Evaluation of Course Teaching Reform Effects Based on Smart Education Cloud Platform: Take Marketing as an Example

Wenjing Hu[*]

Faculty of Management, Hubei Business College, Wuhan, Hubei, China
Corresponding Author.

Abstract: The concept of smart education provides a fresh perspective for the development of education, guiding the direction of future educational development. This study focuses on validating the effectiveness of smart teaching reforms, using the "Marketing" course reform as an example. Through the design and implementation of teaching reform experiments, a survey of teaching effectiveness, and a comparative analysis of final grades, the conclusion is drawn that curriculum teaching reforms based on the concept of smart education have a positive impact on students' satisfaction with learning, learning experience, and learning outcomes. They also contribute to improving students' autonomous learning abilities, collaborative expression abilities, resource acquisition abilities, and comprehensive problem-solving abilities.

Keywords: Teaching; Reform; Smart Education; Cloud Platform; Effectiveness Evaluation

1. Introduction

Today, with the popularization of mobile terminals and the rapid development of digital communication technology, significant changes have occurred in the marketing environment and industry ecosystem [1]. Corporate marketing has also ushered in a new round of transformation due to changes in consumer behavior. Existing traditional theoretical framework systems, teaching methods, and approaches in major universities may no longer keep pace with the development of the times, necessitating urgent reforms and exploration in the field of professional education [2].

In the long-term teaching practice, I have been continuously trying to implement teaching reform with the assistance of information technology, such as using smart cloud platforms like WeChat for education, Rain Classroom, and Superstar Learning. Taking the "Marketing" course in the Accounting Major at Hubei Business College as an example, a comparative experiment was conducted by offering this course to four classes: 19 Accounting Major Class 1/2/3/4, with innovative teaching methods applied to some and traditional teaching methods to others. After the teaching implementation, a questionnaire survey on teaching effectiveness was conducted, and the practical effects were analyzed based on learning data generated by the smart cloud platform during the learning process and theoretical examination results [3].

2. Questionnaire Design and Distribution

2.1 Questionnaire Design

In the practice of innovative teaching reform based on smart education cloud platforms, to evaluate the effectiveness of teaching reform, two questionnaires were designed for the Hubei Business College's 19 Accounting Major Class 1/2 (teaching reform experiment class) and 19 Accounting Major Class 3/4 (control class), respectively. The first questionnaire is titled "Survey of Teaching Reform Effects in the 'Marketing' Course", and the second is titled "Survey of Teaching Effects in the 'Marketing' Course". The first three dimensions of both questionnaires are the same, including learning satisfaction, learning experience, and learning outcomes, with a total of 11 evaluation indicators. The questions in the questionnaires were designed using a Likert "five-level" scale, with respondents indicating their attitudes on a scale from "1" to "5", representing "strongly agree", "agree", "neutral", "disagree" and "strongly disagree" respectively [4].

2.2 Questionnaire Distribution

Utilizing the Questionnaire Star platform, the corresponding questionnaires were distributed to 19 Accounting Major Class 1/2 (teaching reform experiment class) and 19 Accounting Major Class 3/4 (control class). A total of 77 questionnaires were collected from the teaching reform experiment class, with a questionnaire response rate of 87.5%. In the control class, 68 questionnaires were collected, with a questionnaire response rate of 79%. To verify the reliability of the survey questionnaires, reliability analysis was conducted using SPSS software, and the results are shown in Table 1. Reliability analysis is used to study the reliability and accuracy of quantitative data responses and is reflected by the Cronbach's α reliability coefficient [5]. The two coefficient values in the table are both above 0.9, indicating high internal consistency of this scale and strong reliability of the questionnaire.

3. Analysis of Survey Results

3.1 Statistical Analysis of Three Dimensions

To better understand the overall differences in teaching effectiveness between the teaching reform experiment class and the control class,

I conducted a comparative analysis based on three dimensions: students' satisfaction with learning, learning process experience, and learning outcomes. The method used for this analysis was an independent sample t-test [6]. The specific results are shown in Table 2.

From Table 2, it can be seen that in the comparative analysis of overall teaching effectiveness between the teaching reform experiment class and the control class, as determined by independent sample t-tests, the p-values for students in the teaching reform experiment class and the control class are both significantly < 0.05 in the dimensions of "satisfaction with learning," "learning experience," and "learning outcomes." This validates the hypothesis, indicating a significant difference in teaching effectiveness in these three dimensions.

Table 1. Questionnaire Reliability Analysis

Questionnaire	Number of Items	Sample Size	Cronbach's Alpha Coefficient
Teaching Reform Experiment Class	18	77	0.970
Control Class	11	68	0.967

Table 2. Independent Sample T-Test for Teaching Effectiveness between Teaching Reform Experiment Class and Control Class

Dimension	Group	N	Mean	Standard	Deviation Standard Error of the Mean	T	P
Satisfaction with Learning	Experiment Class	77	5.065	1.3012	0.1483	-4.209	0.000
	Control Class	68	6.250	2.0470	0.2482		
Learning process experience	Experiment Class	77	4.909	1.5992	0.1822	-4.968	0.00
	Control Class	68	6.441	2.1046	0.2552		
Learning outcomes	Experiment Class	77	8.481	2.1313	0.2429	-3.684	0.000
	Control Class	68	10.271	3.6358	0.4409		

Note: α=0.05

3.2 Detailed Indicator Comparison Analysis

While the analysis from Table 2 shows significant differences in overall teaching effectiveness between the teaching reform experiment class and the control class, a more detailed indicator comparison analysis, as presented in Table 3, reveals that the p-values for students in the teaching reform experiment class and the control class are all significantly < 0.05 for indicators 1, 3, 4, 5, 6, 7, 8, 9, and 11. This confirms the hypothesis that there is a significant difference in teaching effectiveness for these nine indicators. However, the p-value

for indicator 2 is slightly > 0.05, suggesting that the practice of implementing teaching reforms still needs improvement in terms of both breadth and depth. Students' acceptance of teaching reforms in terms of "introducing new developments in the field and linking theory to practice" is not very high. The p-value for indicator 10 is also slightly > 0.05, indicating that teaching reform practices based on the concept of smart education have yet to show an immediate impact on enhancing students' comprehensive problem-solving abilities and require gradual strengthening.

Table 3. Independent Sample T-Test for Detailed Teaching Effectiveness Indicators between Teaching Reform Experiment Class and Control Class

Index	Group	N	Mean	Standard	Deviation Standard Error of the Mean	T	P
1.After studying the course, I prefer the course 'Marketing'.	Experiment Class	77	1.636	0.6264	0.0714	-4.859	0.000
	Control Class	68	2.206	0.7834	0.0950		
2.How do you think this course has done in updating teaching content in time, introducing new trends and developments in the subject, and integrating theory with practice?	Experiment Class	77	1.818	0.5555	0.0633	-1.880	0.062
	Control Class	68	2.015	0.7017	00851		
3.How do you think this course guides students to fully utilize various teaching resources, conduct self-directed learning training, and improve their awareness and ability of self-directed learning?	Experiment Class	77	1.610	0.6520	0.0743	-3.645	0.000
	Control Class	68	2.029	0.7324	0.0888		
4.Before class, I can preview, read textbooks and related materials, and provide timely feedback and communication.	Experiment Class	77	1.701	0.7083	0.0807	-4.755	0.000
	Control Class	68	2.294	0.7929	0.0961		
5.I actively participate in activities such as discussions, voting surveys, and communication evaluations initiated by the teacher during class.	Experiment Class	77	1.584	0.6356	0.0724	-4.385	0.000
	Control Class	68	2.088	0.7478	00907		
6.After class, I will browse and review the learning resources pushed by the teacher, review and consolidate the knowledge learned, and complete assignments in time.	Experiment Class	77	1.623	0.6696	0.0763	-3.744	0.000
	Control Class	68	2.059	0.7306	0.0886		
7.Through this teaching and learning method, I have a deeper understanding and better mastery of the knowledge I have learned.	Experiment Class	77	1.597	0.6337	0.0722	-3.698	0.000
	Control Class	68	2.029	0.7721	0.0936		
8.Through this teaching and learning method, my autonomous learning ability has been improved.	Experiment Class	77	1.649	0.6441	0.0734	-3.381	0.001
	Control Class	68	2.044	0.7617	00924		
9.Through this teaching and learning approach, my ability to collaborate, communicate, and express myself has been improved.	Experiment Class	77	1.636	0.6865	0.0782	-3.023	0.003
	Control Class	68	2.059	0.8082	0.0980		
10.Through this teaching and learning method, my ability to collect and analyze data has been improved.	Experiment Class	77	1.766	0.5595	0.0638	-1.949	0.053
	Control Class	68	2.103	0.7754	0.0940		
11.Through this teaching and learning approach, my ability to comprehensively analyze and solve problems has been improved.	Experiment Class	77	1.831	0.5713	0.0651	-3.698	0.000
	Control Class	68	2.044	0.7418	0.0900		

Note: α=0.05

4. Comparative Analysis of Final Learning Performance Evaluation of Research Subjects

After conducting the comparative experiment on teaching reform, final exams were organized for the 19 Accounting Major Class

1/2/3/4. The same exam paper was used for all classes. The analysis was conducted using data visualization software Tableau, combining learning data generated by the "Learning Portal" platform and the final exam results. From the comprehensive score distribution comparison shown in Figure 1, it can be observed that, under the same conditions of teaching staff, academic starting points, and basic performance, there is a difference in students' learning performance after implementing teaching using innovative teaching methods in the teaching reform experiment class and traditional teaching methods in the control class. The teaching reform experiment class has a significantly higher percentage of students in the high-score range, with 33.33% of students scoring above 80%, compared to 18.97% in the control class.

Additionally, the failure rate in the teaching reform experiment class (0.57%) is significantly lower than in the control class (1.15%).

Looking at the box chart of score distribution in Figure 2, it is evident that, although the control class has a highest score of 92, which is 1 point higher than the teaching reform experiment class's highest score of 91, the score distribution in the teaching reform experiment class is more concentrated (narrower box). Moreover, the median value (82 points), which represents the central tendency of the distribution, is significantly higher in the teaching reform experiment class compared to the control class (77 points). The upper and lower quartiles and the lowest score are also higher in the teaching reform experiment class.
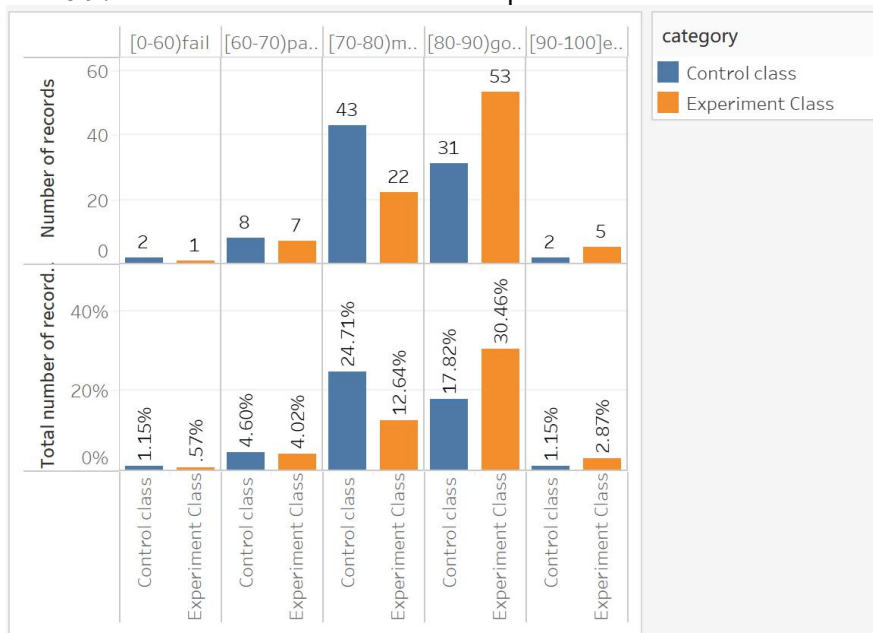

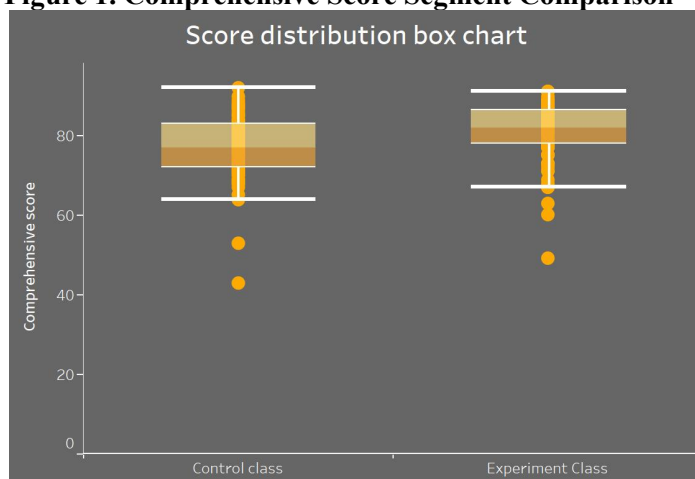**Figure 1. Comprehensive Score Segment Comparison**

Figure 2. Score Distribution Box Chart

5. Conclusions

Combining the above questionnaire survey analysis and teaching effectiveness analysis, it can be concluded that the teaching reform of the "Marketing" course based on the smart education cloud platform is significant. Under the guidance of the concept of smart education, both teachers and students have utilized the smart education cloud platform to achieve richer sharing of teaching resources, real-time dynamic learning data analysis and supervision, meeting the requirements of comprehensive teaching process assessment and visual analysis. Students have expressed higher approval and evaluation in terms of learning satisfaction, learning experience, and learning outcomes. The final evaluation of students' learning performance further validates the effectiveness of the teaching reform.

References

[1] Li Wei. Research and Application of Hybrid Teaching Mode in Universities Based on Smart Teaching Platform. Digital Communication World, 2020(11), 173-174.

[2] He Chumin. Research and Practice of Project Teaching for "Online Store Decoration" Course in Secondary Vocational Education Based on the Concept of Smart Education. Guangdong Technological Normal University, 2021. (Dissertation)

[3] Zhang Yan. Research on Student Behavior Patterns Based on Big Data in Cloud Classroom Teaching - A Case Study of "Compensation Management" Course. Heilongjiang Education (Theory and Practice), 2020(07), 78-80.

[4] Li Zibao, Huang Xianjun. Application Effect of "Rain Classroom" Smart Teaching Mode in Neurology Theoretical Teaching. Journal of Anhui Medical University, 2022, 21(03), 98-100.

[5] Tan Jiehua. Research on Project Teaching of Electronic Commerce Course in Secondary Vocational Education Based on Command Learning Platform. Guangzhou University, 2022. (Dissertation)

[6] Chen Suqiong, Lu Xi. Teaching Reform and Effectiveness Evaluation of Industrial Economics Based on Innovative Talent Training Objectives in Finance and Economics Majors. Research and Practice of Innovation and Entrepreneurship Theory, 2023, 6(10), 11-13.