
Logistics undergraduate research practice teaching evaluation based on CIPP

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Abstract

With the deepening of the reform of education, schools and teachers gradually realized the importance of practical teaching in the whole teaching activities. This paper starts from the four aspects of the questionnaire, including the context evaluation, input evaluation, process evaluation and product evaluation, and constructs the CIPP logistics undergraduate research practice teaching evaluation system. The research shows that the teaching concept is novel, the teaching plan is scientific and the overall condition is good. However, the investment in practical teaching is deficient, and the input of experiment and practical training equipment should be increased and the teaching strength should be improved. So, in the logistics practice teaching, we should start from the teaching contents, teaching methods, establish a scientific and perfect evaluation and supervision system, cultivate the investigatory thinking and strong practice ability of innovative integrated logistics talents.

Keywords

Logistics undergraduate, Practical teaching evaluation, CIPP.

1. Introduction

With the increasingly fierce competition in the logistics industry, the planning, operation and operation of modern logistics become more and more important, and the requirements for logistics talents are becoming higher and higher. Logistics specialty itself has strong applicability and practicality, and application-oriented undergraduate logistics talents should pay particular attention to practice, innovation and application. Practical teaching is to cultivate students' ability to analyze and solve problems, and to train students' practical ability by strengthening professional training. However, due to some objective reasons of theoretical teaching for a long time, the practical links of logistics majors tend to be weak links and there are many problems. The disconnection between theory and practice and the development of teaching mode is not the main problems. This paper around the college logistics major practical teaching mode about the main point of comparative analysis, considering the training objectives and teaching evaluation system, thus to explore and reconstructing Chinese universities majoring in logistics personnel training mode.

At present, scholars at home and abroad about the practical teaching mode of college logistics, mainly divided into technical mode, industry-university-research model, modularized mode and comprehensive model.

First, technical teaching mode. This teaching model focuses on building education teaching system centered on capacity-building, and using professional competence as the basis, training target and evaluation criteria for education. Yao and Min[1] argues that to solve production problems existing in the practice of college professional training can significantly improve the skill levels of students, put forward the practice outside the campus and the combination of two production internship model

dominated by the students. Therefore, teachers play the role of guidance and management in the learning process of students.

Second, teaching mode of industry-university-research. On the basis of the technical teaching model, it is necessary to combine economic and social development and scientific and technological progress closely, so the teaching mode of industry-university-research is born. The main body of this model are students, which systematically combines education learning with real work. Huang et al.[2] put forward the thought and measures of reforming the practical teaching mode based on the combination of industry-university-research. To cultivate students ' comprehensive quality and comprehensive ability, we can integrate the graduation practice and thesis into the practice teaching mode. Practice with scientific research subject and jobs for combining site, a teaching and practice base, then combines the graduation practice and graduation thesis, graduation practice and graduation thesis, combining actual project practice teaching mode.

Third, modularized teaching mode. This mode is mainly based on the position task, which requires students to have the knowledge and ability of certain profession. Teachers can according to the characteristics of the course and students take different teaching methods, and puts forward different teaching requirements, according to their aptitude, inspire students' interest in learning, each eventually achieve the teaching goal. Li et al.[3] for logistics professional talent training, proposes the practical teaching mode of "class hillock fusion", from "professional foundation platform + innovation platform + post ability module" mode, "four stages" of practice courses of progressive type of practice teaching plan, training "course + open experiment innovation practice" diversified practice three ways to construct and implement.

Last, comprehensive teaching mode. In practice, to constantly adapt to the training goal and actual teaching situation, the teaching mode is not invariable, and the comprehensive teaching mode of several combination modes is usually adopted. The model is to analyze, integrate and comb through the teaching concept, and create a set of specific teaching mode. Han[4] first proposed the practice teaching model of "eight bits". That is to give full play to the combination of teachers' leading role and the role of students, and to achieve teaching objectives in the process of deepening theoretical teaching and strengthening comprehensive cultivation. Chen and Fang[5] analyzed the limitations existing in the current practice teaching, and used the concept of open education and the information technology method, etc., to build a link that allows students to participate, experience and practice in person. Qiu[6] put forward the practice teaching mode and mechanism of five-step improvement. Yang[7] proposed the group cooperative with post practice teaching mode, based on the work practice and the theory of cooperative learning, around the theme of the students' practice, and form the activities of the program after the test. Sun and Guo[8] using analytic hierarchy process evaluates the practical teaching of "3+1" in logistics specially in applied university, and analyzes the importance of different stages of practical teaching. And finally it suggests the reasonable structure of practical teaching system so as to scientifically guarantee the talents training model for applied universities.

2. Construction of evaluation index system based on CIPP.

CIPP Evaluation model is built up of context evaluation, input evaluation, process evaluation and product evaluation. This paper compares the characteristics of the practice of logistics specialty, and obtains the evaluation index system that shown in table 1, through the study of CIPP evaluation model.

Table 1 The teaching evaluation index system of logistics undergraduate practice based on CIPP evaluation model

Practical teaching evaluation (A)	First index	Second index	Description
	Practical teaching background (B ₁)	Teaching concept (C ₁)	Logistics practice teaching concept science, advanced.
		Teaching aims (C ₂)	The purpose of practical teaching is clear and thorough.

		Teaching program (C ₃)	The practical teaching plan is clear and reasonable.
		Requirement of society (C ₄)	Logistics market urgently needs to practice innovative talents.
	Practical teaching input (B ₂)	Faculty (C ₅)	The logistics teaching staff is strong.
		Base and equipment stock (C ₆)	Logistics training base and equipment stock.
		Fund investment (C ₇)	The follow-up funds of practical teaching are fully invested.
	Practical teaching process (B ₃)	Content of courses (C ₈)	The teaching content is rich and practical.
		Teaching method (C ₉)	Practical teaching method is scientific and flexible.
		Teaching supervision and assessment (C ₁₀)	Practice teaching supervision thorough examination serious.
	Practical teaching achievements (B ₄)	Student practical ability (C ₁₁)	Students have high practical ability and comprehensive quality.
		Reform and innovation (C ₁₂)	The reform of practical teaching is fast and innovative.
		Social approval degree C ₁₃	College and logistics students have high social recognition.

To determine the weight of indicators at all levels, the analytic hierarchy process is introduced. By consulting several senior logistics experts of education, a more scientific and reasonable judgment form is obtained. A weight judgment matrix is constructed as follows:

$$(A-B_i) = \begin{bmatrix} 1 & 1/2 & 2/7 & 1/4 \\ 2 & 1 & 1/2 & 1/2 \\ 7/2 & 2 & 1 & 1 \\ 4 & 2 & 1 & 1 \end{bmatrix}; \quad (B_1-C_i) = \begin{bmatrix} 1 & 1/2 & 1/5 & 1/2 \\ 2 & 1 & 1/3 & 1 \\ 5 & 3 & 1 & 3 \\ 2 & 1 & 1/3 & 1 \end{bmatrix};$$

$$(B_2-C_i) = \begin{bmatrix} 1 & 3 & 2 \\ 1/3 & 1 & 1/2 \\ 1/2 & 2 & 1 \end{bmatrix}; \quad (B_3-C_i) = \begin{bmatrix} 1 & 1/3 & 2 \\ 3 & 1 & 5 \\ 1/2 & 1/5 & 1 \end{bmatrix}; \quad (B_4-C_i) = \begin{bmatrix} 1 & 3 & 2 \\ 1/3 & 1 & 1/2 \\ 1/2 & 2 & 1 \end{bmatrix}.$$

First, by the judgment matrix (A-B_i), the weight of the primary index B_i is obtained by using the analytic hierarchy process, and the solving process is as follows:

(1)The columns are normalized as follows.

$$A = \begin{bmatrix} 0.0952 & 0.0909 & 0.1026 & 0.0909 \\ 0.1905 & 0.1818 & 0.1795 & 0.1818 \\ 0.3333 & 0.3636 & 0.3590 & 0.3636 \\ 0.3810 & 0.3636 & 0.3590 & 0.3636 \end{bmatrix}$$

(2)Summing by row.

$$W = \begin{bmatrix} 0.3796 \\ 0.7336 \\ 1.4196 \\ 1.4672 \end{bmatrix}$$

(3) The final weight can be obtained by normalization.

$$W = \begin{bmatrix} 0.095 \\ 0.183 \\ 0.355 \\ 0.367 \end{bmatrix}$$

(4) Consistency check is given as follows.

$$\lambda = \frac{1}{n} \sum_{i=1}^n \frac{(Aw)_i}{w_i} = 4.0022,$$

$CI = \frac{\lambda_{max} - n}{n - 1} = \frac{4.0022 - 4}{4 - 1} = 0.0007$. $CR = CI / RI = 0.0007 / 0.89 = 0.0008 < 0.1$. where, RI can be found by Table 2.

Table2 Average random consistency index

1-10 order average random consistency index										
order	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.52	0.89	1.12	1.26	1.36	1.41	1.46	1.49

Therefore, the judgment matrix has complete consistency, which means the calculation results are reliable. In the same way, it is easy to get the following results.

$$B_{1w} = [0.097 \quad 0.186 \quad 0.532 \quad 0.186], CR = 0.0014 / 0.89 = 0.0016 < 0.1 ;$$

$$B_{2w} = [0.589 \quad 0.159 \quad 0.252], CR = 0.0046 / 0.52 = 0.0089 < 0.1 ;$$

$$B_{3w} = [0.230 \quad 0.648 \quad 0.122], CR = 0.0018 / 0.52 = 0.0035 < 0.1 ;$$

$$B_{4w} = [0.539 \quad 0.164 \quad 0.297], CR = 0.0046 / 0.52 = 0.0089 < 0.1 .$$

All the results are less than 0.1, so the results are reliable. By establishing an index system, we can evaluate the university logistics professional practice teaching on the background, input, process, and results. The results can make the colleges and universities realizing their own advantages and disadvantages in practical teaching, which provides reference for the continuous improvement of practice teaching.

3. Application analysis based on CIPP practical teaching evaluation method.

3.1 Questionnaire

The questionnaire was mainly distributed to senior students majoring in logistics at CTBU, covering both logistics engineering and logistics management. A total of 75 questionnaires were issued, 64 copies were recovered, and the effective recovery rate was 85.3%. For each indicator, students should give a reasonable score between 0-10 points and provide a basis for the statistical analysis of practical teaching according to their description and practical teaching of logistics practice.

The evaluation questionnaire is chosen to be distributed to students majoring in logistics of grade 2014, based on the following two considerations.

(1) The logistics of grade 2014 will finish their studies of the four-year college system. In this process, they are more or less involved in practical learning, including visiting internship, curriculum design, logistics design competition, graduation design and graduation practice. Thus they have certain experience and feelings for practice teaching of the university logistics professional background, teachers, teaching facilities, the practice teaching process and the results. Therefore, the statistical results of the questionnaire can be obtained with a higher credibility.

(2) In addition, the senior students of this stage have experienced the process of looking for a job. Hence, they have a profound understanding of the social demand for questionnaire (C₄), colleges and universities, and professional social recognition (C₁₃), and the results of the survey will more accurate.

3.2 Logistics practice teaching evaluation questionnaire statistics.

Questionnaire are analyzed by using Excel software, after excluding all individual index score the same questionnaire. Combined with the weight of indicators at all levels, the total score of each questionnaire was calculated and the comprehensive evaluation result was obtained. The calculation method is given as follows.

$$V_{B1} = 0.097 * C_1 + 0.186 * C_2 + 0.532 * C_3 + 0.186 * C_4;$$

$$V_{B2} = 0.589 * C_5 + 0.159 * C_6 + 0.252 * C_7;$$

$$V_{B3} = 0.230 * C_8 + 0.648 * C_9 + 0.122 * C_{10};$$

$$V_{B4} = 0.539 * C_{11} + 0.164 * C_{12} + 0.297 * C_{13};$$

$$V_A = 0.095 * V_{B1} + 0.183 * V_{B2} + 0.355 * V_{B3} + 0.367 * V_{B4}.$$

In all, it can be calculated that $V_A = 7.044$. The statistical analysis diagram is shown in Fig. 1.

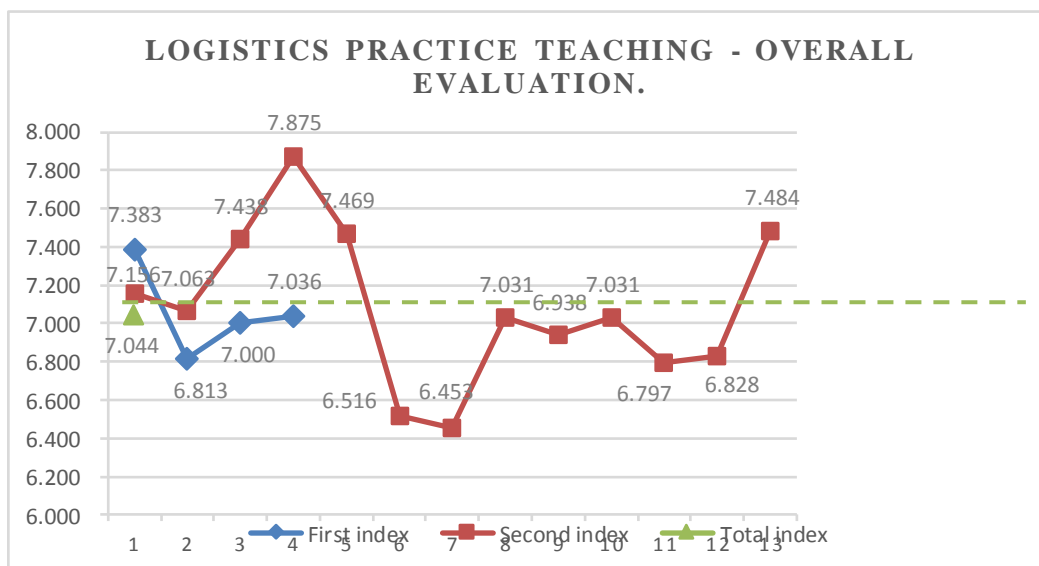


Fig. 1 Overall evaluation of logistics practice teaching.

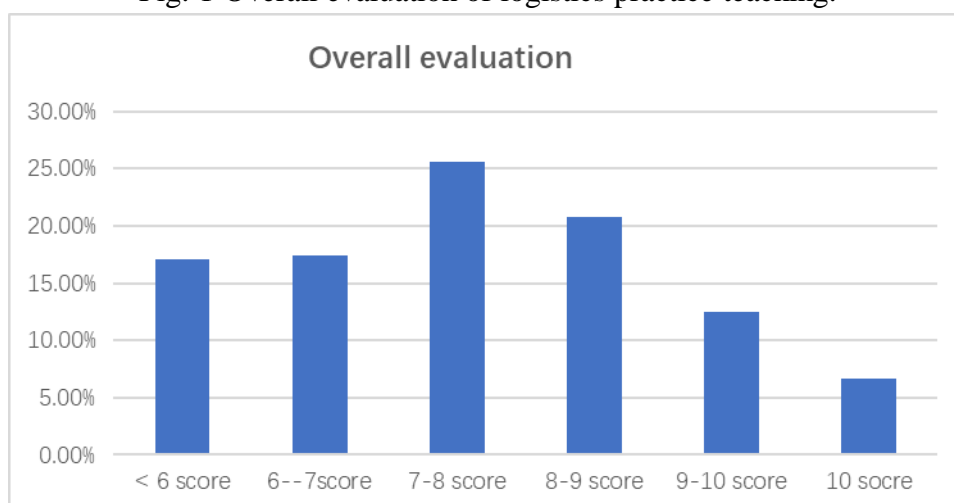


Fig. 2 Teaching evaluation of logistics practice -- proportion of scores.

As can be seen from Fig. 1, the average score of (social demand) is the highest, which indicates that there is a shortage of logistics innovative talents, and it is far from enough to meet the needs of the

market. With a score of 6.453 obtained Fund investment, the lowest score indicates that CTBU logistics practice teaching needs to increase investment and build a high level laboratory and training base.

As can be seen in the Fig. 2, the comprehensive score is 7.044. In the first grade, the score of A₃ and A₄ was equal to the comprehensive score, and the remaining two items were slightly higher than and below the comprehensive score. In the secondary index, the early stage of teaching is the higher score of the background evaluation stage, while the input evaluation and process evaluation stage are lower than the comprehensive score. Therefore, the school should clarify the advantages and disadvantages and improve the quality of practice teaching.

According to the CIPP evaluation model, the evaluation process is divided into four stages: background evaluation, input evaluation, process evaluation and achievement evaluation. The evaluation results are shown in Fig. 3.

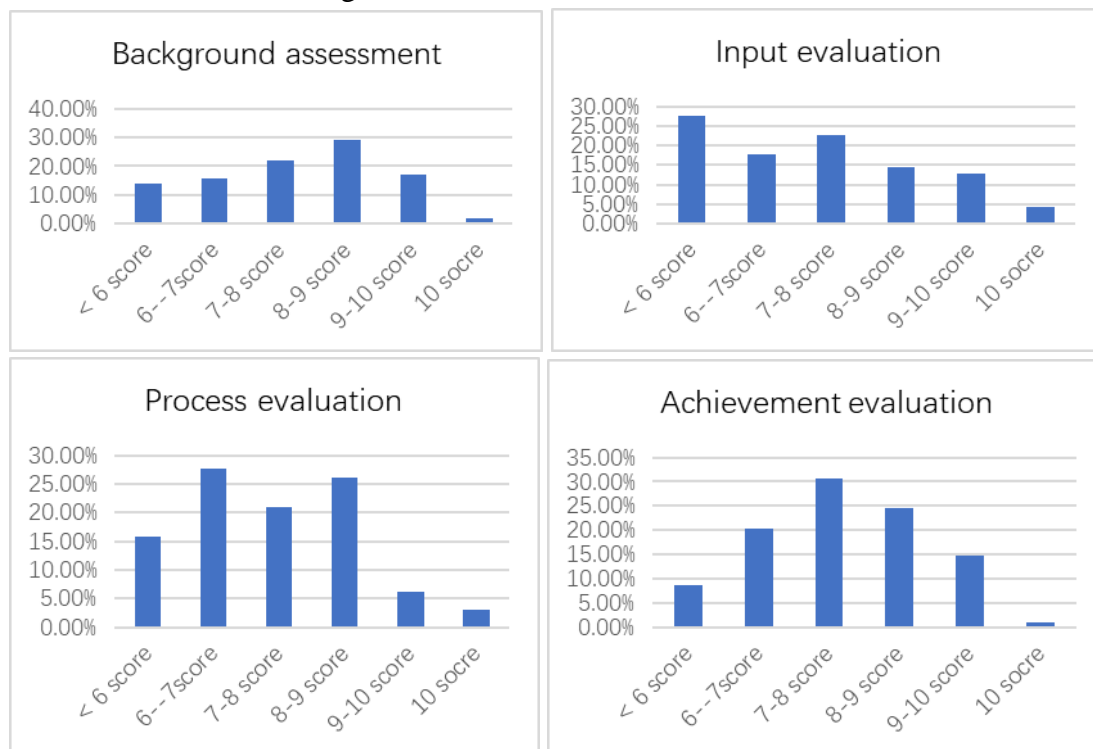


Fig. 3 Evaluation of logistics practice teaching in stages.

4. Conclusion

In the background evaluation, the overall score is high in the range of 8-9 points, which indicates that the teaching concept of our school in the logistics practice teaching is novel, the teaching plan is scientific and the overall condition is good. However, the score in the questionnaire is less than 10, so there is still room for improvement.

In the evaluation of input, scoring six points lower than the proportion of the most, is about 27%, visible due to factors such as the venue and funds, investment was lacking in the practice teaching in our school should increase experiment and training equipment investment and the improvement of teachers.

In the process evaluation and outcome evaluation, the score was mostly in the 6-9 range, which was basically consistent with the overall score. However, in these two stages, the proportion of the questionnaire with high scores was still small. So, in logistics practice teaching, we should start from the teaching contents, teaching methods, establish a scientific and perfect evaluation and supervision system, cultivate the investigatory thinking and strong practice ability of innovative integrated logistics talents.

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