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Exploration on Blended Teaching Reform of Statistics Course

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Abstract

Under the background of big data, the teaching reform of statistics course is carried out. Starting from the current teaching situation, centering on the fundamental purpose of "building MORALITY and cultivating people", the scientific curriculum system and knowledge points are reshaped and the teaching mode is reformed. Through several years of practice and exploration, the research group has innovated the teaching model and reformed the assessment method by renewing the teaching idea, reconstructing the teaching strategy and integrating the teaching content, and achieved obvious teaching effects.

Keywords

Statistics, The Online and Offline Hybrid Teaching, Reform of Teaching Mode

1. Introduction

With the promotion of the construction of new liberal arts, the role of modern information technology tools such as cloud computing, big data and artificial intelligence in liberal arts education has received more and more attention. As an important discipline branch of humanities and social sciences, economics and management majors should strengthen education and teaching reform in the construction of new liberal arts in order to cultivate excellent economic and management talents. Statistics is the core course of many majors in economics and management, and plays a crucial role in the cultivation of economics and management talents.

Under the background of big data, new teaching concepts and methods such as MOOC, SPOC, flipped classroom and virtual simulation are flourishing. The online and offline hybrid teaching is a teaching mode that incorporates these

emerging information technology elements and combines the advantages of online teaching and traditional teaching through the deep integration of modern information technology and education teaching. The hybrid teaching mode is one of the "five golden courses": "online quality MOOC + offline teacher tutoring", which realizes the transformation of time and space allocation of each teaching link, learning theory through online video before class, carrying out homework and discussion in class. It is a reform of student-centered learning and teaching methods. The "blended teaching" emphasizes the integration of online and offline teaching, and focuses on the outstanding advantages of online and offline teaching, which is a transformation and upgrading of traditional teaching methods, and a theoretical innovation and mechanism innovation of teaching methods in Chinese universities. This kind of hybrid teaching mode innovation can not only improve the current teaching methods of colleges and universities, improve their teaching efficiency and school results, but also pay more attention to the interaction and feedback of students in the teaching process, better stimulate students' learning enthusiasm and initiative, cultivate students' learning ability of being good at thinking and daring to innovate, and meet the high standards and requirements of today's era development for talents' needs (Tao & Zhang, 2021).

2. Status Analysis

At present, there are still some urgent problems in the construction of statistics courses: the phenomenon of "Emphasis on teaching, not nurturing" has been changed to some extent, but in the process of implementation, how to combine political identity, character cultivation, scientific spirit and other value leadership and knowledge transfer is a problem that needs to be paid attention to. The course teaching mostly focuses on the teaching of traditional and classical theories and methods, and does not pay enough attention to the needs of students, industry needs and social needs. Big data analysis and other related contents are weak, and most of the traditional textbooks are not covered. The teaching process is "theory lecture, practice, explanation", mostly in the form of offline classes, which cannot fully mobilize students' learning initiative and motivation. Classroom teaching is limited by time, space and teaching technology and means, and is mainly a one-way transmission of "teacher → student", and the communication channel of "student → teacher" is not smooth, so it is difficult for teachers and students to communicate and interact effectively. Under the traditional teaching mode, teachers can only communicate with students through classroom teaching once or twice a week, and it is difficult for teachers to grasp the effect of each student's teaching in a class with a large number of students. The lack of active feedback from some students further leads to the lack of synchronization between teaching and learning. The course assessment is mainly based on the final examination, lacking process assessment and classification assessment, which makes it difficult to comprehensively investigate the teaching effect and

comprehensively evaluate the students' theoretical learning and practical operation ability (Tao, Zhang, & Xu, 2019).

Some of the problems that remain after the trial of blended learning:

2.1. Insufficient Construction of Hybrid Teaching Reform and Limited Facilities

The old teaching facilities, limited practical training platform and poor interactivity of online teaching platform in some universities largely affect the teaching effect. It can be seen that if the hardware facilities are not perfect and talent training fails to fully integrate modern information technology, it is difficult to carry out the hybrid teaching mode.

2.2. Blended Reform Online Teaching Resources to Be Reasonably Selected

In an era of highly developed information, a variety of teaching resources are easily available. When selecting teaching resources, the individual learning needs of students should be fully taken into account, but also combined with teaching objectives to improve the attractiveness of the course to students and increase their understanding and absorption of professional knowledge. In practice, some homemade videos are simple and rough, and the selection and integration of teaching resources also lack relevance and innovation, resulting in teaching resources failing to meet the actual learning needs of students. The unreasonable choice of teaching resources will also lead to the lack of online and offline teaching courses, and the lack of integration or simple repetition of online and offline teaching will greatly reduce the enthusiasm and initiative of students' online learning, leading to the phenomenon of disconnection in the curriculum system, making the teaching rhythm lack of coherence, which largely reduces the advantages of online and offline hybrid teaching.

2.3. The Faculty Is Not Strong, and the Awareness and Level of Blended Teaching Needs to Be Improved

At this stage, some school teachers lack in-depth thinking about blended teaching, and simply understand blended teaching as the combination of teachers' offline explanation of professional knowledge and students' online viewing of course videos, which does not break away from the inherent framework of traditional teaching mode, resulting in a low utilization rate of teaching resources. Second, teachers' supervision of online learning needs to be strengthened. Due to the influence of "irrigation" mode of teaching, most of the students in China's colleges and universities have weak independent learning ability and self-control ability, and still maintain a "task-driven" learning mentality, so it is difficult to correct the problems of passive learning, poor thinking and lack of innovation in a short time. In addition, the limitation of online learning conditions reduces the opportunity of face-to-face interaction between instructors and students, and instructors cannot directly understand students' learning status, which greatly re-

duces the role of blended teaching mode.

2.4. Learning Outcomes Evaluation Methods Need to Be Improved

The blended teaching mode promotes the diversity of teaching forms, which also requires that the evaluation of students' learning effect cannot be single. According to the survey, most colleges and universities still focus on single, patterned test papers to test students' learning results, and lack of mutual evaluation activities between students and individuals and between students, which cannot truly and comprehensively reflect the students' independent learning situation, scientifically and objectively reflect the students' individual development and comprehensive quality ability. Therefore, the single teaching evaluation method cannot provide timely and effective feedback on the real effect of blended teaching.

3. Reform Objectives

In the background of informationization and digitalization, based on the current situation of course teaching, with the fundamental purpose of "building morality and cultivating people" and the main task of teaching mode change, we will build a first-class course in statistics and provide support for training high-quality statistical talents.

3.1. To "Establish Moral Education" as the Fundamental Purpose

With the fundamental purpose of "building MORALITY and cultivating people" as the guiding principle of the course construction, the main channel of classroom teaching is used to infiltrate the function of nurturing people around all aspects of teaching, and the function of ideological and political education of the course is brought into play to achieve the same direction of knowledge transfer, ability cultivation and value leadership. Students are guided to go deep into social practice and pay attention to livelihood issues to cultivate their sense of social responsibility; students are guided to adopt scientific methods to solve real-life problems to cultivate their craftsmanship; students are guided to seek truth from facts to cultivate their good professionalism. While achieving the knowledge and ability goals, the quality goals and value shaping goals are realized (Yang, Wang, & Gao, 2020).

3.2. Enrich Online and Offline Teaching Resources

According to the status of the course in the teaching plan and the characteristics of the course, the teaching content is decomposed according to the online and classroom modules to form a set of teaching resources to meet the needs of society, mainly including: 1) teaching guidance documents including course standards, theoretical syllabus, experimental syllabus; 2) teaching and learning media including teaching lesson plans, teaching multimedia courseware, case sets, exercise banks, experimental projects, mock test banks, Catechism videos, etc.

Through the elaborate design of online teaching and offline classroom teaching, high quality teaching effect is achieved.

3.3. Building a Diversified Evaluation System for Student Learning Effectiveness Based on OBE

The effective implementation of the blended teaching mode also requires the development of scientific assessment standards. The assessment content of the course can be composed of online evaluation, practical skills assessment, offline theory examination and online and offline exercises. The course assessment is a combination of process assessment and final assessment to guide students to shift their vision from "test scores" to "learning process" and make them become the main body of learning (Yan, 2022).

4. Reform Content and Implementation Approach

Over the past few years, we have been exploring and practicing according to the reform objectives.

4.1. Update Teaching Philosophy and Adjust Teaching Objectives

Focusing on the fundamental purpose of "building MORALITY and cultivating people", we constantly update our teaching philosophy, break through the traditional teaching objectives centered on teaching statistical knowledge and cultivating ability, and fully integrate the educational objectives of cultivating students' correct worldview, outlook on life and values, cultivating students' scientific spirit and cultivating students' family sentiment into the teaching design, so as to achieve the unity of teaching knowledge, cultivating literacy and realizing value leadership, and truly preach, teach and solve problems.

4.2. Develop Teaching Resources and Integrate Teaching Contents

Enriching course teaching resources is the primary task to carry out blended teaching. We build teaching resource library around teaching contents, elaborate online learning resources and construct online video courses to provide all-round support for online teaching.

Reconstruct the course teaching content. Firstly, in view of the teaching status quo of attaching importance to knowledge transfer and neglecting spiritual leadership, the course content system is reorganized according to the basic knowledge transfer module, comprehensive skills training module and practical ability cultivation module, and the cultivation of world view, values and life view, the cultivation of scientific spirit and the cultivation of national sentiment are organically integrated, so as to give full play to the leading role of course thinking and government. Second, in order to keep up with the frontier of the times and broaden students' horizons, the teaching contents of frontier and hot issues of economic development are introduced. For example, through the introduction of new fields and directions in statistics and frontier technologies in statistics

such as big data, artificial intelligence and cloud computing, and the tracking and analysis of statistical hot issues such as economic data release, students are informed of the latest developments in statistical theoretical research and industry development, and are guided to carry out deep thinking about theories and in-depth investigation of practical applications.

4.3. Innovative Teaching Mode and Reform of Assessment Methods

Innovative teaching mode, through pre-class guide, online independent learning, classroom key points explanation, online and offline in-depth discussion, process assessment, etc., the traditional "teacher lecture-based" mode to "student independent learning-based" mode change. According to different teaching contents, we carry out "MOOC + SPOC teaching", "project-based teaching" and other online and offline hybrid teaching to effectively guide students' active exploration and discovery of knowledge and realize the independent construction of the knowledge they have learned.

Reform the assessment method and build a diversified evaluation system of student learning effect based on OBE. Diversified evaluation methods should be adopted for students to ensure a combination of qualitative and quantitative, including both online and offline components. In terms of qualitative evaluation, when establishing evaluation indexes, it should not just be limited to the final exam results, but should pay more attention to whether students have achieved the integration of knowledge and ability, attitude and values and learning methods and skills in the learning process, so as to be comprehensive, objective and rational.

4.4. Strengthen Concept Education and Build Teaching Team

The key to the implementation of the blended teaching mode lies in the teachers, who themselves are busy with teaching and research work and need to take a lot of time to prepare for the preliminary teaching reform. First, they should prepare sufficient teaching materials, including videos, extended materials, case resources, test exercises, etc. to upload to the SPOC platform. Secondly, they should be familiar with the hybrid teaching information tools and master the platform to observe and supervise the use of various functions of student learning analysis and statistics to ensure the smooth implementation of teaching in the course and get the best teaching effect. All these tasks require a lot of time from the lecturers, and if a stable teaching team can be formed, with the advantages of old teachers and new teachers complementing each other, the implementation of blended teaching will be guaranteed to a certain extent.

5. Conclusion

Through several years of teaching reform, good results have been achieved. In the blended teaching mode, students can use fragmented time to watch videos and do basic exercises online to have a preliminary understanding of the rele-

vant contents of the teaching, so that they can listen to the lectures offline with questions and have class discussions on difficult points and key points, which has achieved better results than the traditional offline teaching.

In the future teaching process, the fundamental purpose is to fully implement the "building MORALITY and cultivating people", and the construction goal is "one degree in both genders", based on the existing curriculum construction, further optimize, improve and promote the first-class statistics courses and hybrid teaching mode.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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