

On the Construction of SPOC Curriculum in Applied Technology University

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Keywords: Online Education; SPOC; MOOC; Micro-video

Abstract. In contemporary society, the unfair education resources in the area have been broken through online education on the Internet, which makes it possible for everyone to enjoy equal education. In this paper, three aspects of the small private online course (SPOC), SPOC platform and development of learning resources for teaching model were discussed in detail to preliminary explore the path or method for establishing SPOC a school of technology and application. It has important significance in promoting the construction of high-quality SPOC, the sharing of educational resources and the reform and development of university teaching.

1. Introduction

With the continuous popularization of network information and the improvement of national education awareness, various new online teaching modes based on the Internet such as massive open online course (MOOC) and small private online course (SPOC) have sprung up on school education [1]. Compared to Massive and Open in MOOC, a small and private MOOC, named SPOC, for students was proposed by Professor Armando Fox [2]. It added online tutoring and classroom teaching on MOOC, which made college students can be truly benefited from high-quality MOOC resources.

2. The Teaching Model of SPOC

The teaching preparation, implementation and evaluation were three necessary components of a complete teaching process [3]. The SPOC adopted the teaching mode of ‘MOOC+’ and included online and offline course. The specific process was shown in Figure 1.

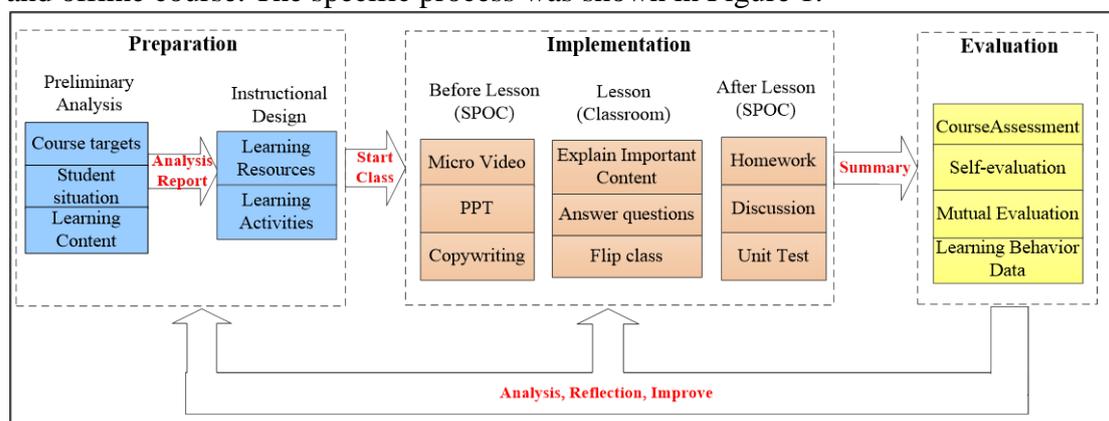


Figure 1. The teaching mode of SPOC

Firstly, the teaching preparation took place before the course, which included pre-analysis and instructional design. Its main purpose is to promote teachers to decompose the teaching content and design teaching resources and teaching activities, by analyzing the curriculum objectives, learning content and student situation.

Secondly, the teaching implementation was divided into three stages: pre-class, classroom and post-class. In the pre-class stage, teachers put the teaching materials, such as micro-videos, PPT courseware and instructional copy, and arrange homework on the SPOC according to the syllabus. Students completed the video watching, reading of reference materials, and other related materials studying on the SPOC platform to achieve the purpose of preview. In the classroom stage, teachers checked the knowledge of students by asking questions. At the same time, teachers also solved the problems in student learning by analyzing and explaining the key content of the course. In addition, students could also display group results through group discussions and then complete knowledge digestion. In the post-class stage, students actively participate in discussions and complete homework and unit tests assigned by the teacher to further consolidate what they have learned on the SPOC platform.

Finally, the teaching evaluation was carried out using curriculum assessment, student self / mutual assessment and online learning behavior data. Teachers adjusted the progress and content of the course in real-time to continuously optimize the teaching resources and the SPOC mode operation mode through the evaluation feedback of the students, online and offline assessment of the course and the teaching reflection.

3. SPOC Platform

The online education platform was an important learning support environment in the construction of the SPOC and was also an important factor in learning effects. Since 2011, large-scale open-source MOOC platforms such as Udacity, Coursera and edX were launched in universities such as Stanford University, MIT, and Harvard University, which provided students from all over the world with free online excellent universities and excellent online courses from well-known professors [4]. After that, the United Kingdom, Europe, Japan, and China began to build their own online education platforms, as shown in Table 1.

Table 1. Some online education platforms

Country	Online course platform	Date	Organization
America	Udacity	2011	Stanford University
	Coursera	April 2012	Stanford University
	edX	May 2012	Massachusetts Institute of Technology and Harvard University
Britain	Future learn	December 2012	12 universities in the UK including Open University
Europe	OpenupED	April 2013	Eleven countries in Europe
China	Cloud classroom of Netease	December 2012	NetEase
	XuetangX	October 2013	Tsinghua University
	CNMOOC	April 2014	More than 400 Chinese universities and organizations including Shanghai Jiao Tong University
	China University MOOC	May 2014	NetEase and Higher Education Press
	Uooonline	2016	Shenzhen University

The basic function of a major online education platform was to provide learning videos. In 2014, in order to achieve sharing of teaching resources and mutual recognition of credits among high-level universities in China, more than 400 Chinese universities and organizations including Shanghai Jiao Tong University, Fudan University, and Baidu Yunzhi College have established Chinese high-level university open cooperative education platform-CNMOOC, which provided a convenient way for students at different levels to obtain first-class university credits. The city branch MOOC of our school is a SPOC platform built with the help of the CNMOOC. As seen in Figure 2. The platform includes four modules of course information, learning resources, learning support and learning activities.



Figure 2. The functional modules in CNMOOC

Before the course, teachers added relevant introductions into the SPOC platform, such as course introduction, teacher team, course outline, assessment standards and so on. When creating the SPOC course, it provides learning support for learners by providing related learning support functions such as discussion forums on the SPOC platform and introduction to common questions. After the class, the teachers uploaded the learning resources such as the course micro-video and micro-homework to the SPOC platform according to the teaching progress, and set the discussion topic. Finally, through online and offline teaching interaction, the learning of teaching content was realized.

4. Learning Resource Development

The development of learning resources is mainly based on the content of the course, including copywriting, PPT courseware, animation videos and other materials. Among them, animation videos are an important learning resource for SPOC. There are many ways to make micro-videos. According to the shooting scene, it can be divided into a selfie, field scene recording, simulation scene record, screen recording and animation. Table 2 lists several commonly used micro-video production methods and their characteristics.

Table 2. The production method of micro-video

Production Method		Characteristic
Selfie		Mobile phones, tablets, camcorders and other devices with video recording capabilities
Field Scene Record	Class Record	Record the teacher's actual teaching process in the classroom
	Field shooting Record	Recording in a real environment
Simulation Scene Record	Studio Record	Simulate classroom scenarios in professional studios
	Interview Record	Record conversations between two or more people
Screen-record	Camtasia Studio	Record images, sound, mouse movements track, commentary and other activities on the computer screen
	Focusky	
	Axslide	
Animation	Youya Interactive Movies	Use animation to restore the case scene
	Shadow player	
	VideoScribe	

The selfie is relatively simple and is mainly used to record the teaching process of combining pen and paper with calculation and writing. Its biggest disadvantage is that the noisy scene recording environment and the rough recording effect. Although the simulation scene recording has a good rendering effect, it requires professional recording equipment and studio environment. The pre-design and post-editing of the video require the cooperation of professionals. So, it resulted in high cost and low efficiency. Screen recording and animation are both used for video editing

software for micro-video production. Camtasia Studio is a set of professional screen recording and editing software, such as recording presentation effects of PPT courseware. In addition to recording screens, the software can also perform editing, editing, adding transition effects, instant playback, and compression of video clips.

In summary, when choosing a micro-video recording method, you cannot blindly choose a certain method to make a course video. According to the teaching content, teaching objectives, cost, purpose and other comprehensive considerations, choose the appropriate micro video recording method. Sometimes, in order to show better results, a combination of multiple video production methods was required.

5. Conclusion

Higher education informationization is an effective way to promote higher education reform and innovation and improve teaching quality. The SPOC adopted a mixed teaching mode combining online learning and offline courses to produce a variety of learning methods such as autonomous learning, collaborative learning and blended learning, which has stimulated students learning enthusiasm and independent thinking ability and achieved the new three-center education concept of 'centering on student development, student learning, and learning effectiveness'. This article discussed the three aspects of the SPOC teaching model, platform and development of learning resources in detail. It is suggested that when constructing the SPOC in universities of technology and application, comprehensive consideration should be given to teaching content, teaching objectives, cost, use and other factors, and then choosing a reasonable choice of one or more paths to achieve.

Acknowledgment

This work was supported by a Characteristic Specialty Construction project of Big Data Intelligence in Chongqing Undergraduate Universities in 2018 (File No. Yu Jiao Gao Fa (2018)12), a Higher Education Teaching Reform of Chongqing Education Commission project in 2019 (Project No. 193347) and the School-level Education and Teaching Reform Project of City College of Science and Technology, Chongqing University in 2019(Project No. 2019YJ1913 and No. 2019YJ1908).

References

- [1] Xiulin Ma, He Mao, Cuixia Wang. From MOOC to SPOC: An Empirical Study on the Effect of Two Kinds of Online Learning Modes[J]. Journal of Distance Education, 2016.
- [2] FOX Armando. Viewpoint From MOOCs to SPOCs[J]. Communications of the ACM, 2013, 56:38-40.
- [3] Wei Xu, Yongzheng Jia and so on. From MOOC to SPOC: Lessons from MOOC at Tsinghua and UC Berkeley[J]. Modern Distance Education Research, 2014.
- [4] Pengjiao Wang, Tingting Duan and so on. The Applied Research of SPOC-based Teaching Design Pattern in Flipped Classroom in Open University[J]. China Educational Technology, 2015.