The Research of Combining MOOC and Classroom Teaching in Virtual Instruments Course

Xian-fei Zhou[(✉)]

Wuhu Institute of Technology, Wuhu, Anhui, China
664518164@qq.com

Abstract. Based on the analysis of the advantages and disadvantages of using MOOC in learning courses in Higher Vocational colleges, this paper proposes a teaching mode that combines MOOC resources with classroom teaching methods, and designs a "MOOC + classroom" teaching mode of virtual instrument courses to make full use of MOOC resources and give full play to classroom advantages in order to stimulate students' learning enthusiasm and help them master professional knowledge content.

Keywords: MOOC resources · Higher vocational education · Teaching mode

1 Introduction

MOOC, an acronym for Massive Open Online Courses, is a large-scale open online classroom specially designed for the masses through which people can learn without going to the regular classroom [1]. The core of this kind of course is to realize teaching, learning, evaluation, testing, training, certification, group and social interaction.

MOOC curriculum was proposed by the United States in 2012, and in 2013, MOOC was introduced to China. The development of large-scale online courses has a great impact on curriculum teaching, and it is one of the important forms of curriculum informatization teaching and network development [2]. Network resources can provide free online courses to expand the scope, effect and impact of curriculum teaching, accordingly some network learning platforms have been established which provides more students with the possibility of systematic learning.

Nowadays, universities attach much importance to classroom teaching and classroom teaching pays attention to theoretical knowledge learning and inculcation teaching. However, in the process of professional course learning, the theoretical content of classroom teaching can not meet the students' needs.

Helpfully, the powerful resources of MOOC can be combined with classroom teaching in higher vocational school to establish the teaching mode of "MOOC + classroom", and it can be used to improve the teaching effect and help the higher vocational education.

Virtual Instrument is a professional course with strong practicality. It is difficult to teach students in accordance with their aptitude in teacher-centered and interaction-inadequate teaching mode. So there is necessity that a new teaching mechanism should be established with the combination of MOOC and classroom teaching.

2 Advantages and Disadvantages of MOOC and Classroom Teaching

MOOC course is a course based on information and network [4], and it is a reflection of technological development. The advantages of MOOC include:

(1) MOOC courses provide teaching videos with the corresponding real-time online testing to carry out the course teaching;
MOOC is a complete curriculum system. With the help of many large MOOC platforms, such as www.xuetangx.com, students can easily start a course of study.
(2) The lecturers of MOOC course are all experts and scholars. The practical teaching of MOOC course lays more emphasis on the connotation. Teachers' perspective, critical thinking and overall design can be demonstrated through MOOC.
(3) High-quality resources can be shared without regional restrictions to promote comprehensive learning and lifelong learning.
With the combination of information technology and Internet technology, MOOC courses can be viewed and learned at any place via computers and mobile terminals, and the content is constantly updated.
(4) The results of learning analysis technology based on big data promote teachers to improve teaching content and help students self-adjust learning plans and learning methods;
(5) Learners can choose any course that be interested in to improve their interest in learning and the quality in learning. Now there are many MOOC platforms, where many teachers teach the same courses and students can choose as will.

Despite of the advantages discussed above, undeniably MOOC has some weaknesses:

(1) Because of long-distance network teaching, MOOC lacks the cheerful, mutual infection and timely interactive atmosphere compared with traditional classroom.
(2) Due to the lack of supervision mechanism, many students will give up learning in the course of MOOC course, and only less than 10% of the students can insist on completing the course.
(3) The form of teaching organization is mainly structured knowledge imparting, which is not entirely suitable for the training of distributed cognition and advanced thinking ability.
(4) The teaching mode is single and the teaching design is simple. There is neither the analysis of classified and stratified teaching objectives nor the demand of various students. It is difficult to meet the specific requirements of many disciplines and different types of courses in higher education.

The Advantages of current classroom teaching are listed as follows:

(1) It can target clearly and moderately according to the students' situation and teaching content. Teaching process can arrange teaching according to students' cognitive law and new teaching ideas.
(2) The teaching process is clear, the classroom structure is rigorous, the teaching density is reasonable, and the key to deal with the difficulties is clear, so it can control the complexity simply. Attention should be paid to the design and arrangement of exercises so that students can consolidate their knowledge immediately in learning.
(3) The teaching attitude is friendly, natural, dignified and generous, the teaching language is standard and concise, the blackboard writing is neat, and the teaching experiment is real; the random adjustment and adaptability in teaching are strong. It involves Teaching democracy, equality and harmony between teachers and students, harmonious classroom atmosphere, respect for underachievers, objective analysis of the situation of underachievers in learning, and targeted individual counseling.
(4) Teachers constantly renew their teaching theory of multiple intelligence in the process of teaching, and focus on the development of all aspects of students' abilities.

The shortcomings in classroom teaching:

(1) The synchronization of students' starting point of thinking and teaching presupposition should be valued. In teaching, teachers should not only pay attention to the starting point of students' thinking, but also pay close attention to the synchronization of learning and teaching presupposition. Basically, teachers should fully understand the individual students and presuppose the teaching methods of knowledge points according to different students.
(2) Effective cooperative learning should be implemented. In the past, although teaching by various means was emphasized in class, some of them were only in form, but they were not implemented in practice. For example, group cooperative learning, sometimes the problem is too simple, sometimes teachers have timely grasp the students' ideas. Sometimes in order to catch up with the progress, students have less time to discuss and communicate, so they can not grasp their real ideas.
(3) Operations should be carried out purposefully and systematically, not under any circumstances. Operational activities should be arranged according to the purpose, content and place of teaching. Generally, new concepts and rules of teaching, students lack perceptual experience or are difficult to understand, it is appropriate to start from the operation. New knowledge that is familiar or can be deduced from what has been learned does not necessarily begin with operation.

3   MOOC + Classroom Teaching Model

From the above analysis, we can combine the advantages of the two to form a "MOOC + classroom" teaching model [5], which is divided into three parts, MOOC resources, students and teachers, and finally analyzes and summarizes through learning effect evaluation. Figure 1 demonstrates the model of MOOC + classroom teaching.
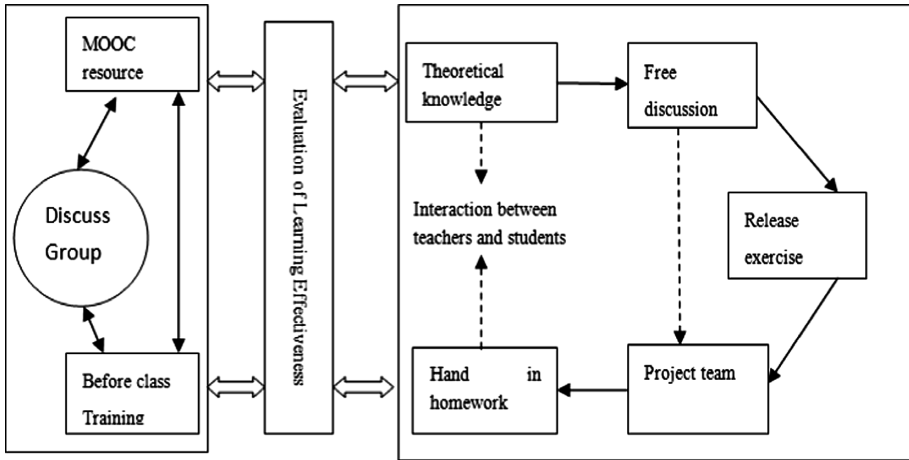

Fig. 1. MOOC + Classroom Teaching Model

(1) Students learn by themselves through the platform. The self-study part comprises pre-class preparation and after-class review, making use of MOOC's rich teaching resources.

And the online video open course resources are employed for self-study.

If there are incomprehensible content in the learning process, it can be timely communicated through the platform section, and can carry out online consultation on the handing in of teaching assignments and questions.

MOOC's teaching philosophy emphasizes the idea of returning learning to its origin. Through online and offline teacher's teaching, assistant's guidance, other learners' cooperation and self-participation in learning, learning interest can be stimulated to the greatest extent, and the pressure of passive learning can be transformed into the desire to acquire knowledge actively, which can be further implemented into specific learning behavior. Universities should make use of it to achieve fragmentation and personalized learning in MOOC, and gradually realize the change from teacher-centered teaching to student-centered teaching.

(2) Teachers Improve Teaching and Scientific Research Ability with MOOC

One of the aims of college reform is to improve the quality of higher education in an all-round way and the comprehensive quality of College graduates. To achieve this goal, teachers play a decisive role. MOOC has a large number of courses offered by

famous teachers both in China and abroad. Learning their advanced educational and teaching concepts and methods, we can fully and profoundly understand the connotation and extension of the relevant courses. In addition, famous teachers' teaching experience contributes to our rational use of MOOC in our own courses. By learning some professional elective courses, our colleague teachers can understand the latest research fields and methods timely, and broaden their professional horizon to improve their own scientific research ability. Although MOOC can not make everyone become a famous teacher, it provides an effective way for teachers to further improve their teaching and scientific research ability through MOOC learning.

(3) Students are the main body of learning, thus the beneficiaries of all the teaching reforms must be students in order that students can acquire more knowledge. The students' academic assessment consists of the following four parts. The self-study on the platform mainly focuses on investigating the time of self-study and completing the tasks on the platform.

In the third part of the class, 15% of the students were assessed in class and 55% of the students were assessed in the final exam. The proportion of the final exam will be further reduced when the model is mature.

The advantages of this teaching mode lie not only in making full use of the advantages described in the first chapter of this paper, but also in avoiding the lack of students' systematic understanding of knowledge through the guidance and summary of teachers in classroom. The discussion in classroom aims to examine the learning effect of the platform and promote the learning on MOOC platform. In-class exercises and final examinations serve to solve the problem of impartiality that may arise from network assessment.

4 Analysis of Learning Effect

In this paper, a questionnaire is designed to investigate the"MOOC and classroom teaching methods effort". In order to understand the learning psychology and behavior of students in "MOOC +classroom" teaching mode.

Through the online testing platform, 85 students participated in the survey, with a recovery rate of 100%. Through the survey, it was found that the majority of students believed that it was necessary for them to learn autonomously by video before class. At the same time, they believed that completing the tutorial plan could improve the learning efficiency, as shown in Table 1.

Table 1. The analyses of students willingness for Moocs.

Question	Strong need	Need	Neutral	Reject
It is necessary to learn independently through MOOCs	60.9%	25.1%	11.7%	2.3%
Improve learning efficiency through cases	64.7%	23.5	8.2%	2.3%

In classroom teaching, students should compare, supplement and revise the knowledge they have learned according to what the teachers have said in class. Teachers attach more importance to students'learning outcomes, the more they can mobilize students' learning enthusiasm. Due to the introduction of cases in MOOC curriculum, in classroom teaching, case presentation is the most popular among students, and it is also one of the best ways to combine MOOC + Classroom teaching (Table 2).

Table 2. The effort for "MOOC + classroom teaching"

Question	Strong need	Need	Neutral	Reject
Show the case in classroom teaching	70.59%	17.65%	9.41%	2.35%
MOOC + Course Teaching Can Stimulate Learning Interest	76.47%	11.76%	9.41%	2.35%

5   Conclusion

The rise and rapid development of MOOC has brought a new era of online education. It is a new challenge to the traditional teaching mode. MOOC teaching has become one of the latest teaching methods and a trend of teaching reform in the context of globalization and information age. Undeniably, MOOC will not end traditional colleges. If we can make proper use of MOOC resources and design more advanced teaching models according to the characteristics of each course, the quality of teaching in universities can be improved greatly and students will get better academic achievements. It is advisable that higher vocational colleges make full use of the advantages of the MOOC curriculum resources, introduce them into the classroom and integrate them with traditional teaching.

References

1. Luoren, L.: MOOC platform and classroom teaching mode of combining exploration. J. Electron. world 429–4301 (2018)
2. Adams Becker, S., Cummins, M., Davis, A., Freeman, A., Hall Giesinger, C., Ananthanarayanan,V.: NMC Horizon Report: 2017 Higher Education Edition. The NewMedia Consortium, Austin, Texas (2017)

3. Mao, H., Yuan, H.: Exploration on the teaching mode of selective embedding MOOC. J. Ninbo Univ. Educ. Sic. Ed. (6), 99–104 (2018)
4. Ma, J.: The construction of a hybrid teaching model based on the idea of MOOCs. J. Shandong Agric. Eng. Coll. (10), 187–188 (2018)
5. Dong, H-b., Jian, G.E.: Exploration of flipped class model for "virtual instruments. Educ. Teach. Forum (51), 145–146 (2018)
6. McEvoy, C.S., Cantore, K.M., Denlinger, L.A.N., et al.: Use of medical students in a flipped classroom programme in nutrition education for fourth-grade school students. Health Educ. J. **75**(1), 38–46 (2016)
7. Fang, Z.: MOOC's innovative drive and teaching practice for the construction of quality courses in colleges and universities. Sci. Educ. Artic. Collects (B), 4–6 (2019)
8. Chen, W.: The influence of classroom teaching in regular college in the MOOC era. Educ. Teach. Forum (4), 237–239 (2019)