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Application of Mixed Teaching Model in Statistics Teaching

Min Zhang, Anning Ye*

School of Statistics and Applied mathematics, Anhui University of Finance and Economics, Bengbu, Anhui 233030, China

*Corresponding author: yeanning@sohu.com

Abstract

The teaching of colleges and universities shows great differences in the nature of courses, students' quality and training objectives. Any kind of teaching mode, in the teaching of specific courses in Colleges and universities, needs to innovate in the teaching mode according to the course characteristics. This paper explores the teaching content, teaching process and teaching form of statistics course. Through the research on the integration of mixed teaching mode into the traditional teaching mode of statistics course, this paper comprehensively analyzes the operability of mixed teaching mode in statistics course teaching, evaluates and studies the teaching effect under the new mode, in order to improve the teaching effect of statistics course.

Keywords

Mixed teaching, statistics, teaching model.

1. Introduction

Under the background of the Internet era, how to make full use of the information platform to serve education has become an important issue for educators. In the national medium and long term education reform and development plan (2010-2020), it is proposed to strengthen the application of information technology, improve teachers' application level of information technology, update teaching ideas, improve teaching methods and improve teaching effect. Encourage students to use information means to study actively and independently, and enhance their ability to analyze and solve problems by using information technology. Hybrid teaching mode is a teaching method supported by high and new technologies such as computer multimedia and Internet. It is a new achievement of education and teaching reform under the new situation.

Blending learning is to combine the advantages of traditional learning methods with the advantages of e-learning (i.e. digital or network learning), and the two advantages complement each other, so as to obtain better teaching effect. In other words, blended teaching can give full play to the autonomy of teachers and students, and more fully reflect the initiative, enthusiasm and creativity of students as the main body of the learning process [1]. The mixed teaching mode can activate the classroom atmosphere, contribute to the interaction between teachers and students, put students in the main position of learning, fully mobilize students' learning enthusiasm and improve their learning subjective initiative. The popularization of Internet technology and the application of computer technology in the field of education make the hybrid teaching model feasible and realistic. Students can use high-quality educational resources through the Internet and no longer rely solely on teachers to teach knowledge. At the same time, the roles of classroom and teachers have changed. Teachers have more responsibility to understand students' problems and guide students to use knowledge.

Through many years of teaching of statistics course, it is found that with the advancement of the teaching process, the learning atmosphere is dull, the level of learning interest and

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motivation is decreasing, and the separation of theory and practice leads to the continuous decline of students' concentration. At present, students' learning status can be roughly divided into the following three categories: the first category, with clear learning objectives and strong learning interest, learning is the main daily activity. Second, the learning objectives are not clear enough, the learning interest is general, and the learning is only to cope with the final exam. The third category has no learning objectives and no interest in learning, and learning has been gradually far away from them. Obviously, in the case of many external interference, only the first type of students will listen carefully in class. With the long-term development, the learning state of learning is bound to affect the teaching quality of Statistics course [2]. To change this situation, in the face of college students with strong sense of autonomy, compulsory measures alone will not work. Instead, we need to reform teaching methods, fully mobilize students' enthusiasm, change students' overall learning state, and then improve the quality of classroom teaching. As college teachers and teaching researchers, actively exploring new ways to improve the teaching effect of statistics has become an important task at this stage.

2. Research Status of Hybrid Teaching Mode

In the initial stage of the research, domestic scholars analyzed three typical hybrid teaching modes through the introduction of foreign successful cases of hybrid teaching. (1) Pre class and in class structural model. The characteristic of this model is that the implementation link of mixed teaching is clear, that is, before class, teachers learn basic concepts by watching videos and complete targeted exercises; in class, teachers evaluate students' pre class learning, solve the problems existing in students' pre class learning and promote the internalization of knowledge. However, the scope of application of this model is biased There are some limitations on liberal arts courses. (2) Four step teaching model. The model mainly includes four links: concept exploration, meaning construction, experiential participation, demonstration and application. Firstly, let students integrate their existing experience through participatory activities such as experiments, games and community projects. secondly, independently carry out concept exploration after class by means of video viewing and online communication. In the process of concept exploration, students Construct meaning by completing testing and writing reflective blog. Finally, the learning results are displayed in a personalized and creative way. The main feature of the first mock exam is that it provides many learning activities based on experiential learning cycle and Mike Casey's natural learning mode. (3) The exploration flip application model is based on Robert Karplus's Explore -Flip- Apply model and Think-Ask-Understand learning method, combined with guided inquiry theory, peer-to-peer mutual aid teaching method (PI) and instant teaching. The "Explore" link mainly adopts the teaching method of guided inquiry, including task, activity and conclusion; The "Flip" link is the real-time teaching of students using teaching videos at home, in which the video feedback submitted by students directly affects the subsequent classroom effect; The "Apply" link is to complete the concept test, material extension and evaluation under the guidance of teachers in the classroom [3].

In recent years, the concept of hybrid teaching has become the central content of curriculum teaching reform. Mixed teaching is a teaching mode that takes students as the main body of teaching activities and adopts the most appropriate teaching methods with the support of a variety of teaching means. Mixed teaching is a teaching mode that takes students as the main body of teaching activities, decomposes teaching activities into different modules, formulates teaching objectives for each module, adopts the most appropriate teaching methods in continuous teaching activities with the support of a variety of teaching means, and completes the guidance, guidance, guidance and learning effect evaluation of learners' learning activities [4].

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3. Current Situation of Statistics Teaching

Statistics is a comprehensive science to infer the essence of the measured object and even predict the future of the object by means of searching, sorting, analyzing and describing data. Statistics uses a lot of professional knowledge of mathematics and other disciplines, and its application scope covers almost all fields of social science and natural science. In financial and economic colleges, statistics is a basic subject course and professional compulsory course for the major of economic management. It is a course with strict theoretical basis and classical thinking methods. It is a necessary basis for quantitative analysis and research of economic problems after learning mathematics courses. Through the teaching of this course, students can understand the basic idea of statistics, understand the basic methods of data collection, sorting and analysis in statistics course, be able to scientifically classify, screen and quantitatively process data, master the application conditions and occasions of various statistical analysis methods, and skillfully use statistical analysis software for relevant statistical calculation and analysis. The main task of statistics is to cultivate students' ability to design questionnaires, collect data and process and analyze data. The teaching content of statistics is classic, but because there are many basic concepts and the content covers a wide range, freshmen and sophomores who have not yet gone deep into the study of professional courses will feel that the method is new, the learning is easy to stay in formal understanding, and it is difficult to master the essence [5].

4. Solutions to Problems

From the perspective of content level, most of the current statistics courses still adopt the traditional "concept - example - example - exercise" mode, which places too much emphasis on theoretical knowledge, emphasizes the preciseness and systematicness of mathematics, focuses on students' learning of pure methods and skills, lacks practicality and interest, and the combination of professional courses is not close. Therefore, many students majoring in economics and management do not have high enthusiasm for statistics learning and are not willing to conduct in-depth research.

4.1. Teaching Design of Classroom Role of Statistics Course under Mixed Teaching Mode

(1) The role of teachers has changed. Under the mixed teaching mode, teachers have changed from the imparter of knowledge in the traditional classroom to the promoter and guide of learning. Teachers are no longer the master of the classroom, and the classroom is no longer the teacher's speech hall. The dominant position of students has been fully reflected in the mixed teaching, but the dominant position of teachers has not been weakened, but strengthened.

(2) The role of students has changed. In the personalized learning under the mixed teaching mode, students become self paced learners. They can control the choice of learning time and learning place, as well as the amount of learning content and learning volume. Students are the protagonists in the whole learning process and no longer the passive recipients of knowledge in the traditional classroom.

(3) Redistribution of classroom time. In the classroom, reducing teachers' teaching time and leaving students more time for learning activities is another core feature of the mixed teaching model. In the mixed teaching model, the original classroom teaching content is completed before class through network technology, so as to enhance the interaction between teachers and students in the classroom without reducing the transmission of basic knowledge, By maximizing the "preview time", we can extend the teaching and learning time, realize the deep internalization of knowledge, and improve the learning efficiency.

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(4) Online and offline mixed teaching increases the interaction in learning. The mixed teaching mode greatly improves the interaction between teachers and students and between students and students in the classroom. Because students learn the upcoming courses to a certain extent through teaching videos, students' questions, teachers' answers and discussions and exchanges between students in the classroom are fully improved Students' sense of ownership in the classroom enables them to actively participate in the learning process.

4.2. Teaching Research on Knowledge Points of Statistics Course under Mixed Teaching Mode

Statistics is a basic course and a compulsory course for economics and management majors in financial and economic colleges. A wide range of research objects and strong practicality are the most prominent characteristics of statistics course. The principle of teaching content for "online and offline mixed teaching" should have the following characteristics: first, it is practical. Many contents of statistics are widely used in practice, such as statistical grouping, sampling inference, time series analysis and regression analysis. Combined with the characteristics of finance and economics schools, constructing research cases related to economics and management can not only guide students to actively explore the knowledge points in statistics, but also deepen their understanding of economics and management related knowledge, so as to achieve the repeated combination of theory and practice. Second, it is basic. As a basic course, statistics is a compulsory course for students in follow-up courses. Students will learn the content of the course at the undergraduate stage, which is the basis of a certain degree of theory. Only with a solid foundation in mathematics and statistical literacy can students further apply statistical knowledge to achieve the purpose of training students. Third, pay attention to problem, comprehensiveness and openness in content. Statistics course focuses on cultivating students' ability to think, analyze and deal with relevant practical problems by using statistical methods. Through hands-on operation, students not only master the theoretical knowledge, but also learn the methods to solve problems, and deeply realize the beauty of using scientific knowledge to solve practical problems.

4.3. Teaching Design of Micro Course of Statistics under Mixed Teaching Mode

For a specific topic in statistics course, such as core concept, single knowledge point, a teaching link, teaching activities, etc., design and formulate micro course. The course content of the micro course should be clear. The instructor can explain the knowledge points clearly in a very short time, and the learners are also interested. It is easy to master the teaching content in a short time. Therefore, the topic selection of micro course should extract the key points, difficulties or points of interest from many knowledge points or teaching links to give key answers. The content of micro course can be knowledge explanation, topic type intensive lecture, skill demonstration, summary and induction, knowledge expansion, textbook interpretation, method teaching, teaching experience exchange, etc.

Micro video is an important carrier of mixed teaching classroom. Teachers change from the transmitter of teaching content to the designer and developer of micro class video resources. The micro course teaching process of statistics course should be brief and complete, including the proposal of teaching problems, the introduction of teaching cases or situations, the explanation of teaching contents, the arrangement of teaching activities, guiding and enlightening students to carry out inquiry learning.

4.4. Research on the Teaching Mode of Hybrid Teaching based on Micro Course in Statistics Course

The construction of teaching mode should first clarify the online and offline mixed process, and follow the principles of teaching mode design with the support of certain theories.

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(1) Pre class preparation. First, teachers should prepare for the micro class. In the pre class preparation stage, teachers should give specific course contents so that students can understand the knowledge points they need to master in each micro class teaching. Second, students should learn about the micro class. Students should clarify their learning tasks and use the micro class to complete pre class learning. If they can't understand some of the contents of the micro class, they can feed back the questions to students teacher. Finally, teachers carry out teaching evaluation and learning feedback. Teachers need to make evaluation according to students' micro class learning status. Such evaluation is the process evaluation of students' learning status.

(2) In the classroom, students learn and teachers guide them. In the classroom, give way to students' time and space, and teachers assist students in learning. This process can be a discussion, an exercise or a case, which is grouped according to students' pre class learning.

(3) After class. In combination with the previous process evaluation, the teacher gives the students' final course learning evaluation. For students who still can't master the knowledge points, the teacher needs to provide an additional learning list. It is suggested that the students consult some materials, watch some learning videos or do some exercises after class.

5. Some Problems Needing Attention

Cultivating high-quality innovative talents is an important task of higher education, and mixed teaching is an effective way to achieve this goal. Integrating mixed teaching into statistics teaching is not only an innovation in statistics teaching reform theory, but also an innovation in teaching mode practice. When integrating the living water spring of blended learning into the traditional teaching mode, the following points should be considered:

5.1. Using Mixed Teaching Mode to Improve Students' Innovative Thinking Ability

Highlight the practicability and foundation of the teaching content of statistics course from the perspective of mixed teaching. Many contents of statistics course can be combined with various professional courses and widely applied to practice. Combined with the characteristics of finance and economics schools, build research cases related to economics and management, guide students to actively explore the knowledge points in statistics, deepen their understanding of economics and management related knowledge, and achieve the repeated combination of theory and practice.

Through pre design and organization, students can be inspired to discuss specific problems, which can cultivate students' independent thinking ability and innovative spirit. Mixed teaching abandons the traditional indoctrination and cramming methods. Under the organization and guidance of teachers, all students actively participate in classroom discussion, so as to realize the interaction between teaching and learning.

5.2. Using Mixed Teaching Mode to Enhance Students' Problem-Solving Ability

To realize the auxiliary teaching of mixed teaching to statistics courses, examples can be combined in micro class teaching to stimulate students' in-depth understanding of the theoretical content of statistics courses with online and offline mixed classes. Then, through in-depth understanding of the theoretical knowledge, further guide students to apply the theoretical knowledge to practice, achieve the repeated combination of theory and practice, and make students feel that this course is learning and useful. The focus of mixed teaching mode is to improve students' learning ability and ability to solve practical problems, which can not only obtain those fixed principles and rules, but also improve students' skills of expression and discussion, enhance their self-confidence in the face of difficulties, fully mobilize students' learning enthusiasm and shorten the gap between teaching and real life.

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Mixed teaching is an important practice of the reform of statistics teaching mode. At present, there is no experience to learn from and needs careful design. In addition, teaching effect is an important index to measure the completion of teaching purpose and whether the teaching process is satisfactory. We need to evaluate the teaching effect of mixed teaching of statistics course in time, and analyze the role, effect and shortcomings of mixed teaching in statistics teaching.

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