts from "teachers against students" into "teachers and students", even "partners -- partners". The thought that students are the main body in learning is reflected.

2.5 *Blending learning support environment*

In the blending teaching, the unconventional network teaching which is not in the classroom is a very important part, so the choice of support environment is also very important. Blending learning requires a relatively perfect VLEs (virtual learning environment) support, that is a learning and management system used to support the deliver of network learning content, promote the activities like interaction, evaluation and management between teachers and students and so on. It is an indispensable supporting platform and essential learning environment in network learning. At present, the development of VLEs domestic and foreign are: Web CT, Blackboard, Moodle, Vclass ect. And the free open software Moodle has got the favor of more and more educators. Moodle is a course management system presided by Dr. Martin Dougiamas of Australia based on the theory of Constructivism education.

Computer basis course is a course that is popularly offered to non computer majors at colleges and universities at present. Although the names and versions are not the same, such as the "Computer Culture Basis", "computer application basis", but the main contents are to teach basic computer knowledge, how to use the Windows operating system, Office software and some basic network knowledge etc. The course of computer basis itself has some characteristics suitable for blending teaching.

First, the computer basis course is a practical curriculum with strong operability. Some experimental contents can not be mastered in a short term, but need a long-term training to gradually be familiar with, Some operations need to be repeatedly used to achieve proficiency. In traditional teaching, it's very difficult for students to get teachers' guidance and help in time when they have problems in after-class reviewing or performing on computer, due to the constraints of equipment, time and space, which seriously dampened the students' enthusiasm of learning[6]. While in the mode of blending teaching, teachers can put the lecture notes and the common difficult problems on Moodle teaching platform, more important, can answer students' questions online in real time or give messages to students, and can participate in students' discussion, which completely broke the limit of time and space of the traditional classroom.

Secondly, computer knowledge is updated very quickly, but the publishing cycle of textbook is very long, the experiment content and the actual demand relatively lag behind and can not provide the students with the latest and most practical knowledge in time. While in the blending teaching, online learners have more characteristics of autonomy, exploration and cooperation. The abundant network resources can provide the students with the latest and most practical knowledge and technology.

And then, the rapid development of Internet has provided a supporting environment for the blending teaching of computer basis. With the coming of the 3G era, wireless Internet will grow explosively. Surfing on the Internet by broadband has become an important function of the mobile phone, which provide more convenience for the blending learning anytime and anywhere.

The teaching mode of computer basis based on blending learning can step by step change the rigid traditional teaching method and the forced indoctrination teaching method, can combine the classroom teaching and network teaching organically, and can solve the problems existing in the past teaching, which can plays an important role in cultivating students' learning ability, practical

ability and the spirit of exploration and promoting the teaching optimization.

3 THE TEACHING SUPPORT SERVICE

The use of blending teaching in the college course of public information technology has been empirically studied. The conclusion is that it can help resolve the problem of "teach students in accordance with their aptitude". As long as the learning resources are adequate and the navigation is clear, the need of most learners can be met. At the same time, the blending teaching is just a form of organizational teaching. It must closely cooperate with other teaching strategies to design teaching. Only through that can play the role of blending teaching. The application of the model of blending teaching in computer basis should be designed into three parts, before class, in class and after class.

3.1 *Before class*

Video Making: The most important thing in video production is to the presenting and the length of the video content. Before each class the content of the video provided to students should be concise and give prominence to key points. If it is too complex, students will not like it, too simple, there will be no depth. The length of the video can at most be no longer than 20 minutes with the help of the concept of micro class. If the length is more than 20 minutes, students will begin to disperse their attention. While making videos, teachers must design carefully, determine the appropriate knowledge, and submit to students in appropriate methods, and arouse students' active learning and thinking. For example, in the section of Word, the knowledge point extracted can be text input and editing, document formatting, graphic mix row, table settings, advanced layout, a long document publishing, page setup and print output. The micro video should mainly show the operation steps included in the eight knowledge points.

Students watching the video: Before class, whether the students watch the video or not will affect the implementation of the entire teaching activity. It needs to construct students learning environment of collaborative learning and individual learning with the help of information technology. The MOODLE platform is a good choice. MOODLE is a course management system. It can follow the learning track of students. Teachers can analysis students' master of knowledge based on their learning situation. It will benefit the teaching design and video can be put on MOODLE teaching platform. Of course, teachers can choose different teaching platform according to their own design.

Teachers' designing of classroom activities: To organize the various problems proposed by students, and design pertinently classroom activities about the questions that students have can internalize students' knowledge. The design of teaching activities should respect the student's main body status, promote students' learning, but cannot interfere in the choice of students.

3.2 *The implementation of classroom activities*

Research shows that in the process of classroom activity design, teaching methods based the learning of project, game and problem, etc have important guiding significance to the implementation of flipped classroom. Teachers like Zhang Jinlei point out that the key point of flipped classroom is that teachers need to consider how to use class time to complete the efficiency of "classroom time". The classroom teaching activities include panel discussion, achievement reporting and teacher's guidance.

Group discussion: Constructivism believes that the acquisition of knowledge is a process in which learners realize the construction of meaning in certain circumstances through collaboration.

The main activities of students in classroom are panel discussions. The topics of group discussion are designed beforehand by teachers, based on the design of problem, project, game, or case and so on. The design of activities follows a principle-- to ensure all students to participate in the discussion. Such strategies as brain storm, group discussion puzzle, work table, etc can be adopted. In the section of Word, it mainly tells how to recompose the paper according to the standard layout through case design activities, during which each team selects a master's thesis, removing the paper format.

Achievement report: The results of group discussion need to exchange. The forms of exchange achievement are various, which can be briefing, debate, exhibition, small game etc. In the chapter of Word, through the achievement report at exhibition, each team will report about the select of papers, the format of papers, the process of the re-layout of paper, the standard of the layout of papers, the problems in the process and the insights of the team members.

The role of Teachers: The teacher, in the classroom, is no longer "the saint on the podium", but the listener and observer, timely joining the group discussion in need of help, and gives real-time feedback according to students' grasp of knowledge, help students to have an objective understanding of their own learning, and then control their own learning progress.

3.3 *After class*

The summary and reflection after class is an important part in learning. After class, students need to give a summary and reflection over the class learning, in which construct farther their own knowledge system. The process of achievement reporting should be picture-recorded and uploaded to the network platform. After class, teachers and students learn and discuss after class.

The adoption of blending teaching in computer basis helps solve the problem that students are at different levels and meet the requirements of the development of information technology. The entire teaching activity is divided into before class, in class, and after class and these three parts complement each other, self-contain, and achieve the teaching goal. Classroom is more suitable for the large-sized class teaching. In the large-sized class, teachers are more difficult to know about all the students, students can learn autonomously according to their own situation.

4 ANALYSIS OF TEACHING EFFECT

The ultimate goal of the research is to improve the performance of computer basis under the meta cognitive strategy. The most traditional way of evaluation is to average students test scores, which ignores the differences among students' basis. It is isolated, static, one-sided, lacks of scientificness, and can not reflect the changes of students learning fully and objectively. In recent years, because of the stability and no-after-effect of the Markov chain, it can rule out the difference among students' basis, advocates effect evaluation, analyzes the changes of students by combining the present and the previous, and thus is widely used in the study of teaching evaluation. But the value of education lies not in the student's ability, but in which direction and to what extent the ability of the students has changed. Simply to use the absolute performance of students as the source of data is not reasonable. Therefore, this article will use the proposed Markov chain teaching evaluation model in literature [8] based on the difference of individual performance to evaluate the achievement of learning[7]. In the teaching of computer basis, blending teaching method will be adopted.

Figure 1 is the students' achievement changes of 2013 fall semester between class A who have used blending teaching and class B who haven't. The abscissa represents the three teaching periods of pre-teaching(1), in-teaching(2) and post-teaching(3). The vertical axis represents the change of students' achievement, the achievements taking the average.

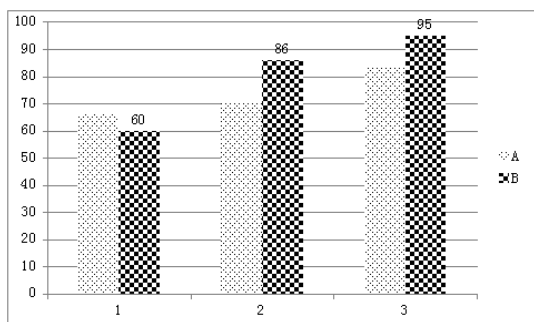


Figure 1: The achievement statistical chart

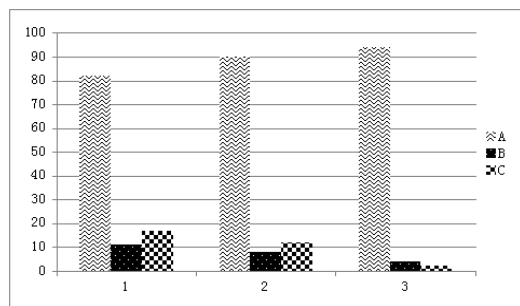


Figure 2: The learning environment l chart

From the curve changes in the figure shows that it makes the students overall grades improve 10-20% with the using of blending teaching method.

After a term's teaching practice, the effect of the course is investigated by means of questionnaire to know about the understanding of blending teaching method. Also the questionnaire is distributed to the students of class A and B. 125 papers were got back and 125 effective. Afterwards, data analysis was done to the papers, finding that the practice has achieved initial effects.

The content of the investigation questionnaire is divided into three aspects: number one is the learning interest and attitude, number two is the effect of the basic knowledge of computer basis, number three is the evaluation and support of blending teaching method. In order to know more clearly about the validity and the existing problems of the design of the investigation content, the statistics of the investigated result of each problem were displayed in Figure 2, and averaged the data of the same aspect with several problems to understand the specific situation of each aspect. The questionnaire survey analysis shows that students gain development in many aspects, not only get much knowledge.

5 CONCLUSION

After being introduced into the course of computer basis teaching, metacognitive strategy has been constantly enriched, expanding to different fields. With the rise of network autonomous learning, the two are soon combined together. Blending teaching method with the effective supplement of network autonomous learning for the classroom learning, will be more and more widely used and spread to colleges and universities, becoming an effective means in the course of computer basis.

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