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# The Research And Application Of Intelligence Evaluation System In colleges and universities

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**Abstract:** Teaching quality is the lifeline and core competitiveness of the survival and development of higher vocational colleges. Student evaluation plays an important role in the monitoring of teaching quality. Based on the analysis of the existing teaching evaluation system and its results, this paper proposes a multi-dimensional teaching evaluation information system based on quantitative teaching evaluation index system and intelligent analysis function. The system has been tested and run by a university, and its feasibility and effectiveness have been verified. It provides a reference scheme for other universities to build a multi-dimensional evaluation system based on the characteristics of the subject.

## 1. Introduction

Since the beginning of the 13th five-year plan period, higher vocational education is facing new tasks and problems as China's economic and social development enters a new normal. Around the national "four comprehensive" strategic deployment, it is the main task for the development of Higher Vocational Education in the future to actively adapt to the requirements of the new normal, carry out supply side structural reform, and build a modern vocational education system to meet the needs of the development of socialism with Chinese characteristics in the new era. Under the background of rapid expansion of scale and gradual transformation of mode, how to effectively guarantee the teaching quality of higher vocational education, improve the teaching quality monitoring and evaluation mechanism, and realize the sustainable and steady development of higher vocational colleges has become an important task facing higher vocational colleges. Student evaluation is one of the important bases for the management department to monitor the teaching quality, and the result data of evaluation is an important basis for the school teaching management department and school leaders to make scientific management and decision. The continuous development of information technology provides new ideas and methods for improving students' evaluation of teaching. This paper aims to explore the scientific and effective mechanism of higher vocational students' evaluation and teaching by studying the system of students' evaluation and teaching in higher vocational colleges.

## 2. Material and Methods

### 2.1 Background Of Teaching Evaluation System

The existing research of online teaching evaluation system, including the design of university teaching evaluation system from the perspective of academic early warning [1], Exploration and practice of "four-in-one" precise implementation of classroom teaching evaluation[2], the student teaching



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evaluation system based on emotion mining [3], the PE teacher teaching evaluation system [4], the research on the first-class university students' teaching evaluation reminder [5], and the reliability, validity, influencing factors and application of students' teaching evaluation Risk [6]. These evaluation systems do a good job in classroom teaching evaluation by formulating evaluation standards, selecting evaluation methods or processes, and applying "Three Combinations" of evaluation results. It is of great significance to apply evaluation results to the mechanism of academic early warning. However, there is no effective comprehensive evaluation system based on the characteristics of professional disciplines in the existing evaluation system. The main problems are as follows:

(1) The evaluation index is not scientific, accurate and reasonable, the dimension of the evaluation index system is single, the index is lack of characteristics, it can not reflect the characteristics of the subject, and it blurs the different requirements for different types of courses. Students are also very vague in understanding.

(2) The feedback of teaching evaluation results is not timely, the current teaching evaluation system is lack of result feedback link, and many teaching problems fed back by students for many times have not been improved in time.

(3) There is still much room for improvement in the mining and application of teaching evaluation data.

Based on the analysis of the existing evaluation system and the data of many years' evaluation results, The goal is to set up the evaluation index system scientifically, analyze the evaluation data intelligently and provide services for leaders' decision-making, Using the existing research results for reference to design the evaluation system of colleges and universities.

## *2.2. Demand Analysis Of Evaluation And Teaching System*

The application subjects of the evaluation system are students, teachers, administrators, experts and so on. Starting from the application subjects at all levels, the system aims to improve the scientificity and effectiveness of the evaluation index system for students in higher vocational colleges, and provides objective, fair and reasonable evaluation for teachers. The realization can be based on practical training courses, theoretical courses and other different disciplines to adopt reasonable evaluation standards, increase the systematic and targeted evaluation indicators. To be able to conduct multi-dimensional evaluation on Teachers' morality, style, overall impression and teaching methods. The results of teaching evaluation can not only be inquired by students and teachers, but also provide auxiliary intelligent analysis for teaching managers and professional leaders, understand the classroom teaching situation of teachers with different titles and ages, understand the popularity of a group, a course and a teacher, and provide scientific basis for teaching management.

## *2.3 Overall Design Of Evaluation And Teaching System*

### *2.3.1. System Architecture Design*

The architecture of evaluation system is composed of data layer, presentation layer and application layer. As shown in Figure 1, the data layer includes teacher and student information database and professional course database. It carries the data of the system operation, in which the teacher and student information base is connected with the basic information of the personnel in the school AIC system to ensure the accuracy of the data. The professional course database is synchronized with the course management in the school educational administration management system to ensure the real-time and correctness of the course data. The presentation layer includes the related information of students and courses, teachers and courses, course groups and evaluation indicators. The association information between students and courses refers to the association between students' majors, grades, student status and courses; the association information between teachers and courses refers to the association between teachers and majors, grades, courses, etc.; the association information between course groups refers to the association between different subjects' courses in terms of teaching content, teaching methods, etc.; the association between course groups and evaluation indexes Information

refers to the weight distribution relationship between different curriculum groups and evaluation indicators. The presentation layer supports the analysis of teaching evaluation results. The application layer includes evaluation management, evaluation operation and evaluation result analysis.

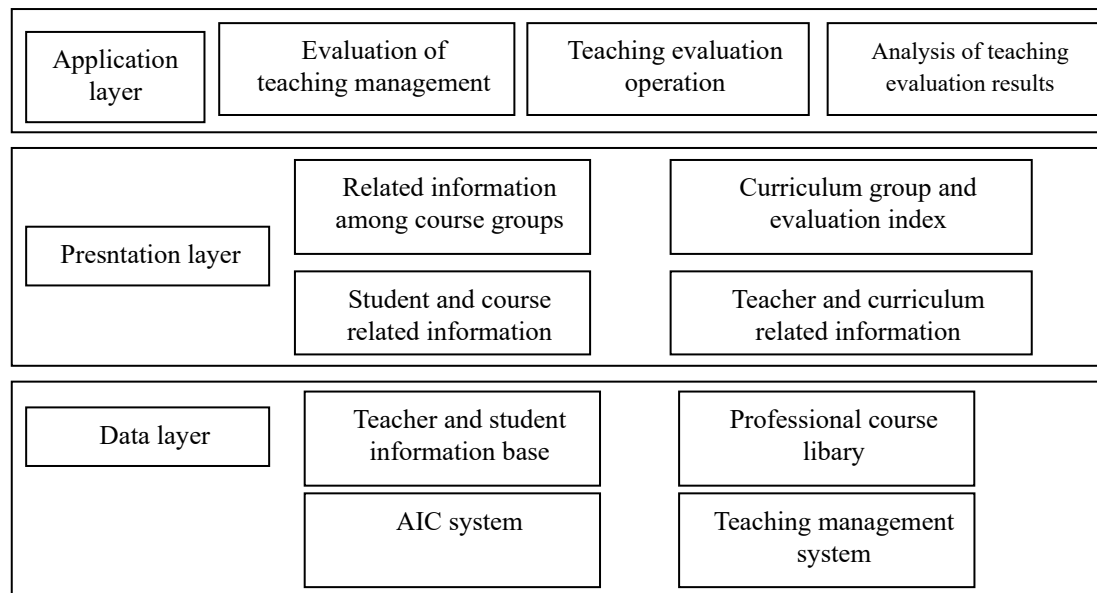


Figure1. Evaluation system structure of colleges and Universities

#### (1) System management process

According to the current teaching mode, the management process of the evaluation system is shown in Figure 2.

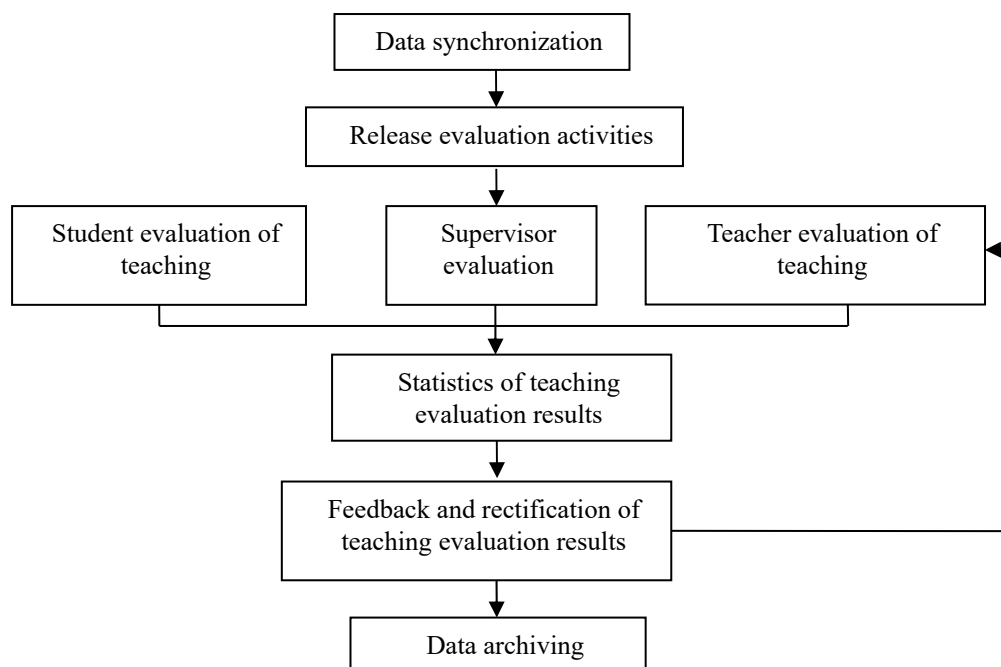


Figure2. Management process of university evaluation system

■ Data synchronization. Before launching the evaluation activities, the school's Educational Affairs Office shall make a good connection between the evaluation system and AIC system, the educational affairs course arrangement system and the student status system, so as to realize the

real-time synchronization of data and ensure the consistency and accuracy.

- Release evaluation activities. Import the data of participants, set the starting and ending time, evaluation index and weight data of evaluation.

- Students' evaluation of teaching. Students' evaluation of teaching is the key link in the process of evaluation. The academic affairs office, branch and counselors urge teachers and students to actively evaluate teaching. After students log in to the system, they independently evaluate the teachers' overall impression, seven red lines of teachers' ethics and evaluation indicators.

- Teaching evaluation summary. After the evaluation of teaching, the system can compare and analyze the massive evaluation data vertically and horizontally, and track and analyze the same curriculum of the same teacher. Teaching managers and secondary schools can easily, quickly and intuitively see the results of teaching evaluation. The academic affairs department is in charge of the evaluation of teaching in all disciplines. The results of teaching evaluation pointed out the direction for the later stage of teaching quality diagnosis and teaching improvement, provided a reliable basis for the leadership to optimize management decision-making, and provided a reference for the evaluation of teachers' titles.

## (2) System function design

The function module of the evaluation system is based on the system structure and the evaluation and management process. Its function design is shown in Figure 3. The main functions of the system are jointly realized by the basic data management module, the evaluation and teaching module, the evaluation and teaching monitoring module and the data query, statistics and analysis module.

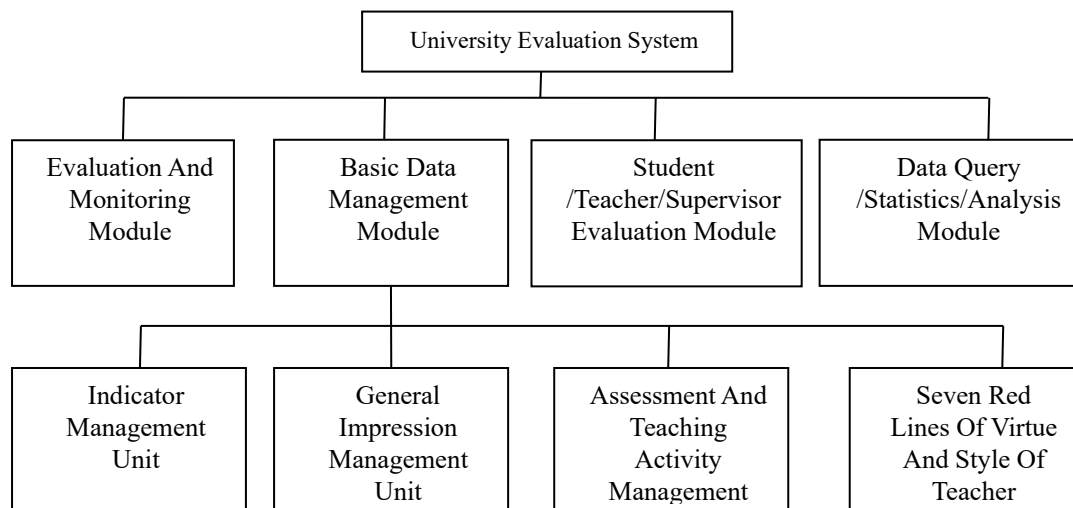


Figure3. Function design of university evaluation system

- Basic data management module: the educational administration office or other management departments maintain the basic data, including 1) index management unit, which is used to authorize users to create and maintain the evaluation index system, including the management of teaching attitude, teaching content, teaching method, teaching management, teaching effect related indexes, and the setting of index score range;. The above indicator system is reflected in the form of integer score. Each indicator system provides score settings for four intervals, and each interval sets options in a single number of radio boxes. The above indicator management includes indicator query, add, edit, delete, view details and publish functions. 2) the overall impression management unit is used to manage the overall impression indicators, including satisfaction, general and poor; the overall impression indicator management includes query, add, edit, enable, disable and delete functions. 3) teachers' morality and style unit, which is used by students to evaluate teachers' morality and style, including seven red lines of teachers' morality and style: damaging the interests of the state, damaging the legitimate rights and interests of students and schools; violating the party's line, principles and policies in education and teaching activities; fraud, plagiarism, tampering with and embezzling other's

academic achievements, and illegal use of scientific research funds in scientific research work And abuse of academic resources and academic influence; part-time part-time pay behavior affecting normal education and teaching; malpractice for personal gain in enrollment, examination, student merit promotion, research guarantee, etc.; asking for or receiving gifts, gifts, securities, payment vouchers and other properties of students and their parents; sexual harassment of students or improper relationship with students. 4) teaching evaluation activity management unit, which is used to set up the scope of students for evaluation activities and launch the evaluation activities. The evaluation activities are based on the natural month, and each natural month initiates the monthly evaluation of teachers in the whole school.

■ Students, teachers and supervision evaluation module: including the evaluation of quantitative indicators, monthly test questions and monthly summary of teachers, the results of which form the overall evaluation of teachers. The evaluation activities whose evaluation time is not within the validity period shall be regarded as the end, and students do not have the right to evaluate teaching.

■ Assessment monitoring module: effectively monitor the assessment process, the evaluation progress of evaluation activities can be viewed according to different dimensions such as the overall progress of evaluation activities, departments, administrative classes, evaluation year, class number, evaluated number and not evaluated number, and can send a message reminder to the students who are not evaluated, ensure the sample size of teaching evaluation data.

■ Data query, statistics and analysis module: after the students' evaluation of teaching, the system makes statistical analysis on the data. Teachers can query the evaluation of all their courses, counselors can query the evaluation list of the class they manage, and the head of the branch and the academic affairs office can also query the evaluation list and details within the current management scope. Through the research and analysis of teaching evaluation data, the management department can understand a certain classroom teaching situation; can understand the classroom teaching situation of teachers of different titles and ages.

### 3.Test Results and Discussions

#### 3.1 Application Results

##### 3.1.1 Sources Of Teaching Evaluation Data

The data is based on the multiple evaluation results of more than 7,000 students in the three semesters of 2017-2018 in a university. In the statistical analysis of this paper, teachers whose evaluation results were less than 80% (actual evaluation/due evaluation) were deleted. This part of data was small, but contained many outliers.

##### 3.1.2 Effectiveness Analysis Of Teaching Evaluation Data

The internal consistency test of teaching evaluation data analyzes the correlation of each teacher's diversified evaluation results, multiple times evaluation results and teaching supervision evaluation results.

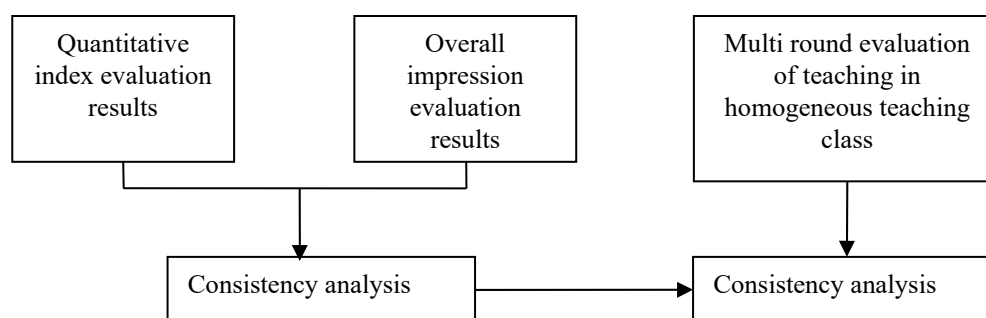


Figure4. Data validity test of university evaluation system

It is found that the evaluation results of quantitative indicators including teaching content, teaching methods and teaching effect are consistent with the overall impression of teachers (excellent, good, general and poor).

Table 1 Teacher evaluation results

Year	Month	Name Of Department	Name Of Teacher	Job Number	Number Of Evaluated Students	Quantitative Index	Satisfaction Degree			
							Excellent	Good	Commonly	Poor
2018	11	Tourism Branch	Li*	6438*	67	81.85	52.2%	11.9%	22.3%	13.4%
2018	11	Tourism Branch	Huang *	6139*	40	99.7	97.5%	2.5%	0%	0%

### 3.1.3 Statistical Analysis Of Teaching Evaluation Data

After the end of teaching evaluation, the results of teaching evaluation will be automatically counted, and the horizontal and vertical data comparison analysis can be carried out for massive teaching evaluation data, and the same course tracking comparative analysis can be carried out. Teaching managers can easily, quickly and intuitively see the teaching evaluation results. At the same time, the results of evaluation and teaching have data, charts and other multi-dimensional display. The overall teaching level of each teaching unit is shown in Figure 5. See Figure 6 for the statistics of the ranking of faculty and staff of the whole school. Teachers can view the evaluation results and rankings online as shown in Table 2.

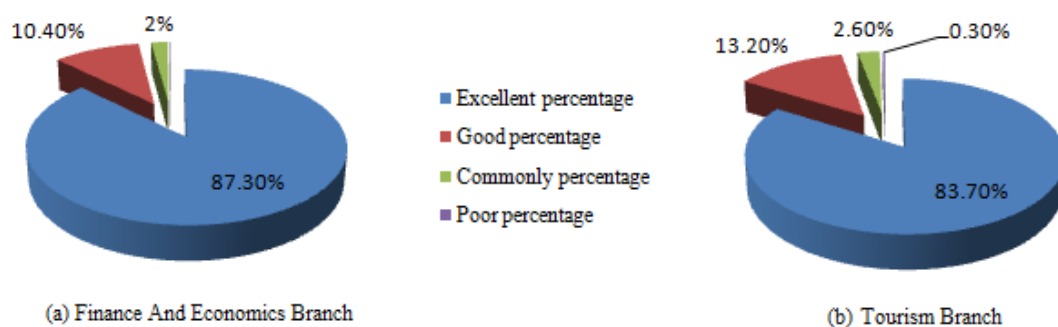
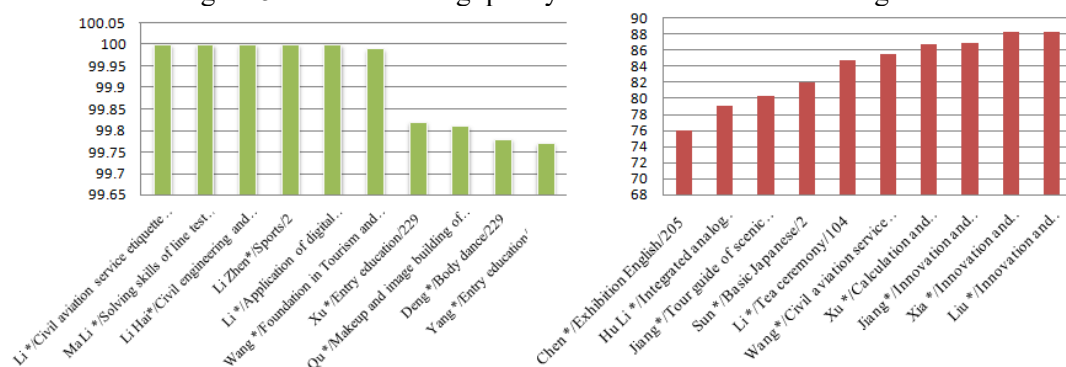


Figure 5 overall teaching quality evaluation of each teaching unit



(a) Top 10 teaching evaluation results average (b) Back 10 teaching evaluation results average  
Figure 6. Teacher teaching quality ranking

Table 2 Ranking of teaching evaluation

Ranking	Year	Name Of Department	Name Of Teacher	Job Number	Number Of Evaluated Students	Average
394th Place	2018	Finance And Economics Branch	Guan*	6207*	600	97.4
585th Place	2018	Finance And Economics Branch	He*	6118*	373	96.29

#### 4. Conclusion

This paper presents an intelligent teaching quality information processing system. The system can not only realize the general sense of teachers and students' evaluation of teaching, but also make students receive education and deepen the understanding of the actual teaching process. At the same time, it can help students understand themselves correctly, improve the understanding between teachers and students, summarize teaching experience together, and improve teaching quality. The innovation lies in the innovation of evaluation index system, which combines the seven red lines of quantitative index score, the overall impression of students and the ethics of teachers. After the evaluation of teaching, through the analysis of data reliability and consistency in the three dimensions of quantitative indicators, overall satisfaction, and seven red lines of teachers' ethics, we can get objective, real and effective evaluation data. This information system has a great reference significance for guiding teachers to improve their teaching ability. The evaluation index system has been put into practice in the teaching quality evaluation of a university teacher, and the effect is good.

#### Acknowledgments

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