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Research on the Design of New Teaching Method of Management Course

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Abstract
Industry Revolution 3.0, Big Data, Cloud Computing and Internet technology have profoundly changed our way of life, indicating the booming of the development of a new generation information technology era. At the same time, the use of teaching methods like MOOC and SPOC are spreading dramatically, which poses great challenges to the teaching of management courses. Now traditional teaching method has been unable to meet the students' growing demand for the knowledge. Under this circumstance, this paper concentrates on a comprehensive research for new teaching methods about management courses. Mainly starting with the comparison between traditional and innovative teaching methods, we can conclude new methods about management courses teaching process through constructing evaluation mechanism and conducting survey questionnaire and statistical analysis. This work will offer references and suggestions for the teaching reform of management courses in universities.

Key words: Management courses; Innovative teaching method; Integration research

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INTRODUCTION
In recent years, the rapid development of mobile Internet technology, has a great impact on the traditional teaching methods of higher education. How to understand the new teaching ideas and integrate teaching new methods have become an urgent problem. In recent years, domestic and foreign scholars have made active research and exploration on teaching methods. And the traditional teaching methods include PBL, humanism, situational, constructivism, inquiry, heuristic and so on. The integration of management teaching methods is mainly focused on these aspects: (a) basic theory class: Mainly related to the concept of design management teaching and content, which is mostly introductory and emotional knowledge; (b) pure practice class: Design specific methods, and then carry out practical work; (c) theory and practice combination class: This type of research requires theoretical guidance, practical feedback, and sufficient research time, where the domestic application is relatively small. Based on this, this paper mainly studies the existing 13 kinds of new teaching methods from the theory and practice of combining the perspective, and integrates a set of management courses for the new method.

1. MANAGEMENT COURSE TEACHING METHODS OVERVIEW
Education is the foundation of a country's long-term economic growth. To enhance the quality of the people, it is necessary to optimize the education system. In order to optimize the education system, it is urgent to improve both the teaching methods and the teaching standards evaluation methods. Now, known and widely-use management class teaching methods are PBL, humanism, situational, constructivism, inquiry, heuristic, flip, SPOOC, IBL, MOOC, CDIO and so on.

The teaching method of management class is divided into traditional and modern style by the time scale, and it is divided into online and offline teaching by means of tool. There are three general modes: (a) Traditional transition to modern model: Teacher-oriented steering is dominated by software teaching (computer-based online learning and student-centered technology application). (b) Decentralized application model: It is problem-oriented of PBL style and humanistic to satisfy the demands of students, which are specialized in situational image, constructivist systematic teaching process, inquiry-based interaction, heuristic guidance and inspiration. It also focusses on the needs of different students that resembles the flip-style and SPOC, the online sharing learning of MOOC, the teaching design and practical feedback of CDIO. (c) Structural interdependence model (integration model): It is vertical interdependent (according to the degree of learning difficulty or interdependence, to teach one course using diverse methods), physical interdependent(using project learning) and level interdependent, via standardized tests to determine the arrangement of the course and the arrangement of the entrance examination.

2. COMPARATIVE STUDY OF TRADITIONAL AND MODERN TEACHING METHODS

Traditional teaching methods mainly study the teacher-centered traditional teaching model, which is characterized by the medias through lectures, blackboard and teaching media support, to impart the content to the students. The teacher is the master of the entire teaching process, while the students are in a passive status of accepting knowledge imparted by teachers.

The modern teaching methods mainly include: (a) emotional teaching method—touch and educate people by emotions; (b) discovery pedagogy—give students some examples and problems, to stimulate students' actively thinking, independent inquiry and self-discovery, leading them to master the corresponding principles and conclusions of the method; (c) discussion of teaching methods—inspire students on specific issues to express their own views of the method; (d) questionable teaching method—raise and solve question through the analysis of the problem; (e) case teaching method—teach or discuss with the introduction of some typical cases; (f) implies teaching methods—teaching methods that harmonize conscious and unconsciousness, emotion and reason, etc.; (g) open thinking teaching method—choose teaching methods with different answers or conclusions independently; (h) Experimental exploration teaching method—the method of combining teaching, experimentation and research; (i) systematically thinking teaching method—pay attention to the whole thinking process and the method of solving the local problem in the whole premise; (j) the social participation teaching method—combine the knowledge of books and social practice. The comparison between traditional and modern methods is shown in Table 1.

Table 1
Evaluation of Teaching Methods

	Typical characteristics	Typical methods	Evaluation standard	Teaching efficiency
Traditional teaching method	Teacher is the master, while the students are instilled in the passive position	Teachers impart or instill the teaching content to the students through lectures, blackboard and teaching media support.	Score	Very low
Modern teaching methods	All teaching activities are teacher-oriented, while students are the main characters	Emotional teaching method, discovery-style teaching method, discussion teaching method, question-based teaching method, case teaching method, implied teaching method, open thinking teaching method, experimental exploration teaching method, system thinking teaching methods, social participation teaching methods, etc.	In addition to the ability of scores, moral and other comprehensive multi-standard	Relatively high, but also needs to be improved

Comparing traditional teaching methods and modern teaching methods, we found that: the traditional teaching concept regards teachers as the center, the school as a simple place to impart knowledge, the book as the main teaching content, the students as a passive tool to accept knowledge, the score as the only criterion for assessing the effect of teaching and student achievement. To a certain extent, it hinders the students' positive thinking, ignoring the cultivation of students' abilities. Whereas, students with high scores and poor abilities can not adapt to the society in the new era. Therefore, modern teaching ideas completely abandon these backward ideas and methods, trying to use a new teaching concept to change this phenomenon, so we believe under the guidance of modern teaching concept can we carry out a series of modern teaching reform.

3. RESEARCH ON THE INTEGRATION AND INNOVATION OF NEW METHODS IN MANAGEMENT COURSES

In order to better construct the new teaching method of management course, this paper adopts the statistical score method based on student evaluation, and summaries the most suitable method of student evaluation through the mathematical statistics method, to obtain the new teaching methodology of management curriculum. The specific process is as follows:

Step 1: The establishment of scoring mechanism

We set the proportion of the number of students with certain attitude towards each method to the total number as structural indicators of a score range, and the percentage of students as the assessment of the weight of the specific operation.

Description: (a) Through the statistical analysis, we can determine the number of students with certain attitude towards each method, and we use the middle value of each group multiplied by the percentage of the number of people to represent the unadjusted total score. (b) The total unadjusted score of each method = score interval group value × percentage of people = fractional interval group value × weight percentage. (c) The adjusted total score of the method = unadjusted overall score of the method × adjustment coefficient of the number of people with online or offline studying = the percentage of people favoring the online studying / the percentage of people favoring the offline teaching. (d) The existence of the unadjusted score is due to the fact that the difference between the students number of offline and the online studying is not taken into account.

Step 2: We apply the weights of different methods with different values, and use the least squares method to fit a variety of teaching methods to obtain the two methods that are closer to the straight line than the other methods. The principle is that the fitting line represents the different average degree of bias of students, the more closely means more suitable for most students.

$$Y_i=a+b_i+u\ .$$

(Y_i for the teaching quality score, X_i for the online teaching method dependent variable or offline teaching method dependent variable, b for the online or offline weight coefficient, a for the constant intercept, u for the statistical error term.)

Step 3: The least squares method is used to fit the maximum score scheme for two or more teaching methods, and get the values of a, b, u and linear model equations

$$aN+b\sum x_i=\sum y_i\ ,$$

$$a\sum x_i+b\sum x_i^2=\sum x_i y_i\ .$$

(Description: The formula of the least squares method)

Step 4*:* Data collection and analysis:

We adopted the small scale questionnaire (n>=30) to determine the interval assessment scores range from 300 students' attitude towards the teaching methods. The following is the questionnaire survey:

Questionnaire survey on the online and offline teaching tendencies: the preference of online learning accounts for 44.44%, while offline accounts for 55.56%; This shows that the amount of people studying off-line is slightly more than the number of students studying online. In the evaluation of the degree of preference, we have to eliminate the number of inequality, so the ratio of the two numbers can be used as a factor to adjust the score. (The preference of learning off-line =A_1, the preference of learning online =A_2).

Autonomy and discussion situation: The people bias towards independent learning account for 60%, while the others who prefer explore learning contribute 40%; This indicates that students preferring self-learning teaching methods surpass the number of exploratory teaching, and the ratio of the two is 3:2 that can be used as the measurement of the degree of bias in the two teaching methods. (PBL (problem-oriented teaching) =E_1, humanistic teaching =E_2).

Basic concepts and expansion situation: The students who bias to the basic concept and students who prefer to expansion respectively add about 50% that reflect that the bias of students towards the two types of teaching methods are in the same degree. (Constructive teaching (basic concept) =G_1, exploratory teaching (expansion) =G_2).

The statistical situation of the three biggest advantages of online teaching: Students who deem it's flexible account for 42.22%, students who choose it for its low cost make up 16.67%; and the students who hold this view that it can offer a wide range of resources, take up 41.11%. (Note: "Flexible fingers" at flexible learning time. "Wide resources" refer to the larger amount of resources than off-line. "The low cost" means the cost required is more economical than offline ones). The proportion of these three kinds of advantages reflects the bias degree of the three different teaching methods in the students. (MOOC-based teaching (wide resource + flexible + low cost) =F_1, SPOC teaching (wide range of resources + flexible) =F_2, flip teaching (wide range of resources + low cost) =F_3).

Four teaching program preferences: the proportion of module building learning is 27.78%, detective heuristic learning for 50%, shipbuilding practice learning for 13.33%, feedback game learning for 8.89%. Each different mode of teaching methods is corresponding to 4 different degrees of biases in teaching methods for students. (Constructive teaching) =D_1, heuristic teaching (detective heuristics) =D_2, CDIO type of teaching (shipbuilding practice) =D_3, flip teaching (feedback game type) =D_4).

Intercom stories and video preferences: the proportion of preferring video adds about 44.44%, comparing with the portion (55.56%) of the students who are in favor

of the story(the supporting ratios of these two teaching represent the ratio of their respective numbers of people). (Heuristic teaching (storytelling) =C_1, situational teaching (put video) =C_2).

Teachers ask questions according to the problem and their own demands: the figure of students who are in favor of their own questions stands for 44.44%, while the students who support the teacher problem guide contribute 55.56%; which can represent the degree of bias of the two methods. (Humanistic teaching (autonomous learning) =B_1, exploratory teaching (to explore learning) =B_2).

Step 5: Collect and determine the weight ratio of two or more different methods selected in Table 3 according to each question, then adapt the weight ratio as the degree of bias of the student to different methods.

The results are as follows:

A. A_1: A_2=55.56%÷44.44%=1.25 (off-line and online adjustment coefficient ≈ 1.25);

B. B_1:B_2=55.56%÷44.44%=1.25;

C. C_1:C_2=55.56%÷44.44%=1.25;

D. D_1:D_2:D_3:D_4=27.78%:50%:13.33%:8.89%=0.5556:1:0.2666:0.1778;

E. E_1:E_2=60%÷40%=1.5;

F. F_1:F_2:F_3=1:83.33%:57.78%=1:0.8333:0.5778;

G. G_1:G_2=50%:50%=1:1.

Combining all the ratios from A to G, we can obtain the total relative ratio of weights that PBL: Inquiry: Constructivism: Humanism: Scenario: Heuristic: CDIO: MOOC: SPOC: Flip type Exploratry=375:200:200:300:288:360:96:108:90:63, (weight for the percentage system).

In summary, it can be calculated that the total weight is 2,080; the weight of score interval should be: (375-63)×1/10=31.2, (375-63)×2/10=62.4, (375-63)×3/10=93.6. According to the weight of the corresponding interval value, we can acquire the ranking: 63-94.2 weight is corresponding to 0-1 points; 94.2-187.8 weight refers to 1-4 points; 187.8-252 weight matched to 4-6 points; 252-345.6 weight is corresponding to 6-9 points, and 345.6-376.8 weight is in the interval of 9-10 points. Calculate the score: PBL score = fractional interval group value × weight percentage = 375/2080 × (9 +10) /2=1.713. And so forth, the exploring score = 0.481; constructivist score = 0.481; humanistic score = 1.082; situational score = 1.038; heuristic score = 1.644; CDIO score = 0.115 (unadjusted MOOC score = 0.130, SPOC score = 0.022, flip score = 0.015), after adjusted: MOOC score = 0.130 × online and off-line adjustment factor = 0.13 × 1.25 = 0.163; SPOOC score = 0.022 × online and off-line adjustment factor = 0.028, flip score = 0.019 (see Table 2).

Table 2
Number of Student Attitudes Percentage of the Total Number of Scoring Tables

	Examples of teaching methods	Interval score	Number of people	Percentage of people	Adjusted total score
Off-line teaching	PBL teaching	9-10	54	18.00%	1.713
	Inquiry teaching	4-6	29	9.60%	0.481
	Constructivism teaching	4-6	29	9.60%	0.481
	Humanism teaching	6-9	43	14.42%	1.082
	Scenario teaching	6-9	42	13.85%	1.038
	Heuristic teaching	9-10	52	17.31%	1.644
	CDIO type teaching	1-4	14	4.62%	0.115
	Total	/			
Online teaching	MOOC type teaching	1-4	16	5.19%	0.163
	SPOC teaching	0-1	13	4.33%	0.028
	Flip teaching	0-1	8	3.08%	0.019
	Total	/	300	100%	6.764

Attitude preference: Enthusiastic (9-10points), like (6-9 points), General (4-6 points), dislike (1-4 points), tired (0-1 points).
Note. Give two intervals to the general attitude of the evaluation, four to the two kinds of attitude evaluation, and subdivide them into a 1:3 degree ratio. This assignment is consistent with the normal distribution, better describing the student preferences.）

Empirical analysis: Use spss software to analyze students feedback of bias and the average fit degree through the histogram (see Figure 1).

The results show that the PBL and heuristic teaching scores are at a high score level, indicating that the students are mainly biased towards these two methods. Then we further assign the numerical variables of 1 to 10 to the scores of the methods in descending order, conducting the least squares linear analysis to obtain the y_i and x_i linear trend, and finally find the optimal program. Formulas are

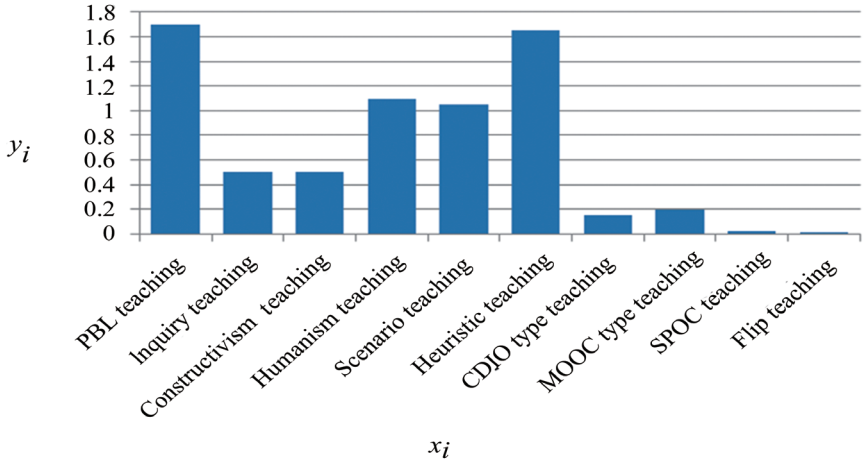

Figure 1
Histogram of Students' Bias and the Average Fit Degree

as follows:

$aN+b\sum x_i =\sum y_i$,

$a\sum x_i+b\sum x_i^2=\sum x_i y_i$.

The model equation is obtained:

$b = 0.2060$, $a = -0.4566$, $u = 0.007$.

That is

$y_i= -0.4566 + 0.206x_i+ 0.007$.

Fit the variables of all the methods, when the absolute value of $\cos a\times [y_i= -0.4566 + 0.206x_i + 0.007]$ is in the range of (0,0.056) (a is the angle between the fitting line and the horizontal axis). That is, in 8 error units ($0.007 \times 8 = 0.056$), indicating that the method represented by x_i and other methods which also satisfy the statistical test of any combination are both very close to the average level of student bias. (The absolute value of $\cos a\times[y_i= -0.4566 + 0.206x_i + 0.007]$ is the vertical distance from the observed value to the fitting line). After testing, we find that x_3 and x_7 satisfy the set conditions. The results are: CDIO type teaching and situational teaching are more satisfactory for fitting standards (see Figure 2).

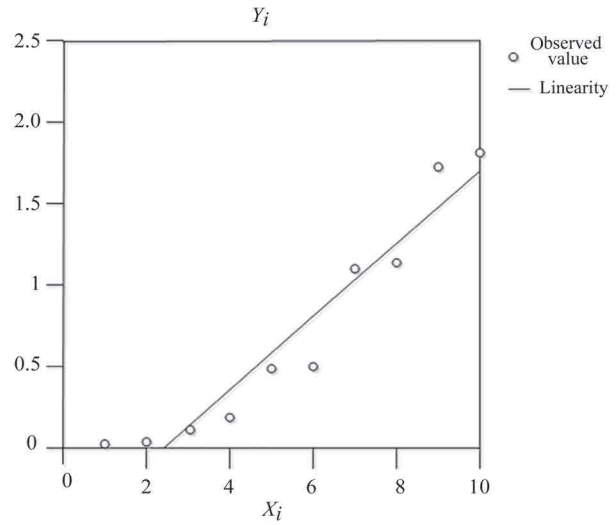

Figure 2
Teaching Methods Generally Bias the Degree of Fit

Through the mathematical statistics analysis, the methods of integration are PBL teaching, heuristic teaching, CDIO teaching and situational teaching. The integrating foundation: The higher value of histogram indicates that students are more biased towards PBL-type teaching and heuristic teaching or the actual effect of these two teaching methods can most meet students' requirements. Therefore, selecting the degree of bias of the two methods is more representative (the two methods scores account for respectively 25.33% and 24.31%, and the sum of the two is nearly 50%). From a representative approach, we can make more efficient use of the characteristics of teaching methods. The statistical data is fitted in order to obtain a function that is corresponding with the data, so as to better understand the practical significance behind the data. Selecting two points closest to the fitting function (CDIO-style teaching and situational teaching) minimizes the description bias of the function linear trend. This advantage is that when determine the trend of student bias, it has a better guiding significance towards the direction of management teaching. In the final analysis, the scoring height and the degree of fitting respectively reflect the degree of bias and bias tendency of the teaching methods, and the four methods selected from these two aspects play a significant role in integrating the new method.

Based on this, combining the advantages of different methods, we form the advanced teaching methods of management courses, including: find a clear training objectives; identify the focus of teaching; develop knowledge and competence outline and structure that students need to master; establish system to facilitate the unified teaching; prepare teacher's unique teaching plans which is focus on serving the class, so that the classroom is no longer dull and single; regard heuristic learning as the core of teaching, which is a key practice process of teaching; regard students as the object to create a comprehensive performance of the teaching

content in the good condition, to achieve situational teaching effect; through the form of group discussions, summarize the analysis results and questioning comments, to form a collaborative atmosphere of mutual assistance, and collect feedback to improve the results; timely establish specialized website sharing classic classroom of curriculum system, to achieve the share of resources. Additionally, it is advisable to establish a continuous feedback improvement mechanism for quality assurance and to improve the problems emerging in teaching.

CONCLUSION

All kinds of teaching methods have advantages and limitations, and only under the mutual integration can they play a positive and effective role in teaching. In addition to inheriting the effective methods in previous teaching practice, there are some representative teaching methods that reflect the characteristics of a certain era. Current education requires that teaching can not be merely satisfied with imparting some existing knowledge, but should focus on the development of students with capabilities, especially the ability of independent self-study and active inquiry. At present, there are many domestic and abroad beneficial reforms and experiments, and a series of new teaching methods are put forward. In summary, we must continue to improve the existing methodology and put it into practice, so that our teaching methods can be more scientific, and we can achieve excellent teaching results in the long run.

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