Innovation Analysis of MOOC+SPOC Reversal Classroom Teaching Reform Model Based on Big Data Era

Qingtao Huang, Gang Chen*

College of Humanities & Sciences of Northeast Normal University, Changchun, Jilin, 130117, China

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Abstract: With the arrival of the era of big data, teachers' teaching methods and students' learning methods have changed to a certain extent. The richness of Internet educational resources and the rise of micro-class and mu-class teaching modes have caused certain impact and challenges to traditional classroom teaching activities. The concept of MOOC+SPOC reversal classroom teaching mode based on the era of big data proposed in this paper makes up for the shortcomings of traditional classroom teaching, enriches teaching means, enhances students' participation in in and out-of-class learning, and cultivates students' individualized self-learning ability. Starting from the complete teaching activity process such as teaching preparation, teaching activity implementation and teaching evaluation before class, construct a flipping classroom teaching mode based on “MOOC+SPOC”. The flipping classroom model based on "MOOC+SPOC" has been well applied in teaching, and students' feedback is good, which improves students' enthusiasm and cultivates students' comprehensive ability.

1. Introduction

In the era of rapid development of information technology in the 21st century, the rapid development of computer technology and network communication technology has caused great changes in people's learning, work, and life, and has also had a strong impact on the education field [1]. The development of information technology has led to changes in our teaching paradigm, from “teacher center” to “student center” [2]. MOOC has developed rapidly and has become an important channel for people to acquire knowledge in the era of big data. However, the large-scale rate of rejection and the rate of failure have made MOOC's practical results unsatisfactory. Students can easily access vast amounts of knowledge through the Internet, which has a huge impact on traditional teacher-centered classroom teaching [3]. It is difficult for ordinary colleges and universities to offer many courses of course admiration, but SPOC teaching can be offered according to the characteristics of the school, its own conditions and teaching needs. It is a more refined and smaller type of online open courses than MOOC. It not only integrates the advantages of large-scale online open courses, but also makes up for the shortcomings of traditional classroom teaching [4]. Based on this, in the context of the big data era, teachers can try to introduce more advanced flipped classroom teaching mode in combination with the actual needs of classroom teaching reform, giving students full autonomy in learning, so that students can independently complete the learning of relevant knowledge with the assistance of teaching resources.

2. Research on MOOC+SPOC Flipping Classroom Hybrid Teaching Model Based on Big Data Era

MOOC is an online course open mode that has emerged in recent years. It has powerful data storage capabilities and processing capabilities. It can save learning process, progress, participation in discussions, etc., and understand and understand real data through big data. Students' learning and electronic management of teaching process [5]. MOOC's teaching activities focus on knowledge-centered understanding, and its activity design pays insufficient attention to inquiry learning, personalized learning and collaborative learning. The emergence of SPOC originated from MOOC and is regarded as a new model of “post-MOOC era”. It can also be regarded as a product

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of MOOC and traditional campus curriculum integration [6]. MOOC + SPOC refers to the special online open course based on the same MOOC course. Educators should pay attention to the formation of a correct understanding of the actual situation of the big data era, and make clear the impact of the background of the big data era on the reform of education and teaching. Compared with the traditional teaching mode, this mode can free teachers from boring classroom teaching and become the guide of teaching activities, which is more conducive to opening up students' thinking and deepening students' understanding of knowledge [7]. Using the whole teaching process and teaching resources of MOOC, we carry out the research and reform of flipped classroom teaching. This teaching mode breaks the rigidity of the traditional classroom and integrates the MOOC teaching resources effectively, which provides a new way of thinking for the reform of education and teaching in Colleges and universities.

One of the prerequisites for the development of flipped classroom is that blended learning can be regarded as the guiding ideology of flipped classroom, while flipped classroom is a mixed application strategy or implementation plan. Table 1 below compares MOOC with SPOC

Table 1 Comparison of MOOC and SPOC

Comparison item	MOOC	SPOC
Number limit	Large-scale, indefinite, up to several	Small-scale, indefinite, general
Openness	Thousands or even tens of thousands	Ten to hundreds
Learning cost	Completely open	Restrictive applications
Admission requirements	Low (except certification, basic free)	Relatively high (credit grade)

Under the background of big data era, the reform and innovation of education and teaching can introduce the reversed classroom teaching mode to ensure that the designed teaching process and the selected teaching content are more in line with the basic learning rules of students. SPOC is divided into synchronous SPOC and asynchronous SPOC. Synchronous SPOC refers to the simultaneous implementation of SPOC and MOOC. Students can not only get online tutoring from MOOC team, but also apply for a certificate of completion. MOOC is only a supplement to classroom teaching and can not completely replace classroom teaching. When MOOC develops to improve the utilization rate of teachers, increase the output of students, and improve students' learning ability and participation in learning, this mode can be called SPOC [8]. It can provide students with corresponding education and guidance in combination with the construction of the flip classroom, effectively ensure the effectiveness of education, and provide good support for the smooth progress of education reform. Compared with the traditional classroom, the flipping classroom has made a big change in terms of teaching methods, teachers and students' roles, teaching content, etc., from the previous value orientation of "teaching" to "study". Teaching mode [9]. Teachers can add or delete MOOC resources such as short videos, courseware, test questions, final exam questions and discussion topics, and build higher or lower than MOOC benchmarking content to form SPOC curriculum resources that are consistent with the school's characteristics.

In essence, SPOC and MOOC belong to the same category. The teaching concept and teaching design are similar, but SPOC pays more attention to school-based. The key to flipping the classroom is the combination of technical tools and teaching. The use of modern technology is an important means and resource for the realization of “flip turn” [10]. In terms of specific operations, teachers combined with the application of big data technology and practical exploration in teaching reform can build an online learning supervision and evaluation system to comprehensively evaluate students' classroom performance and online learning effects. This model puts higher requirements on the overall quality of teachers. Teachers should devote more energy to making micro-courses and planning classroom teaching interactions. Therefore, teachers should learn and choose the appropriate MOOC resources first, and they can record the chapters without finding the appropriate MOOC resources. Teachers can upload teaching videos and learning materials which can be

recorded by themselves or excellent teaching resources screened by teachers. The purpose is to make students interested in learning and improve the quality of teaching. According to the feedback of online data, teachers can decide the content of offline classroom and realize the integration of online learning and classroom teaching. Therefore, the flip classroom teaching mode must be based on the interaction between face-to-face teaching and online teaching, and gradually improve the teaching effect through continuous improvement and improvement.

3. Construction of "MOOC+SPOC" Reversal Classroom Teaching Model Based on Big Data Era

3.1 Pre-class Teaching Preparation

Through practice analysis and theoretical discussion, this paper holds that SPOC teaching mode is the general trend of teaching reform in the Internet + education environment. The flipped classroom teaching mode based on "MOOC+SPOC" is the integration and innovation of face-to-face classroom teaching mode and SPOC online learning mode. "MOOC + SPOC" flips the classroom teaching environment before class, which is the process of knowledge transfer. In order to ensure that students can acquire knowledge, both teachers and students need to take an active part in it. Teachers and students discuss and determine the theme of curriculum-related professional literacy. Then, teachers organize students to discuss in class in order to cultivate students' professional literacy. In the process of designing classroom teaching resources, teachers should comprehensively analyze and examine students' self-learning ability, design of teaching guidance objectives, determination of teaching syllabus, selection of teaching methods and setting of teaching rating links, etc. All of which should take students as the center. In the flip classroom teaching, students are the main body of learning, they are independent learning according to their different style characteristics and preferences. In order to achieve the teaching effect of flipping the classroom, on the one hand, students need to have sufficient knowledge reserves, so that knowledge can be transformed from passive acceptance to active recognition and independent output, thus supporting the interaction with teachers. Before the "MOOC+SPOC" based classroom teaching, the students' learning style is analyzed. The purpose is to adjust and improve the teaching design to meet the overall needs of the students, making them more targeted and scientific.

3.2 Implementation of Teaching Activities

The SPOC-based flip classroom teaching mode is a fusion of SPOC online learning mode and face-to-face classroom teaching mode, which realizes the comprehensive “deep integration” of information technology and education. Therefore, in order to ensure the application effect of the flipping classroom, in the teaching organization and design planning work, students should be guided as much as possible to encourage students to express their personalized opinions during the learning process. Using SPOC to adopt the functions of video teaching or online evaluation to assist classroom teaching, teachers can gain an insight into the student's learning profile by watching the progress, frequency, homework and self-test results of the student's micro-course learning online. Test the situation using the test questions provided by SPOC. Students can interact with their peers in the discussion area and explore the problems they encounter independently. Therefore, before conducting flip classroom learning, we should understand the specific situation of students and design a classroom teaching mode suitable for students' learning. Combining Internet education with school education will effectively improve the current classroom teaching. Students can download video resources to their mobile phones, and learn more difficult knowledge points at any time, anywhere, so that learning becomes arbitrary. Through the analysis of students' learning attitude, we can understand the students' acceptance of SPOC-based flip classroom teaching. And make use of the effective competition between groups to enhance the enthusiasm of students to participate in teaching activities, ensure that each activity can participate in teaching practice, complete the corresponding learning tasks, and achieve good learning results.

The network teaching platform based on big data has the functions of real-time interaction,

resource sharing, mobile learning, online examination and so on. The teaching mode of "MOOC + SPOC" flip classroom emphasizes students' learning autonomy more. It requires students to review, internalize, discuss and apply the knowledge they have learned in the classroom. In the implementation of SPOC curriculum, first of all, we should design the overall teaching objectives of the course according to the syllabus, and design each unit or section of specific small goals combined with the overall objectives. Through this layer-by-layer decomposition, we can ensure that the teaching objectives are achieved. According to the learning tasks and guidance questions assigned by teachers, students complete their learning content by watching micro-videos before class. Through teacher-student interaction and student-student collaborative autonomous learning, the learning process can be reversed. Flipping the classroom around the typical work tasks to carry out the teaching activities, the self-learning task list developed before the class, through the corresponding video teaching resources to enable independent learning to have goals, motivation and effectiveness. From the thinking and practice of learning knowledge to the analysis and comprehension of knowledge, the exchange of roles can deepen students' understanding of knowledge. In the SPOC-based flip classroom teaching, the analysis of students' initial ability is mainly reflected in the fact that teachers need to understand the results of students' self-learning before class, and the knowledge ability acquired by students before class will be used as a starting point in the classroom. Ability to start. In this way, based on the application of big data technology, teachers can grasp the learning situation and learning state of students more comprehensively and objectively in teaching activities.

4. Conclusion

The arrival of the era of big data has greatly enriched the educational resources on the network, and created a good environment for information learning, laying a solid foundation for the application of the flip classroom teaching mode. The rise of MOOC is an important opportunity for the reform of college curriculum teaching. It not only plays an important role in promoting the construction of high-level classrooms in universities, but also plays an important role in promoting the development and sharing of quality educational resources. Based on the "MOOC+SPOC" flipping classroom teaching mode, it enriches the teaching mode under the background of MOOC, which makes the integration of information technology and education deep, and realizes the combination of online and offline before, during and after class. Knowledge recognizes the internalization of knowledge and then the process of sublimation of knowledge. It also combines big data technology with flipped classroom teaching mode, promotes the gradual progress of teaching reform, and provides individualized education and guidance services for students. To a certain extent, this teaching mode can cultivate students' learning consciousness and initiative, promote personalized teaching, and effectively alleviate the contradiction between students' limited learning time and unlimited knowledge. In the era of big data, with the calm thinking and application of MOOC and SPOC by researchers from all walks of life, the integration of MOOC, SPOC and flipped classroom teaching mode will bring about a new upsurge of reform in teaching and learning methods.

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References

[1] Xu X, Zhan D, Zhang C, et al. The MOOC/SPOC Based “1+M+N” Multi-University Collaborative Teaching and Learning Mode:Practice and Experience[J]. computer education, 2018, 288(12):5-10.

[2] Liu, Da. The Reform and Innovation of English Course: A Coherent Whole of MOOC, Flipped Classroom and ESP[J]. Procedia - Social and Behavioral Sciences, 2016, 232:280-286.

[3] Wang X H, Wang J P, Wen F J, et al. Exploration and Practice of Blended Teaching Model Based Flipped Classroom and SPOC in Higher University.[J]. Journal of Education & Practice, 2016, 7.

[4] Knox J. Beyond the “c” and the “x”: Learning with algorithms in massive open online courses (MOOCs)[J]. International Review of Education, 2018(3):1-18.

[5] Luis Ramírez-Donoso, Rojas-Riethmuller J S, Mar Pérez-Sanagustín, et al. MyMOOCSpace: A cloud-based mobile system to support effective collaboration in higher education online courses[J]. Computer Applications in Engineering Education, 2017.

[6] Reidsema C, Kavanagh L, Hadgraft R, et al. The Flipped Classroom || [J]. 2017, 10.1007/978-981-10-3413-8.

[7] Eaton, Mike. The flipped classroom [J]. The Clinical Teacher, 2017, 14(4):301-302.

[8] Delozier S J, Rhodes M G. Flipped Classrooms: a Review of Key Ideas and Recommendations for Practice [J]. Educational Psychology Review, 2017, 29(1):141-151.

[9] Yang Y, Akinci E, Dutton J R, et al. Animal cell culture; a practical approach[J]. Comparative Biochemistry and Physiology Part A: Physiology, 1993, 106(1):163.

[10] Rotellar C, Cain J. Research, Perspectives, and Recommendations on Implementing the Flipped Classroom [J]. American Journal of Pharmaceutical Education, 2016, 80(2):34.