SPOCs Based Teaching Reform and Innovation for the Course of “Multimedia Technology and Application”

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Abstract

The SPOCs teaching mode has the characteristics of combination of the classroom teaching method and flipped classroom teaching method based on online teaching. So this paper focus on the design and application of the question-based SPOCs teaching mode in the course of “Multimedia technology and application”, put forward a teaching scheme design that is suitable for large scale online/offline teaching. The teaching effect shows that, the proposed teaching reform method is accepted by most of the teachers and students and can make the students study deeply according their own willing, so as to enhance their autonomous learning ability.

Key words: *SPOCs; MOOC, flipped classroom; teaching reform; multimedia technology and application*

1 Introduction

MOOC courses have the characteristics of no limitation of the identity and the number of the participants, clear structure, concision, free access and famous teacher. But the practice shows, we cannot ignore the unique value of the face to face teaching model, so the better way to acquired comparatively longer vitality of the MOOC is to explore another small-but-excellent SPOCs online course. How to explore a kind of O2O online teaching method and classroom teaching method mixed learning model based on the SPOCs online courses to a limited extent, so as to integrate the universal mind of computing into the creative thinking of all kinds of students, realize effective learning and continuous learning, is a valuable researching area in the field of theory and practice.

For a course, the teaching requirement and the teaching method should be different based on the students of different level and different foundation, the MOOC can be used as a standard, it should include the complete teaching content the course required with a certain depth demands and Breadth demands, while the SPOCs should contain the personalized teaching content, it can be higher or lower than then standard of the MOOC. ¹ The SPOCs has the characteristics of limited students, the teaching can totally involved in the studying process of the students, such as online course, face to face teaching in classroom, after-school tutoring; It also has the characteristics of the combination of the classroom teaching method and flipped classroom teaching method based on online teaching. ² This kind of learning mode can readjust the time distribution of in and out of classroom, the decision rights of learning transfers from the teacher to the student. The teachers don't have to teach the basic information to the students in the classroom, which can be learned by students before class based on the online studying by the video and the internet resources made by the teacher. ³

This research focus on the design and application of the question-based SPOCs teaching mode in the course of “Multimedia technology and application”, proposed a method to formulate the training objectives and the training mode that is suitable for a same course with different major of students. Put forward a teaching scheme designing that is suitable for large scale online/offline teaching based on the research of the teaching arrangement, Teacher's role's setting, teaching activities designing and student's role's setting. The teaching effect shows that, the proposed teaching reform method is accepted by most of the teachers and students and the excellent rates and the well rate of the classed of the classes that adopted this method is better than the other classes.

2 The current status of the SPOCs and flipped classroom

Lue, R conducted the teaching analysis from four basic aspects: (1) recognize the learning style , define the learning demands;(2)develop a clear learning plan and effective measuring strategies;(3) independent research and development or buy the learning material;(4) learning tracing and record measure data. ⁴ Yeqin used the teaching method of flipped classroom, by the approach of online game to arouses the students' study motivation, and proposed the “by the students, for the students, of the students” teaching method based on the flipped classroom, put the learning initiative back to students, help students form a good habit of learning independently, evaluate independently, and proposed three keywords: “class management”, “group scoring” and “peer pressure”.

But there is also some bad situation of the lack effective use of the internet resources during the revolution of MOOC and SPOCs, such as less effective classroom discussion,” video + lays down the law” teaching mode, ineffective teaching design, ignoring the acceptance degree of the students, undisciplined learning attitude, unclear division of labour of each members in a group, so as to finally result in the excellent ones are more excellent, the poor ones are even worse. ⁵

3 Research scheme design

3.1 The platform of Teaching Reform Object

This research realized the experiment based on a class from “School of Science” college with 87 students which implement the SPOCs teaching approach and a class form “School of Humanity and Law” college with 162 students which didn't implement the SPOCs teaching approach. The former one adopted the THEOL platform as the experimental platform, all the used teaching resources including the teaching video, ppt and the operation process video are all made by the author. Furthermore, this platform also includes the discussion area, online test and podcast unit.

3.2 Teaching design principles

- *Design the personalized SPOCs teaching scheme based on the major reality*

How to implement the SPOCs in the course of “multimedia technology and application” and formulate a suitable teaching approach should depend on the realities of the students, the features of the course and the scale of the students.

- *On the basis of the high quality network video resources*

The network video resources with high quality are important elements to stimulate learners' learning dependency. The teaching content of the video should be cautious and not be too deep, too theorization; the time duration should be within 5-10 minutes which can control the student's attention in a relatively concentrated time range. The recorder form is classified into two kinds, one is shooting form, and the other one is screen recording form. In order to ensure the effect of the screen recording, we added some contagious sounds and interactive elements. On the one hand, it can integrate the issues that we'll be discussing in the next class, on the other hand, some questions and answers and be integrated into the video.

- *Moderate segmentation of the teaching content, setting questions from easy to hard*

The resources of the entire course can be divided into chapter resources, and then can be further divided into knowledge element. All the videos were produced by the knowledge element. We adopted the question-based SPOCs teaching mode, the questions were set from easy to hard and were attached to students' real life, which can provide guidance and help to the students when they are transited from "reality area" to "potential area".

- *By means of effective interaction inside and outside the classroom setup character*

On the one hand, it is conducive to improve the activity of the students in the classroom by setting up special role. Different roles can be allocated with different tasks which must be accomplished on time. The clear accountability ensures each students will be involved in active learning, so as to avoid the undisciplined learning attitude. On the other hand, effective interaction was implemented inside and outside classroom. It can increase students' learning autonomy based on the message, comments, homework and tests on the THEOL platform and also based on the platform of QQ group, WeChat group.

3.3 SPOCs flipped classroom based teaching scheme design for the course "Multimedia Technology and Application"

Here we take the first chapter as an example. The questions were classified into different levels according to the degree of difficulty, the studying group can select the question and submit the homework by the THEOL platform within the allotted time, then present and discuss in the class.

3.3.1 The teaching goal of this chapter is as follows:

- *Cognitive of the knowledge*

Can understand the implication of the media and multi-media; Grasp the characteristic of the multimedia technology; Can analyse the research areas and application areas combining with practice, and have own view of the future development about multimedia technology; Grasp the function and the performance index of various media devices; Can analyse the disadvantage and advantage of different media devices; Can put forward a suitable configuration of several media devices according to the realistic demand

- *Emotion training goal*

Develop the students' ability to analyse and solve problems by the thought of multimedia technology, makes students aware of the important roles that the Multimedia technology plays in our daily life so as to enhance the ability of thinking.

3.3.2 The arrangement before class

Watching video is the important precondition to the offline discussion. In order to help the students to have a preliminary understanding of this chapter, I designed several overview questions:

- *What is media?*
- *What is multi-media? Have you ever contacted with the multi-media, present some examples*
- *What is virtual reality technology? Present some example with image, video and animation? What convenience and experience can it bring to our life, work and studying?*
- *The previous life, this life and the future of the multimedia technology*
- *What are the commonly used digital camera brands? Performance and Features*
- *What are the commonly used video card's features and performance? How can we select a suitable video card in different demands?*

3.3.2 The arrangement in the class

First, a small test is taken, the content of the test is set by the MOOC course which can cover all the content of this chapter and the item difficulty is not hard; Second is the student questioning part, during this step, the students can ask the teacher for advice according to their own learning obstacles. Simultaneously, the teaching assistant will check the students' test results, summarize the analysis results, so that the teacher can focus on explaining the most problems; Third classified the students into some groups, each one has 5-7 persons, and each person in the group has specific and defined roles. During the discussion, each person must present his/her own opinion which will be the reference of the grade of the final assessment

The arrangements of the 90 minutes' class are as follows:

- *"Last class's review--students dominate the class"*
--10 minutes: Check the homework of the last class, and it is mainly performed by the interactive evaluation
- *"Review and introduction—teacher dominates the class "*
—10minutes: Review of the last class, and introduce the new knowledge into this class. In this part, the teacher can make use of the question method or test method, so as to know about the preview effect of the students in MOOC
- *"flipped classroom—students dominate the class "*
—50minutes: Normally, the students should share and communicate their own opinion according to the questions they selected in last class. The speaker of a certain group is selected randomly. The speaker can be one of the group, and also can together with other members in the same group. If the other members of the same group feel that the speaker cannot explain their opinion clearly, they can supplement. And if the members of the other group have the different point views, they can present their own opinion. In addition, if the content of this chapter is really hard, the flipped classroom can be changed to students questioning and the teacher answer. The Student's progression and achievement can be used as the reference for the final assessment.

- *Supervision and Conclusion—teacher dominates the class ”*

—20minutes: During this part, the teacher will give a conclusion for the discussion in this class, assign homework, the MOOC learning task and the discussion topic of the next class

3.3.3 The review homework of this class

What kinds of any other devices does the multi-medium hardware system have in addition to the high performance computer system?

3.3.4 The discussion topic of next class

- *What kinds of the physical characteristics does the sound have? What is the corresponding physiological characters? What is the difference to a person's subjective feeling with different sample sounds? What kinds of physical characteristics result in this difference?*
- *How to measure the performance of a sound signal?*
- *Why does the voice need to be digitization? Is there any relation between the digital process and the performance of a sound signal?*
- *Thinking: is there some relation between this chapter and last chapter?*

4 The design of the evaluation system

The evaluation score of the “Multimedia technology and application “course is composed by regular grades and the inal grade. The final exam is a closed-book exam which is mainly used to inspect the grasping degree of the theoretical knowledge, it counts for 30% of the total score. The regular grades counts for 70% of the total score which are mainly used to inspect the MOOC online activity, classroom activity, completion of the comprehensive homework and the regular tests

- *MOOC online activity—25% of total scores:*

It is composed by the Sign in numbers and the completion of the online studying task. Here the later includes the discussion task and the online homework. The teacher will assign the online discussion topic or homework according to the content of the course before and after each class, students can accomplish them by the method of posting or upload the related material, then the teacher must give objective comments and grades.

- *Classroom online activity—25% of total scores:*

It is composed by the attendance, performance in class, the question answering in class and the discussion in class.

- *Completion of the comprehensive homework—15% of total scores:*

The comprehensive homework is final homework, which is used to inspect the students' comprehensive ability of application and the capability of solving practical problems.

- *Regular tests—35% of total scores:*

In order to supervise the students' autonomous learning, there will be a regular test after the online studying and classroom studying. The content is mainly in form of objective questions, the result can be analysed by the analysis software, and the teacher can grasp the weak part the teaching content.

5 Teaching effectiveness

The comparison diagram is shown in Fig. 1, the class which adopted the reform mode proposed in this paper has more than 3 scores than the class which didn't adopt it in terms of average score. Furthermore, for the final comprehensive homework form the former class, most of them are not download from the website and are closely related to their major, the students are more willing to reflect their own thoughts and opinions. In conclusion, the teaching effectiveness shows that the personalized learning can make the students study deeply according their own willing, the proposed teaching mode can supply a platform to the students show themselves, so as to satisfy the students' personalized learning demands.

Fig.1 The comparison of the two teaching mode

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