Creative Education, 2020, 11, 2027-2037
https://www.scirp.org/journal/ce
ISSN Online: 2151-4771
ISSN Print: 2151-4755

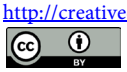
An Empirical Study on the Course of "Database Principle and Application" Based on the Mixed Teaching Mode of "Massive Course"

Yi Zhang[1*], Xiaoyan Li[2]

[1]Department of Mathematics and Computer Science, Nanchang Normal University, Nanchang, China
[2]Jiangxi Open University, Nanchang, China
Email: *605911246@qq.com

How to cite this paper: Zhang, Y., & Li, X. Y. (2020). An Empirical Study on the Course of "Database Principle and Application" Based on the Mixed Teaching Mode of "Massive Course". *Creative Education, 11,* 2027-2037.
https://doi.org/10.4236/ce.2020.1110148

Received: September 10, 2020
Accepted: October 20, 2020
Published: October 23, 2020



Abstract

"Database Principles and Applications" is a compulsory basic course for undergraduates majoring in information science and computer science. This course is rich in teaching content, strong in theory, and closely related to actual operation. Therefore, this course has always been regarded as "difficult for teachers to teach and difficult for students Learning". The author tried to use the mixed teaching mode of combining classroom and "Massive Course" to construct a teaching measurement evaluation scale and measure the results of teaching reform. After analysis and research, it reveals that the "massive course" mixed teaching model has a significant positive impact on the teaching course of "Database Principles and Applications", which help solve the problems of less class hours and more content in the course. This article adopts an empirical research paradigm, conducts teaching reform experiments in the three grades of two schools, and analyses the results from both qualitative and quantitative aspects. Finally, it concludes that the mixed teaching model of "massive course" is beneficial to improve teaching effective. The full article firstly introduces the characteristics of the "Database Principles and Applications" course and the characteristics of the "massive course", and then introduces the basic situation and result analysis of the course reform, and finally draws a conclusion.

Keywords

"Massive Course", Teaching Mode, Empirical Research

1. Introduction

"Database Principles and Applications" is a compulsory basic course for under-

graduates majoring in information science and computer science. Through this course, students can understand the basic concepts of relational data models, the basic operations of databases, and the architecture and development steps of database systems. It plays an important role on subsequently learning big data and building an information system knowledge framework. The theory of the course is strong with rich learning content, and it is also closely connected with practice. So, it has always been regarded as a "teacher is difficult to teach and students are difficult to learn" course. Especially in recent years, with the continuous popularization of new database technology applications, the course content has increased the basic knowledge of big data storage and processing. Correspondingly, when schools are constantly compressing professional course hours, the contradiction between less classroom hours and more teaching content is becoming more and more prominent.

"Massive course" also known as Massive Open Online Courses (MOOCS) which is an online course opening mode. There are about 7615 related documents searched for the keyword "massive course" on literature platforms such as China National Knowledge Infrastructure. More detailed analysis and summary of nearly 200 articles of "massive course" are carried out by Shen et al. (2014). From the analysis of the literature, it is found that "Massive Course" has become one of the most important teaching forms after classroom teaching. "Massive Course" provides students with a shared platform for independent learning and a good lifelong learning environment for the public. It can be said that "Massive Course" is changing the lives of everyone. At present, there are tens of thousands of "Massive Course" platforms with over 100,000 registered people worldwide and the number of online courses on the "Education Online" platform has exceeded 100,000. The computer scientists Sebastain Thrun and David Evans opened an "artificial intelligence" course which registered online learning exceeded hundreds of thousands of people. Some people vividly called "Massive Course" as wave (Li, 2013).

From the analysis of some relevant literatures, most of authors support the "Massive Course". However, when the author realizes the convenience in the "Massive Course" teaching practice, it also finds that there are problems which could not be ignored. For example, it is hard to constraint in student management, the teaching content is fragmentation, it is difficult for the students to build a relatively complete knowledge system, the course pass rate is not high and the quality of teaching varies.

2. Research Design

In order to test whether the online and offline mixed teaching mode can improve teaching effects of the "Database Principles and Applications" course, it can adopt empirical research paradigm, which conducts the teaching experiment in three groups of two schools. It can prove that the online and offline mixed teaching mode in the form of "Massive Course" is good for improving teaching

effects of the "Database Principles and Applications" course.

2.1. Experimental Subjects

The author carried out teaching reform experiments on 297 undergraduate and college students from 6 natural classes in the 2015, 2016, and 2017 computer major of Nanchang Normal University and Ningbo Polytechnic. Through the way of questionnaires and interviews, it compares and analyses the result of teaching reform.

One of the two selected schools is an undergraduate school and the other is a junior college. Both schools have opened the "Database Principles and Applications" course for the students in the computer major, which enables us to measure the data of teaching experiment and result continuously in three years.

2.2. Survey Tools and Methods

In order to fully understand the application of the new model, this study could combinate quantitative and qualitative research methods. In addition, questionnaire data, Excel and SPSS19.0 are main statistical tools for statistical analysis.

2.2.1. Quantitative Analysis

Based on the literature from Hao (2017), the author created a table for student evaluation, a table for teacher evaluation, and an index for expert evaluation. Each scale has two levels of evaluation indexes, as shown in Table 1, Table 2, and Table 3 below. These indicators are mainly based on the principles of "scientific, completeness, orientation, diversity, effectiveness, and measurability" (Hao, 2017), and four first-level indicators and five second-level indicators are

Table 1. Scale of various indicators of classroom teaching quality (for students in experimental group and control group).

Group / Education	2015 control group	2016 control group	2017 control group
Undergraduate	39	45	49
Junior college	65	50	49
Total samples	104	95	98

First-level evaluation index	Secondary evaluation index
Teaching attitude	1) Full preparation of lessons and proficient teaching; 2) Full of emotion; 3) Strict classroom management and strong sense of responsibility.
Teaching content	1) The viewpoint is correct and the concept is clear; 2) The key points are prominent; 3) The knowledge is wide and the information is large; 4) The content of the textbook is reasonably enriched; 5) The theory is connected with the reality and the practical ability is strengthened.
Teaching process	1) Explain refining, standard language, and clear expression; 2) Flexible and diverse teaching methods; 3) Pay attention to the cultivation of students' independent thinking and innovative ability; 4) Use blackboard writing and modern teaching techniques in a timely manner and with good results.
Teaching effect	1) Students gain something and can master the knowledge they have learned; 2) Stimulate learning interest and desire for knowledge; 3) Learning methods have improved and learning ability has improved.

Table 2. Indicators of classroom teaching quality scale (used by experts and peers).

Project	Evaluation index
Teaching attitude	1) Teachers are well-behaved and energetic; 2) Prepare lessons carefully and fully, give lectures without manuscripts, and be proficient in them.
Teaching content	1) Teaching objectives are in line with the syllabus and students' actual level; 2) Pay attention to the introduction of problems and the teaching of basic concepts, basic knowledge and basic skills; 3) Rich teaching content and large amount of information; 4) Clear and logical, with prominent points.
Teaching process	1) Teaching methods are conducive to enlightening students' thinking; 2) Proper application of teaching means and reasonable design; 3) Attach importance to cultivating students' ability to analyze and solve problems; 4) Good at adjusting the classroom atmosphere and arousing students' enthusiasm.
Teaching effect	1) High utilization rate of classroom time; 2) Promote students' positive thinking and guide students' innovative thinking; 3) students learn, can better master the knowledge; 4) Homework is helpful for students to understand and master the content explained in class.

Table 3. Indicators of classroom teaching quality scale (teachers' self-evaluation).

Project	Evaluation index
Teaching attitude	1) Be able to control the classroom well, adjust the teaching rhythm according to the specific situation, and have strong strain capacity; 2) Be able to timely and appropriately use various teaching techniques and be proficient in operation; 3) Standardized teaching language and reasonable blackboard writing design.
Teaching content	1) Teaching objectives are specific and clear, which can reflect the characteristics of the subject; 2) Can stimulate students' autonomy, initiative and creativity; 3) Pay attention to the communication with students, so that students at different levels can gain something.
Teaching process	1) Be able to reasonably expand the content of the textbook, with the focus and difficulty clearly defined; 2) Reasonable arrangement of teaching content, rich cases, close to reality; 3) Combine theory with practice to strengthen practical ability.
Teaching effect	1) Strong interaction between teachers and students, good at using heuristic teaching; 2) Diversified forms of teaching organization and combination of collective teaching and group cooperative learning; 3) Attach importance to cultivating students' ability to analyze and solve problems; 4) Homework is helpful for students to understand and master the content explained in class.

developed by the evaluation criteria of "teaching goals, teaching behaviours, and teaching methods". The corresponding questionnaires are compiled based on these indicators.

Based on the evaluation scale, the author designed different questionnaires for different respondents. The author has designed 1 to 5 questions for each second-level evaluation index. Each question is the multiple-choice question. Each option is measured using the Likert scale of five-point. The measurement scale ranged as follows: 1) dissatisfied, 2) not very satisfied, 3) neutral, 4) relatively satisfied, and 5) satisfied. The score of each secondary evaluation indictor is equal to the arithmetic average of the corresponding 1 to 5 questions.

In order to comprehensively understand the survey respondents' attitude towards the new teaching model, the students in the experimental group designed common questions that are in favour of adopting the adopting the combination of "Massive Course" and traditional classroom to form a new teaching model of "flip classroom" and why after the questionnaire. The questionnaire sent a total of 312 student questionnaires and 297 were collected. The questionnaire recov-

ery rate was 95.19%. The distribution of 297 questionnaire classes is as follows:

2.2.2. Qualitative Analysis

The main survey method of qualitative analysis is interviewees. The interviewees are divided into three types of research objects, one is a sample of students, which 5 students are randomly selected in each class tested; the other is a sample of teachers, with computer majors in two schools that 5 people were randomly selected from the first-line teachers; three categories were 5 school administrators and education scholars from two schools. The main purpose of qualitative research is to verify the conclusions of quantitative analysis.

2.3. Experimental Steps

This teaching experiment has lasted 4 years, the specific steps are as follows:

The first step is to pre-experiment and prepare for the topic, as well as determine the main research goals and assumptions of the topic. The main research assumption of this topic is that the "Massive Course" mixed teaching mode benefits to improving the quality of teaching and solves the shortage of classroom hours and the loose management of teaching problems.

The second step is to construct a teaching quality scale and conduct a survey of the control group. The author can conduct a sample survey on the students of the control group in the middle and final stages.

The third step is the course construction. The online opening course "Principle and Application of Database" built on the Superstar platform to form teaching materials such as syllabus and course standards to teach the samples.

The fourth step is to investigate the results of the experimental group and the expert survey. After measuring the teaching quality of the students in the experimental group according to the evaluation table, the measurement results are compared with the control group.

3. Experimental Group Teaching Model Description

The author introduces "Massive Course" as an auxiliary teaching method to help students prepare before class, review after class, speed up the course rhythm in class and cultivate students' independent learning ability. The specific practices are as follows:

Preparation for the course. According to the teaching content, the whole course is divided into six parts: database overview, relational model overview, SQL language, database system development, database management system and database new technology. Each part is further refined into several knowledge points and record a video and prepare two or more exercises and as much information as possible. The course outline, the course implementation plan and knowledge point videos and exercises could be uploaded to the "Massive Course" platform.

The teaching process of each course. Firstly, it requires to conduct pre-class goal guidance, upload the course materials to the platform and arrange students to study in advance; then it needs to learn difficulties and key points in classes, and check and fill in deficiencies; finally, the timely feedback after class is im-

portant. The specific method is that the teacher uploads the lesson plan, course video, PPT and expanded materials to the MOOCS platform one week in advance for students to learn by themselves. The important thing is that the teacher will also prepare some exercise uploads at the same time, so that students can learn by themselves. In the classroom, the teacher first checks the pre-lesson preparation situation, and the student answers the exercises arranged before the lesson, and then gives targeted explanations and supplements. After the class, the teacher will interact with the students to complete the question answering and testing after class, and feedback the classroom effect.

Set the teaching content of the first class of "Massive Course". The first lesson is an introduction to the entire course. Students have preconceived characteristics in their psychology, so the first lesson is particularly important and needs special attention. The content that needs to be explained in the first lesson includes: "What knowledge is needed to learn this course" (Foundation), "Relationship between this course and other computer professional courses" (Relation), "What does this course include?" (Content), "How to learn this course" (Requirement). That is summarised by as the FRCR method (Zhang, 2018).

4. Result

4.1. Reliability and Validity Test of Questionnaire (Zhang, 2018)

According to SPSS19.0 analysis, Cronbach's Alpha in the reliability and validity test of the student questionnaire is equal to 0.858, based on the Cronbach's Alpha of standardized item = 0.871, both values exceed 0.7; the Kaiser-Meyer-Olkin metric with sufficient sampling is equal to 0.824, which passes Bartlett's sphericity test Sig is equal to 0.000.

What is more, Cronbach's Alpha of the reliability and validity test of the expert questionnaire is equal to 0.871, and the Cronbach's Alpha based on the standardized items = 0.890, both of which exceed 0.7; the Kaiser-Meyer-Olkin metric with sufficient sampling is equal to 0.532, and the Bartlett's sphericity test Sig is equal to 0.000.

Teacher self-check questionnaire reliability and validity test Cronbach's Alpha is equal to 0.881, based on standardized items Cronbach's Alpha = 0.905, both values exceed 0.7; the Kaiser-Meyer-Olkin metric of sufficient sampling is equal to 0.662, and passes Bartlett's sphericity test Sig Equal to 0.000.

4.2. Student Questionnaire Results

For example, " ↑ 2→1 ↓ 0" means that there are three indicators, of which there are 2 rising items, 1 equal item, and 0 decreasing items.

In Table 5, there are 9 minimum value in each indicator in the undergraduate sample evaluation has increased, 6 items remain unchanged, and there is no decline indicator; the maximum value is 3 items which enhance, 12 items level off, and there is no decrease indicator; 15 items have different average values Improvement; the standard deviation has 3 improvements and 12 declines. In the evaluation

Table 4. Student questionnaire statistics description table.

First-level indicators	Secondary evaluation index	Control group (undergraduate)			Control group (junior collage)			Experimental group (undergraduate)			Experimental group (junior collage)		
		Minimum value	Maximum value	Mean ± standard deviation	Minimum value	Maximum value	Mean ± standard deviation	Minimum value	Maximum value	Mean ± standard deviation	Minimum value	Maximum value	Mean ± standard deviation
S-1 Teaching Attitude	S-11 Fully prepared lessons and proficient in teaching	1.50	5.00	3.08 ± 0.95	1.00	3.50	2.43 ± 0.61	2.00 ↑	5.00→	4.11 ↑ ± 0.78 ↓	2.50 ↑	5.00 ↑	4.04 ↑ ± 0.75 ↑
	S-12 full of emotion	1.50	4.50	3.12 ± 0.86	3.00	4.50	3.39 ± 0.69	2.50 ↑	5.00 ↑	3.66 ↑ ± 0.66 ↓	2.00 ↓	5.00 ↑	3.86 ↑ ± 0.70 ↑
	S-13 Strict classroom management and strong sense of responsibility	1.00	5.00	3.59 ± 0.90	1.00	5.00	3.69 ± 0.77	1.00→	5.00→	3.84 ↑ ± 0.94 ↑	2.33 ↑	5.00→	3.99 ↑ ± 0.60 ↓
S-2 Teaching Content	S-21 Correct point of view, clear concept	2.00	5.00	3.95 ± 0.81	1.00	5.00	3.62 ± 0.81	3.00 ↑	5.00→	4.21 ↑ ± 0.59 ↓	2.33 ↑	5.00→	3.93 ↑ ± 0.69 ↓
	S-22 Highlights	1.00	5.00	3.29 ± 1.23	1.00	5.00	3.26 ± 1.26	1.00→	5.00→	3.41 ↑ ± 1.21 ↓	1.00→	5.00→	3.27 ↑ ± 0.74 ↓
	S-23 has a wide range of knowledge and a large amount of information	1.00	5.00	3.56 ± 1.03	1.00	5.00	3.62 ± 0.84	1.00→	5.00→	3.90 ↑ ± 0.72 ↓	1.00→	5.00→	3.76 ↑ ± 1.00 ↑
	S-24 reasonably enrich the information content of teaching materials	1.00	5.00	3.23 ± 1.12	1.00	5.00	3.32 ± 1.10	1.00→	5.00→	3.51 ↑ ± 0.96 ↓	1.00→	5.00→	3.33 ↑ ± 1.13 ↑
	S-25 integrate theory with practice, strengthen practical ability	1.00	4.60	3.45 ± 0.60	1.00	4.60	3.58 ± 0.60	3.00 ↑	4.80 ↑	4.01 ↑ ± 0.52 ↓	1.00→	4.60→	3.51 ↓ ± 0.55 ↓
S-3 teaching process	S-31 explains refining, language specification, and clearly stated	1.00	5.00	3.31 ± 0.91	1.00	5.00	3.43 ± 0.91	1.00→	5.00→	3.51 ↑ ± 0.75 ↓	1.00→	5.00→	3.20 ↓ ± 0.92 ↑
	S-32 teaching methods are flexible and diverse	1.67	5.00	3.03 ± 0.84	1.67	5.00	3.37 ± 0.82	1.67→	5.00→	3.24 ↑ ± 0.96 ↑	1.00 ↓	4.67 ↓	3.33 ↓ ± 0.76 ↓
	S-33 pays attention to the cultivation of students' independent thinking and innovative ability	1.00	5.00	2.95 ± 0.88	1.00	5.00	3.11 ± 0.90	2.00 ↑	5.00→	3.58 ↑ ± 0.84 ↓	1.00→	4.50 ↓	3.27 ↑ ± 0.73 ↓
	S-34 uses blackboard writing and modern teaching techniques in good time and modest effect	1.00	4.67	2.85 ± 0.78	1.00	4.67	3.14 ± 0.77	1.67 ↑	4.67→	3.34 ↑ ± 0.89 ↑	1.00→	4.67→	3.22 ↑ ± 0.75 ↓
S-4 teaching effect	S-41 students have learned something and are able to better grasp what they have learned	1.50	5.00	2.72 ± 0.83	1.50	5.00	3.06 ± 0.80	2.50 ↑	5.00→	3.82 ↑ ± 0.68 ↓	2.00 ↑	4.50 ↓	3.36 ↑ ± 0.69 ↓
	S-42 stimulates interest in learning and curiosity	1.33	4.33	2.73 ± 0.73	1.33	4.33	2.81 ± 0.81	2.33 ↑	4.67 ↑	3.61 ↑ ± 0.52 ↓	1.00 ↓	4.33→	2.99 ↑ ± 1.00 ↑
	S-43 learning method has improved, learning ability has improved	1.50	5.00	2.58 ± 0.91	1.50	5.00	2.61 ± 0.80	2.50 ↑	5.00→	3.66 ↑ ± 0.66 ↓	2.00 ↑	5.00→	3.28 ↑ ± 0.78 ↓

In the **Table 4**: → The results of the experimental group are equal to the control group; ↑ The results of the experimental group are greater than the control group; ↓ The results of the experimental group are smaller than the control group.

Table 5. Statistics of changes in various indicators of the student questionnaire.

First-level indicators	Number of secondary indicators	Undergraduate				Junior college			
		Minimum value	Maximum value	Mean	Standard deviation	Minimum value	Maximum value	Mean	Standard deviation
Teaching attitude	3	↑ 2→1 ↓ 0	↑ 1→2 ↓ 0	↑ 3→0 ↓ 0	↑ 1→0 ↓ 2	↑ 2→0 ↓ 1	↑ 2→1 ↓ 0	↑ 3→0 ↓ 0	↑ 2→0 ↓ 1
Teaching content	5	↑ 2→3 ↓ 0	↑ 1→4 ↓ 0	↑ 5→0 ↓ 0	↑ 0→0 ↓ 5	↑ 1→4 ↓ 0	↑ 0→5 ↓ 0	↑ 4→0 ↓ 1	↑ 2→0 ↓ 3
Teaching process	4	↑ 2→2 ↓ 0	↑ 0→4 ↓ 0	↑ 4→0 ↓ 0	↑ 2→0 ↓ 2	↑ 0→3 ↓ 1	↑ 0→2 ↓ 2	↑ 2→0 ↓ 2	↑ 1→0 ↓ 3
Teaching effect	3	↑ 3→0 ↓ 0	↑ 1→2 ↓ 0	↑ 3→0 ↓ 0	↑ 0→0 ↓ 3	↑ 2→0 ↓ 1	↑ 0→2 ↓ 1	↑ 3→0 ↓ 0	↑ 1→0 ↓ 2
Summary	15	↑ 9→6 ↓ 0	↑ 3→12 ↓ 0	↑ 15→0 ↓ 0	↑ 3→0 ↓ 12	↑ 5→7 ↓ 3	↑ 2→10 ↓ 3	↑ 12→0 ↓ 3	↑ 6→0 ↓ 9

In the Table 5: → The results of the experimental group are equal to the control group; ↑ The results of the experimental group are better than the control group; ↓ The results of the experimental group are less ideal than that ofthe control group, the number after the arrow indicates the number.

of various indicators of the junior college students, the 5 minimum value grow, 7 items are flat and 3 items drop; the maximum value is 2 items which increase, 10 items are flat and 3 items reduce; the upward average is 12 items, 3 items are dropping; the items of standard deviation have 6 improvements and 9 declines.

5. Discussion and Analysis

5.1. College Students Generally Recognize the New Teaching Model

According to the description table of student questionnaire statistics (Table 4), the experimental group and junior college students showed different improvement in various indicators compared with the control group. In particular, the overall improvement of the undergraduate experimental group was relatively obvious, and the mean value of all indicators increased. The undergraduate experimental group generally recognized the new teaching model. According to the experimental results (Table 5), the average value of all index items in the sample group of undergraduates has different degrees of improvement, and the improvement index accounts for 100%; the 12 of 15 average indexes in the junior college students increased and only 3 items decreased. the number of increases is 80%.

5.2. The Teaching Effect of the New Teaching Model Is Better

From the analysis of Figure 1, the average value of the four indicators in the teaching effect of the undergraduate students in the experimental group is higher than other indicators, indicating that the overall undergraduates are most satisfied with the teaching effect compared to other indicators; in addition, Figure 2 shows that the college students think the new model can improve learning methods and learning ability as well as achieve the teaching goal of the curriculum to enhance students' learning ability.

5.3. Teachers of the New Teaching Model Need to do More Preparations before Class, and Students are more Appreciative of These Preparations

In Figure 1 and Figure 2, the author finds that students think that teachers are

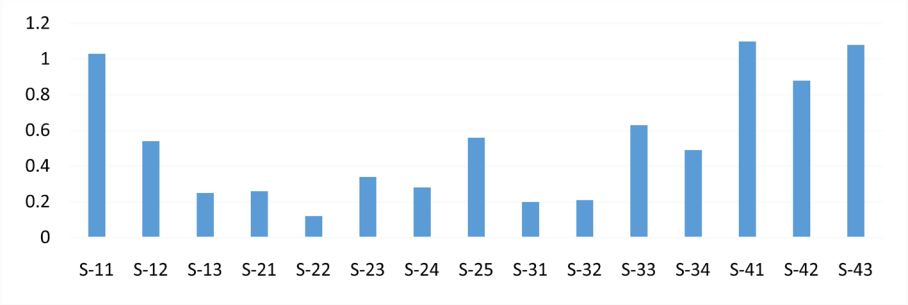


Figure 1. The difference of the mean value of each index between the experimental group and the control group.

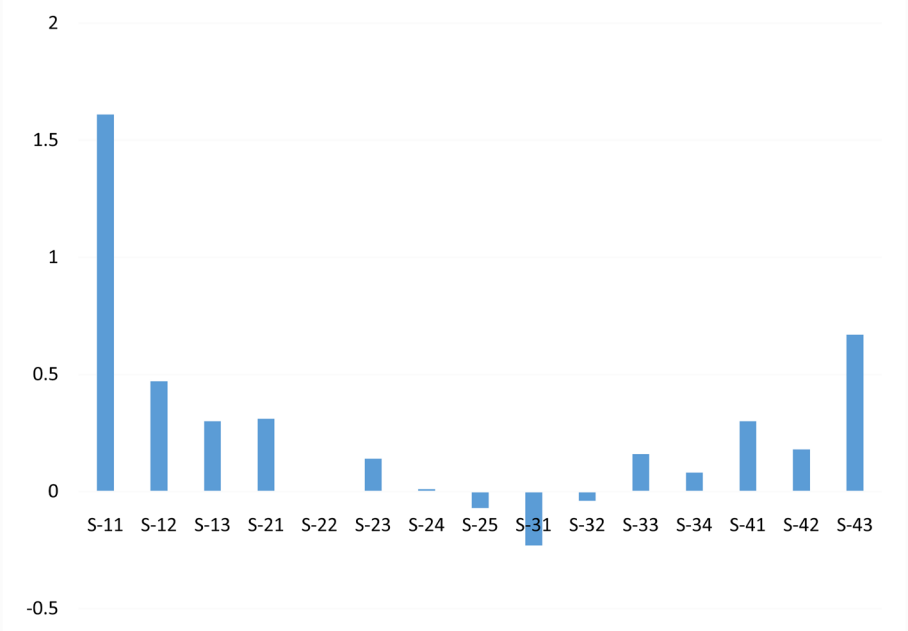


Figure 2. The difference between the experimental group and the control group.

fully prepared and proficient in teaching in the new teaching model, and that is one point that students who are most satisfied with the new teaching model. In order to record a video of the MOOCS, teachers usually try to talk many times before recording, record after meeting the recording requirements, and the prepared materials are also more abundant. The students of the experimental class agree on this.

5.4. The Teaching Content of the New Teaching Mode Is Not Focused

From the analysis of the experimental results, the experimental group of the junior college and junior college students believe that the focus of the course is not prominent. The hours of traditional courses is limited, and there are trade-offs in the course content, but there are no restrictions on the course time, and all knowledge points are explained in detail, without focusing on the key points and only make difficulty distinctions (Zhang, 2018; Chen & Zhang, 2019).

5.5. Deficiencies in the New Teaching Model

From the analysis of the experimental results, the average value of two indicators in the experimental group of junior college students has dropped significantly, indicating that students believe that teachers should pay attention to refining and refining in the new model teaching and clear expression. The new model does not focus on training practical ability. This provides the direction of course reform for the author. This course reform only transplanted the theoretical teaching part to the"Massive Course" platform, and it did not reform the content and form of the experimental computer class (Li & Xiang, 2019; Xu, 2016; Yang, 2015).

6. Conclusion

Talent cultivation is the fundamental function of colleges and universities, and curriculum teaching reform is the foundation of teaching reform. The reform and research of the professional core courses is beneficial to the promotion of the cultivation of the entire professional talents, and has important research significance and practical value. "Database Principles and Applications" is a professional core course in the major course system of "computer", whose theory and practice are closely linked.

The research on the teaching reform of this course has relatively important reference value for other teaching reform of computer courses. The purpose of this article is to demonstrate and determine whether the new online and offline mixed teaching mode of "Massive Course" can help teachers and students to improve the teaching effects of the core professional "Database Principles and Applications" course. This paper conduct the teaching reform experiments on the "Database Principles and Applications" course for computer students in two schools, the students in 2015 class are the control group, the students in 2016 class are the experimental group and the students in 2017 class are the verification group. This experiment has conducted for two years. Based on the four first-level indicators of teaching quality and a total of 15 second-level indicators as the test indicators, it analyses and compares the statistics of students' indicators in those three groups. It could find that the new online and offline mixed teaching model of MOOCS is conducive to improving the quality and effect of teaching. This conclusion has important reference value for the teaching of other courses and can be extended to other courses (Yang, 2015; He, 2014; Zhang, 2014).

Conflicts of Interest

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

References

Chen, L. D., & Zhang, Y. (2019). Reform of Curriculum Teaching Mode under the Back-

ground of MOOC—Taking "Database Principle" as an Example. *Journal of Ningbo Vocational and Technical College, 23,* 18-21.

Hao, L. Q. (2017). *Research on the Evaluation System of Classroom Teaching Quality in Colleges and Universities*. Beijing: China University of Geosciences.

He, K. K. (2014). From the Essence of "Flipped Classroom", the Future Development of "Flipped Classroom" in Our Country. *Education Research, 35,* 5-16.

Li, M. L. (2013). Analysis on the Characteristics and Teaching Design Principles of MOOCS. *Education Research of Tsinghua University, 34,* 13-21.

Li, Y., & Xiang, H. (2019). Research on the Construction of Evaluation System of Classroom Teaching Quality in Colleges and Universities. *China High-Tech, No. 8,* 30-33.

Shen, L. L., Han, X. B., & Cheng, J. G. (2014). The Ultimate Return of "Post MOOCS Era" to Open Online Education: Analysis of Characteristics and Trend of International Literature Research in 2008-2014. *Modern Distance Education Research, No. 3,* 17-26.

Xu, Z. L. (2016). *Research and Implementation of Multimedia Classroom Teaching Quality Evaluation System in Colleges and Universities*. Nanchang: Nanchang University.

Yang, S. H. (2015). *Research on the Evaluation Index System of Undergraduate Classroom Teaching Quality in Colleges and Universities*. Xinyang: Xinyang Normal University.

Yang, S. H. (2015). *Research on the Evaluation Index System of Undergraduate Classroom Teaching Quality in University*. Xinyang: Xinyang Normal University.

Zhang, Y. (2018). Preliminary Study on the Teaching Mode of "Database Principle" under the Background of MOOCS. *Journal of Nanchang Normal University, 39,* 29-31.

Zhang, Y. Y. (2014). The Influence of the Development of "MOOCs" on My Country's Higher Education and Its Countermeasures. *Journal of Hebei Normal University (Educational Science Edition), 16,* 116-121.