

Study on the effect of the “classroom Revolution” of the professional courses of business and trade in higher vocational colleges with the mixed teaching of online and offline

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Abstract: In recent years, the application of online and offline hybrid teaching in higher education has gradually increased. However, there is still insufficient empirical research on the teaching effect of online and offline hybrid teaching in vocational business courses. This study uses the method of teaching experiment to control the teaching methods, and explores the differences between online and offline mixed teaching and traditional teaching methods in the two aspects of students' academic performance and classroom satisfaction. The experiment found that the implementation of online and offline mixed teaching can effectively improve students' academic performance, but the impact on course satisfaction is not significant. Teachers in higher vocational colleges should adjust the amount of course tasks according to the actual situation and guide students to treat the learning pressure correctly, so as to improve the overall learning effect of students.

Key words: Online and offline mixed teaching; Classroom revolution; Teaching effect; Experimental research.

1. Research background

In 2020, the Action Plan for Improving the Quality and Training of Vocational Education (2020-2023) issued by the Ministry of Education and nine other ministries and commissions clearly pointed out that the “classroom revolution” of vocational schools will be promoted to adapt to the diversified characteristics of students, and the curriculum and teaching reform will be pushed into depth. The concept orientation of “classroom revolution” in vocational education adheres to the student-centered and moral education as the foundation, and makes full use of modern information technology means to reform and innovate the teaching mode. The deep integration of modern information technology and teaching process is generally regarded as the main means and the only way to realize the classroom revolution.

Compared with the traditional teaching concept of teaching knowledge as the logical starting point, and the three-center integration paradigm of teacher-centered, teacher-centered and classroom-centered, the online and offline hybrid teaching is a student-centered and teacher-guided classroom revolution, which breaks through the two classes of online independent learning and offline cooperative discussion. It has the characteristics of diversity of teaching resources, autonomy and controllability of learning process and the reversal and extension of teaching time and space, which provides convenient conditions for teaching students according to their aptitude, can effectively promote the development of students, and is more in line with the reality of diversified sources and diverse demands of current vocational college students, satisfying the teaching concept of respecting differences, promoting their strengths and taking students as the center. In the new era, business courses in higher vocational colleges generally require students to grasp industry hot spots in time, effectively use big data tools, have flexible problem analysis, problem solving ability and strong team cooperation ability, and these requirements can be more efficiently achieved through online and offline mixed teaching.

However, the starting point and destination of any kind of classroom revolution should be students' learning and development, and the pros and cons of classroom teaching should be comprehensively evaluated by students' learning effect and students' experience of the course. At present, there is a lack of sufficient empirical research on the effect of classroom revolution. To what extent the classroom revolution can improve the training effect of students, and how students experience the classroom revolution, few studies give quantitative evaluation. This paper evaluates and gives feedback on the learning quality, teaching satisfaction and students' classroom experience by means of classroom teaching experiment, objective score comparative analysis, subjective feeling questionnaire, student interview and other forms, so as to show the effect of classroom revolution more quantitatively, with a view to providing useful reference for the classroom revolution of online and offline mixed teaching of business courses in higher vocational colleges.

2. The research design

2.1 Research objectives

By using the experimental research method and taking the teaching methods of business majors in higher vocational colleges as the control variable, this study compared the differences between traditional teaching and online and offline mixed teaching in terms of student achievement and student classroom satisfaction, so as to understand the applicability and influence of online and offline mixed teaching classroom revolution in business majors in higher vocational colleges. In order to better promote the online and offline mixed teaching in the business courses of higher vocational colleges and improve the effect of talent training.

The research is carried out based on the core course “Service Quality Management” of Business Enterprise Management major of Guangdong Polytechnic of Posts and Telecommunications. This course, with a total of 48 class hours, belongs to the core course of finance and commerce major combining theory and practice. The teaching content not only involves the basic concepts and general principles of service quality management, but also includes practical training of specific scenarios of service quality management. In the course of teaching, theoretical teaching and practical training are combined to promote each other. Based on the characteristics of the course and the quality management process of the service industry, we divide the course teaching content into five modules: service characteristics, evaluation of service quality, management of service process, analysis and improvement of service quality, and remedy of service mistakes. Each module is decomposed into several knowledge points and skills. Considering that the first three modules have a high degree of combination of theory and practice and rich online teaching resources, this experiment mainly involves the first three modules, each module is 8 hours, and each teaching is 2 hours of continuous teaching.

2.2 Experimental objects

Since the sources of students majoring in business administration in Guangdong Polytechnic of Posts and Telecommunications are diverse and the learning situation of all kinds of students is quite different, this experiment takes the students of two regular high school classes of sophomore majoring in business administration (classified as Class A and Class B below) as the research objects, carries out online and offline mixed teaching and collects process teaching data. There are 49 students in class A and 50 students in Class B of the sophomore general high school of Business Administration major. The students participating in the experiment were divided into classes according to the principle of uniform distribution of college entrance examination scores when they entered the school. All the students had taken the same courses before participating in the study and had the same starting level of learning ability.

The students of the two classes have completed the basic courses of management, marketing and other majors in the early stage, and have certain basic knowledge of management and self-learning ability, which lays a good foundation for the implementation of online and offline mixed teaching of service quality management courses.

2.3 Experimental variables and control variables

This experiment takes classroom teaching as the research variable, the experimental group adopts online and offline mixed teaching, and the control group adopts traditional teaching. At the same time, we controlled the irrelevant variables of the experiment to ensure that the teaching time, teaching progress, teachers, teaching environment and teaching content of the two classes were completely consistent. The teacher is also the first time to teach the two classes, which can eliminate the interference of students’ preconceived teacher-student relationship.

2.4 Teaching research design

The classroom teaching process is designed according to the traditional classroom teaching of “teacher-centered” and the online and offline mixed teaching of “student-centered and teacher-led” respectively, as shown in Table 1, and the teacher is required to implement the teaching process according to the above. The teaching procedure under the guidance of the two teaching methods mainly consists of four steps, which are the basic process of completing the knowledge point (skill point) teaching. With the help of the Hyperstar Learning APP, the online and offline hybrid teaching method divides the teaching of service quality management into three stages: pre-class guidance, in-class exploration and after-class extension, so as to expand the course learning time. To meet the personalized learning needs of students.

Table 1 Classroom design of two different teaching methods

Teaching Methods	Teaching philosophy	Basic steps of teaching	Features
Traditional teaching method	Teach as the center	<ol style="list-style-type: none"> 1. Teachers propose teaching objectives; 2. The teacher explains it step by step; 3. Student simulation exercises; 4. Tutoring and answering questions. 	Teaching as the center, pay attention to the imparts of knowledge, students passively accept knowledge, easy for teachers to control the classroom, not conducive to students’ independent ability to play.
Online and offline blended teaching method	Teacher-oriented and student-oriented	<ol style="list-style-type: none"> 1. Teacher puts forward task objectives; 2. Students learn micro-lessons online and complete pre-class tasks; 3. Offline classroom teamwork, case analysis, etc., to solve the teaching difficulties; 4. After-class online development, tutoring and Q&A. 	Taking teachers as the leader, students as the main body, and paying attention to students’ active learning is conducive to the development of students’ independent ability, and leaving time and space for skill development and training.

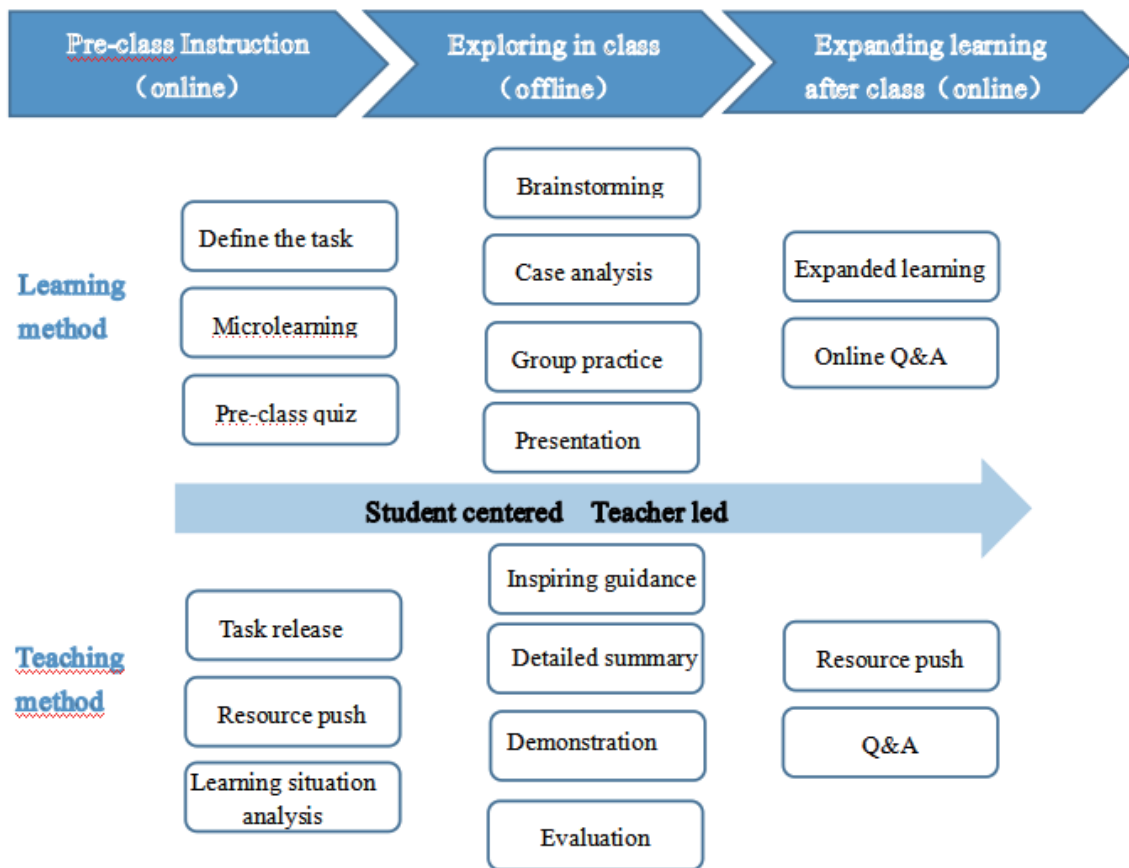


FIG. 1 Schematic diagram of the classroom flow of the online and offline blended teaching method

The experiment is conducted from September to December 2022. During this period, Class A and Class B of Business Enterprise Management major respectively adopt the online and offline hybrid teaching method and traditional teaching method in the first three chapters of the course. Considering the differences between different classes in terms of learning atmosphere and atmosphere, If the experimental group and the control group are fixed, there will be uncontrollable deviations in the results. Therefore, in this experiment, the two classes cross-applied the traditional teaching method and the online-offline hybrid teaching method. The teaching process is shown in Table 2. Unit 1: “Class A and Class B are taught by traditional teaching method; Unit 2: Class A adopts online and offline blended teaching method, Class B adopts traditional teaching method; Unit 3 Class A uses the traditional teaching method, Class B uses the online and offline mixed teaching method.

Table 2 Experimental design

	1. Service characteristics	Second, the evaluation of service quality	Third, the management of service process
Class A	Traditional Lecturing method	Online and offline teaching methods	Traditional teaching method
Class B	Traditional Lecturing method	Traditional lecturing	Online and offline teaching methods

Unit test and class satisfaction survey were conducted after each unit, and interviews were conducted with students of class A and Class B after three units to evaluate the difference between online and offline teaching and traditional teaching methods in teaching effect.

2.5 Method of data collection

(1) Questionnaire survey

In order to comprehensively investigate the classroom teaching effect, we observe the teaching effect from the perspective of learning according to the learning dimension theory of Professor Knuz Ilerez, a Danish psychology doctor, and design the basic dimensions of the “University classroom Teaching effect Questionnaire” on this basis. According to Professor Knuz, in the most general sense, learning contains at least three dimensions of factors, namely motivation, content and interaction. According to these three dimensions of learning, and considering that students’ perception of learning effect is an important factor in evaluation, the four basic dimensions of the questionnaire

designed in this study are “learning motivation”, “learning content”, “learning atmosphere” and “learning outcome”. Three to four questions were designed in each dimension, with a total of 15 questions. Five-level Likert scoring system was used to design the answers. After the questionnaire was compiled, in order to ensure the validity of the questionnaire, we selected 5 students from each experimental group, a total of 10 students, to conduct a pre-survey, and revised the questionnaire according to the feedback results.

(2) Unit test

At the end of each unit, in order to test the students’ learning effect on the relevant concepts and theoretical principles, we use the 100-system paper to give students a unit test. The test paper includes 10 judgment questions, 10 single-choice questions and 1 skill training question, which basically covers most of the knowledge and main skill points involved in the course teaching.

(3) Interview

After the end of the first three units of experimental teaching, random interviews are conducted with the students in the two classes to obtain the overall perception of the students in the experimental teaching process, as well as the true feelings of the students in class. Another purpose of the interview was to obtain students’ views on the teaching effect of the mixed online and offline teaching method from the perspective of individual differences.

3. Experimental results

3.1 The influence of online and offline mixed teaching on academic performance

During the teaching experiment, unit tests were conducted on students in two classes after each unit. The number of students in class A was 49, and the number of students in class B was 50. The answer rate of the three-unit test in both classes was 100%. The unit test adopts the percentage system. SPSS19.0 is used to conduct independent sample T-test on the scores of the three units in the two classes. The results are shown in Table 3.

Table 3 Test results of the difference in academic performance between class A and Class B

	Class	N	mean	Standard deviation	t	p
Unit 1 Grades	A (traditional Lecturing method)	49	78.33	25.441	1.51	0.134
	B (traditional lecturing method)	50	85.2	19.298		
Unit 2 Grades	A (mixed online and offline teaching)	49	84.76	0.662	1.9	0.04
	B (traditional lecturing method)	50	83.9	3.079		
Unit 3 grade	A (traditional Lecturing method)	49	81.47	2.19	4.32	0
	B (mixed online and offline teaching)	50	84.74	4.835		

As can be seen from Table 3, in Unit 1 of the traditional teaching method, there is no significant difference between the scores of the two classes ($P=0.134$). When the combination of online and offline teaching is adopted in Class A of Unit 2, while Class B still adopts the traditional teaching method, the score of unit test of Class A is significantly higher than that of class B ($P<0.05$). In unit 3, when class B adopted the online and offline teaching and class A resumed the traditional teaching method, the score of class B was significantly higher than that of class A ($P<0.01$). From the data of the above three units, it can be found that the unit test score of the class using the online-offline teaching method is always higher than that of the class using the traditional teaching method, and can reach a significant level, which indicates that the online-offline teaching method has a good help to improve students’ academic performance.

3.2 The influence of online-offline mixed teaching on teaching satisfaction

During the teaching experiment, questionnaires on teaching satisfaction were carried out after each unit. In Unit 1, 45 questionnaires were collected from Class A and 43 from Class B, with recovery rates of 92% and 86% respectively. In Unit 2, 37 questionnaires were collected from class A and 40 from class B, with recovery rates of 75% and 80% respectively. In Unit 3, 31 questionnaires were recovered from class A and 39 questionnaires from class B, with the recovery rates of 63% and 78% respectively. The unit test was composed of 15 questions from four dimensions: “learning motivation”, “learning content”, “learning atmosphere” and “learning result”. Each question was scored on the five-point Likert scale. The average score of 15 questions was taken as the score of students’ classroom satisfaction. Due to the difference in the number of questionnaires collected from each unit in the two classes, some values were missing in the data statistics. In this study, the average satisfaction of the same unit in the same class was used to fill in the missing values, forming a total of 45 groups of data for class A and 43 groups of data for class B, and each group of data included the satisfaction of unit 1 to Unit 3. SPSS19.0 was used to conduct an independent sample T-test on the scores of three units of the two classes, and the results were shown in Table 4.

Table 4 Test results of the difference in class satisfaction between class A and Class B

	Class	N	mean	Standard deviation	t	p
Unit 1 Grades	A (traditional Lecturing method)	45	3.954	0.846	0.733	0.466
	B (traditional lecturing method)	43	3.835	0.651		
Unit 2 Grades	A (mixed online and offline teaching)	45	4.037	0.615	0.333	0.74
	B (traditional lecturing method)	43	3.99	0.695		
Unit 3 Grades	A (traditional Lecturing method)	45	4.024	0.591	0.404	0.687
	B (mixed online and offline teaching)	43	4.076	0.632		

As can be seen from Table 4, there was no difference in class satisfaction between the two classes in unit 1 ($P>0.05$); in Unit 2, the mean satisfaction of class A in experimental group was higher than that of class B in control group, but the difference was not significant ($P>0.05$); in unit 3, the mean satisfaction of class B in experimental group was increased and higher than that of class A in control group, but the difference was still not significant ($P>0.05$). The data of the above three units show that the blended teaching method of online, offline and online does not significantly improve students' classroom satisfaction.

3.3 Analysis of interview results

After the end of the first three chapters of experimental teaching, the students of class A and B were randomly interviewed to better understand the students' real thoughts and evaluation of the online and offline blended teaching. During the interview, most of the students believed that the teaching process of the implementation of the online and offline hybrid teaching had "better classroom atmosphere", "more colorful class", "more communication with classmates and teachers, and a deeper understanding of knowledge". Meanwhile, some students reported that the learning intensity had increased after the implementation of the online and offline hybrid teaching. "More tasks for course preview and more difficult tasks in class", "we also need to collect cases and search for a lot of expanded content", which increases the learning burden in the sophomore year when specialized courses are more concentrated to some extent.

4. Research conclusions

From the above research results, it can be seen that the mixed online and offline teaching has different effects on students' academic performance and classroom satisfaction. In this study, the online and offline mixed teaching can effectively improve students' academic performance, but it does not significantly improve students' classroom satisfaction. Some students even say that the online and offline mixed teaching increases their course learning pressure.

The conclusion of this experiment is in line with the current situation of higher vocational colleges. The courses of finance and business in higher vocational colleges are mostly integration of science and practice. The combination of online and offline teaching provides more time for students to apply knowledge, practice skills and deepen cognition through the pre-learning of basic knowledge. It avoids the situation of "teachers speak, students listen and simply practice" in the traditional classroom, which is of great help to students to better complete the skill training. But at the same time, there is a certain gap between students' independent learning willingness, learning methods and learning habits in higher vocational colleges and undergraduate colleges. The classroom revolution requires students to complete tasks such as independent learning before class and after-class expansion, which will undoubtedly occupy some students' spare time, bring pressure to students and affect students' satisfaction with class, especially in the sophomore year when professional courses are more intensive.

Through this study, it can be found that the online and offline hybrid teaching is suitable for finance and trade courses in higher vocational colleges, which can effectively improve students' mastery of knowledge and flexible application. However, in the process of carrying out online and offline blended teaching, teachers should consider external factors such as the total number of courses in the semester and the teaching environment to flexibly adjust the amount of course tasks to avoid adding too much pressure to students. Meanwhile, teachers should pay more attention to students' learning attitude, guide students to correctly view and adjust the learning pressure, so as to improve students' learning effect and course experience as a whole.

5. Suggestions for future research

The research results obtained in this study have certain limitations. The data samples are limited, the research objects are only two classes of business administration major, and only some chapters of online and offline mixed teaching experiments are carried out. The experimental results need to be further verified in more courses and more research objects. The next step will be to further track the teaching effectiveness of courses based on the concept of teaching diagnosis, and explore the influencing factors of the implementation effect of online and offline mixed teaching. In addition, in the process of carrying out the teaching revolution, it is necessary to strengthen the

students' curriculum thinking and politics, guide the students to correctly view the learning pressure, and improve the students' ability to resist pressure.

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