



## An Educational Evaluation Model for Higher Vocational and Technical Colleges in Hunan Province

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### Abstract

**Background and Aims:** The educational evaluation model for higher vocational and technical colleges provides a structured framework to assess educational quality and effectiveness. It includes key components such as evaluation purpose, criteria, methodologies, and indicators. This model ensures continuous improvement and alignment with industry and academic standards. The objectives of this study are: 1. To investigate the components and indicators of educational evaluation of higher vocational and technical colleges in Hunan Province. 2. To explore the actual state, expected state, and needs of educational evaluation of higher vocational and technical colleges in Hunan Province. 3. To design the appropriate educational evaluation model for higher vocational and technical colleges in Hunan Province. And 4. to assess the educational evaluation model for higher vocational and technical colleges in Hunan Province.

**Materials and Methods:** A questionnaire survey was conducted among 384 enterprises in the region to assess the actual and expected states, as well as the need for educational evaluation in vocational colleges. Data analysis was performed using the mean percentage and standard deviation of relevant samples. Ultimately, an academic evaluation model suitable for vocational colleges in Hunan Province was developed.

**Results:** The findings of this research were as follows: 1. There are four components and 17 specific indicators of the educational evaluation of higher vocational and technical colleges in Hunan Province. 2. The actual states of educational evaluation in higher vocational colleges were at a high level, with the expected states also being high. The priority of needs for evaluation components, ranked from highest to lowest, includes graduate ability, experimental training base, school-enterprise cooperation, major and curriculum, educational fund, teaching staff, and teaching quality. 3. The educational evaluation model of higher vocational and technical colleges in Hunan Province encompasses the evaluation purpose, objectives, research aims, scope, evaluation index system, criteria, methodologies, process and procedures, model framework, as well as legal and ethical considerations. 4. The educational evaluation model of higher vocational and technical colleges in Hunan Province had high feasibility and suitability.

**Conclusion:** The research found that higher vocational and technical colleges in Hunan Province have an educational evaluation system with four components and 17 indicators. The current and expected evaluation states are high, with priority needs ranked from graduate ability to teaching quality. The evaluation model includes purpose, objectives, methodology, criteria, and legal aspects, and it is deemed highly feasible and suitable.

**Keywords:** Educational Evaluation; Model; Higher Vocational; Technical

### Introduction

With the rapid development of the world economy, China has put forward the new concept of "Made in China 2025", which provides a new opportunity for the development of vocational education in China and brings new challenges and opportunities to vocational education. The quality of talent in higher vocational education in the new period determines whether our country can occupy a dominant position in the fierce international competition. The quality of higher vocational education is the survival of higher vocational education. To meet the requirements of The Times, improving and guaranteeing the quality of talents in higher vocational colleges has become the focus of higher vocational education in the new era background (Fang Ruizhi, 2020: 5). Due to the government's vigorous development of vocational education and the continuous deepening and promotion of relevant policies, China's higher vocational education has achieved remarkable results, and the scale of running schools has been continuously expanded. The education circle attaches great importance to the quality assurance of contemporary higher vocational education, which has gradually become an important factor hindering the sustainable development of higher





vocational education. Under the new situation, to guarantee the education quality of higher vocational colleges, it is necessary to establish a complete quality evaluation system, which includes not only the government evaluation system and the university self-evaluation system but also the educational evaluation system. As an important type of higher education evaluation, the educational evaluation system is an important tool to make the higher education system transparent and a basic means to exert the function of a higher education quality monitoring system. Through the establishment of the educational evaluation system, the transparency of higher education institutions can be enhanced, their operation and performance can be made more open, and objective and credible information can be provided to all stakeholders. This helps to strengthen the monitoring of education quality and ensure the steady development of the higher education system (Zhang et al, 2019: 57).

The establishment of the educational evaluation system also helps to play the basic function of the quality control system of higher education. Through educational participation and external evaluation, it is possible to assess more comprehensively the teaching quality, academic level, and contribution of educational institutions to society. This provides more targeted suggestions for higher education administrators to promote the continuous improvement of educational institutions. The promotion of the educational evaluation system promotes the quality assurance system of higher vocational education to gradually move towards a scientific and democratic process, which indicates that China's higher education is more in line with society (Wei Chun Yan, 2019: 18).

Higher vocational and technical colleges play an important role in training applied talents and adapting to the needs of economic and educational development. Educational evaluation is one of the important indicators to measure the quality and effectiveness of institutions. However, there are some deficiencies in the research status of educational assessment in China's higher vocational and technical colleges. First of all, the evaluation index lacks comprehensiveness and scientificity and often only focuses on the employment rate and salary of students, ignoring the cultivation of comprehensive quality (Deng Hui, 2017: 15). Secondly, the lack of effective evaluation methods and systems leads to the lack of objectivity and fairness of evaluation results. In addition, when conducting educational evaluation, schools often only attach importance to external evaluation and lack the mechanism of internal assessment and self-reflection. The existence of the above problems affects the accuracy and effectiveness of educational assessment in China's higher vocational and technical colleges (Xu Bo, 2015: 75).

As an important part of educational organizations, enterprises' evaluation of higher vocational and technical colleges is very important. However, it can be seen from the existing research that there is no set of evaluation systems suitable for enterprises to evaluate higher vocational and technical colleges. In the indicator of evaluation ranking, there are few and incomplete indicators for enterprises to refer to. Enterprises are the organizations that accept the most graduates of higher vocational and technical colleges, so it is very important to study in this respect, and it is also an indispensable part of the educational evaluation system of higher vocational and technical colleges. Therefore, it is necessary to conduct in-depth research on the educational evaluation of higher vocational and technical colleges in Hunan Province and explore suitable evaluation indicators, methods, and systems to improve the scientific and fair evaluation and ensure that the applied talents trained by higher vocational and technical colleges meet the educational needs.

## Objectives

1. To investigate the components and indicators of educational evaluation of higher vocational and technical colleges in Hunan Province.
2. To explore the actual state, expected state, and needs of educational evaluation of higher vocational and technical colleges in Hunan Province.
3. To design the appropriate educational evaluation model for higher vocational and technical colleges in Hunan Province.





4. To assess the educational evaluation model for higher vocational and technical colleges in Hunan Province.

## Literature Review

### 1. The overall development history of Hunan higher vocational colleges.

Higher vocational and technical colleges in Hunan Province are an important part of China's education system, which is of great significance for training high-quality technical personnel and promoting local economic development. The development of higher vocational and technical colleges in Hunan Province can be traced back to the late 1980s and early 1990s. Before this, vocational education was mainly based on technical schools, which trained front-line workers and skilled workers. However, with the rapid development of the economy and the transformation of industrial structure, the demand for high-quality technical personnel has gradually increased, and higher vocational and technical colleges have emerged. Under the background of the national reform of the higher education system, Hunan Province actively responded to the policy call and began to try to set up colleges and universities for vocational and technical training. In the 1980s, Hunan Province established the first batch of higher vocational and technical colleges to meet the needs of local economic development for technical talents (Li Juan et al., 2010: 10).

The development of higher vocational colleges in Hunan Province can be divided into three stages. The first stage is the initial stage, mainly the practice of running schools in the early stage of reform and opening up. The second stage is the accelerated development stage, including the increase in the number of schools and the expansion of disciplines and specialties. The third stage is to improve the quality and efficiency of the stage, focusing on improving the quality of education and the personnel training level. From the early 1990s to the early 2000s, higher vocational and technical colleges in Hunan Province experienced a period of vigorous development. The government has gradually increased its support for vocational and technical education, and the number of colleges and universities has gradually increased, and the professional Settings have been continuously expanded, covering many fields such as industry, agriculture, medicine, arts, and science. At the same time, the management system and educational philosophy of the school have also undergone positive changes, paying more attention to training applied talents and promoting the quality and upgrading of vocational and technical education. From the mid-2000s to the 2010s, higher vocational and technical colleges in Hunan Province have entered a new stage of all-around development. The government has further improved regulations and policies, optimized resource allocation, and promoted the overall development of higher vocational colleges. More extensive cooperation between schools has been launched, and close integration with enterprises, industries, etc., to ensure that the educational content is better suited to the actual employment needs. Remarkable progress has also been made in the construction of the teaching staff, and several outstanding educators and industry professionals have joined the teaching and research teams of higher vocational colleges (Li Juan et al., 2010: 18).

### 2. Research on the development trend of higher vocational and technical colleges in Hunan Province.

In recent years, the number of higher vocational and technical colleges in Hunan Province has not only continued to expand but also further strengthened the deep cooperation with industry docking and promoted the development of practical education innovation and entrepreneurship education. The school actively responds to the national "double first-class" construction and constantly improves its own educational level and comprehensive strength. The achievements of Hunan vocational colleges in educational service, scientific research, and innovation have laid a solid foundation for their local and even nationwide reputation. The development trend of higher vocational and technical colleges in Hunan Province is mainly reflected in the following aspects: First, the transformation and upgrading of vocational education. With the adjustment of Hunan's economic structure and the requirements of industrial upgrading, vocational education should be closer to the needs of the industry and pay attention to the cultivation of





talents and the improvement of innovation ability. Strengthen cooperation with enterprises, set up professionals closely related to industrial development, provide practical education, and train high-quality talents to meet the market demand. Second, international cooperation and exchanges. Hunan higher vocational and technical colleges should actively expand international exchanges and cooperation, establish cooperative relations with foreign higher vocational and technical colleges, and introduce advanced educational ideas and teaching resources. Through the international mode of education and cooperation projects, the school's educational level and international influence are enhanced. Third, personnel training, innovation, and entrepreneurship. It is the core task of higher vocational and technical colleges in Hunan province to train high-quality technical talents to meet the needs of society. Strengthen practical education, promote the cultivation of students' innovation and entrepreneurship ability, pay attention to the cultivation of students' comprehensive quality and vocational skills, and improve employment competitiveness (Li Xiuxian, 2009: 53-58).

### 3. Research on the evaluation of the educational serviceability of Hunan Higher Vocational Colleges.

Analysis of the current situation of educational serviceability of Hunan higher vocational colleges. From the current situation, Hunan higher vocational colleges provide human resources support to promote Hunan's educational and economic development. 1) The technical serviceability is improved, and the economic contribution is increased. The number of educational trainings has increased, and the quality of on-the-job personnel has improved. 2) Problems existing in the evaluation of educational serviceability in higher vocational colleges. First, the evaluation subject is single, and the higher vocational colleges lack motivation. Secondly, the setting of the educational serviceability evaluation index is unreasonable, focusing on the outcome evaluation. Third, the distribution of vocational education resources is uneven, and the conversion rate of scientific and technological achievements is not high. 3) Measures to promote the construction of educational serviceability evaluation in higher vocational colleges. First, establish a multi-faceted evaluation system to evaluate educational service capabilities scientifically and reasonably. Second, innovative evaluation methods and diversified evaluation of educational service capacity. Third, improve the supervision system to ensure the quality of evaluation of educational serviceability. (Zou Ruirui, 2018: 37-39).



## Research Framework

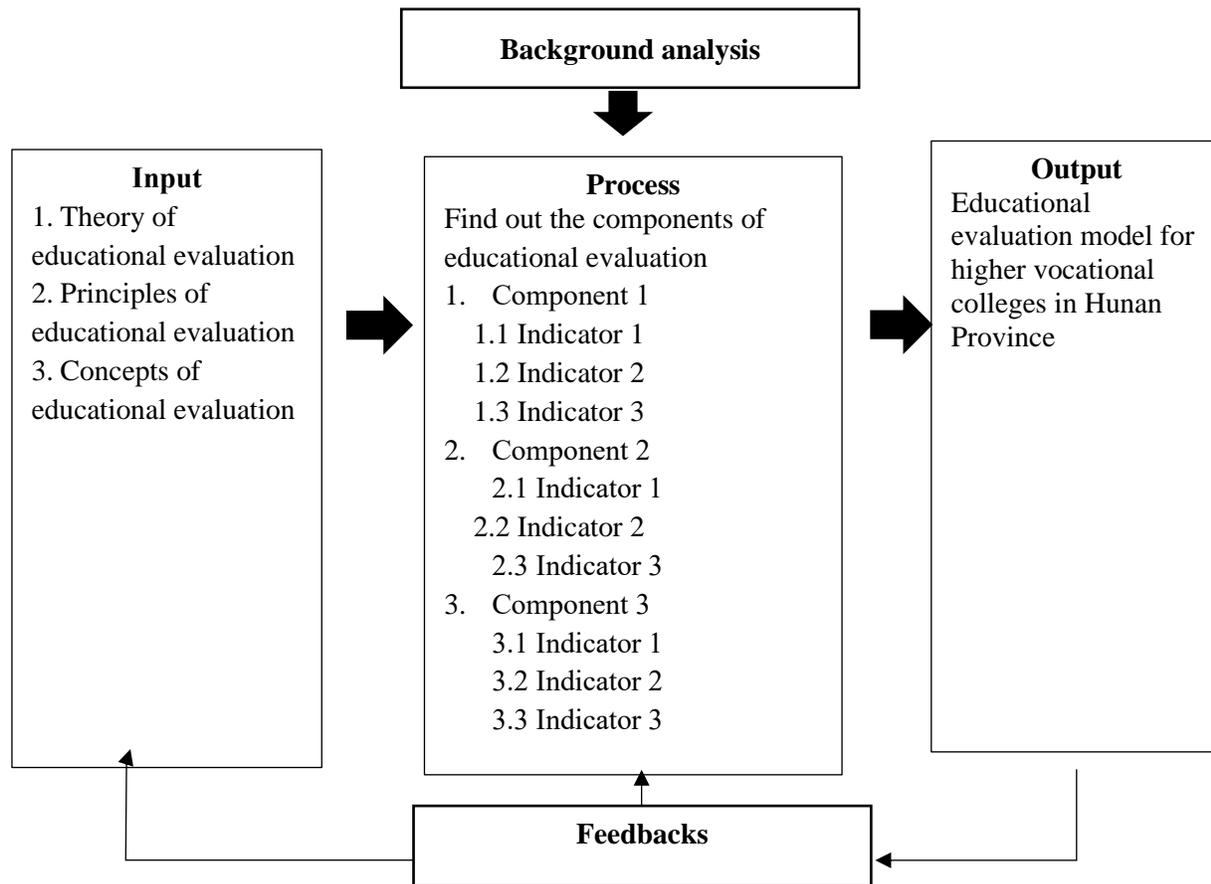


Figure 1 Research Framework

## Methodology

**Phase 1: To investigate the components and indicators of educational evaluation of higher vocational and technical colleges.**

### 1. Research content

Step 1: Documentary research

This phase focuses on relevant literature, books, and theoretical concepts, and experts to verify the components and indicators. Study the literature, books, theoretical concepts, and related studies, summarize new research ideas from them, and use tables to show them.

Step 2: Experts' consultation

Through online interviews with five experts, the components and indicators of educational evaluation of higher vocational and technical colleges in Hunan Province were determined, and then a table was formed to conclude.

### 2. Research tools

Documentary Research, Expert online interview

### 3. Data collection methods

The main literature includes books, journals, and papers.



## **Phase 2: To explore the actual statutes, expected states, and needs of educational evaluation of higher vocational and technical colleges in Hunan Province.**

### **1. Populations and samples**

The research objective of this stage is the enterprise with a legal person registered in Hunan Province. According to the latest data released by the Hunan Provincial government in 2024, there are 630,000 formally registered enterprises with legal persons in Hunan Province. According to the Krejcie & Morgan (1970) table (Table 1 below), the number of questionnaire survey samples is determined to be 384 managers, of which 384 managers are issued after the central national enterprises are first selected. Then, according to the types and professional Settings of higher vocational and technical colleges in Hunan Province, the corresponding industry enterprises were selected to distribute the questionnaire. The specific selection of total quantity is shown in the table below:

**Table 1** Population form

<b>Population</b>	<b>Sample</b>	<b>Total</b>
National enterprise manager	57	
Central enterprise manager	57	
Pharmaceutical enterprise manager	34	
Teacher enterprise manager	34	
Aviation enterprise manager	34	384
Construction enterprise manager	34	
Financial and economic enterprises manager	34	
Railway enterprise manager	34	
Art and sports enterprises manager	33	
Funeral enterprises manager	33	

### **2. Research content**

In this stage, through the previously determined components and indicators, a questionnaire survey is designed to understand the current situation and expected status of enterprises in higher vocational colleges. The specific research contents include questionnaire design, questionnaire content validity analysis, questionnaire pre-survey, questionnaire reliability analysis, questionnaire results statistics, and analysis.

### **3. Research tools**

The research tool at this stage is a questionnaire survey.

#### **3.1 Questionnaire design. A questionnaire was designed using the Likert scale**

##### **3.1.1 Survey on educational evaluation of higher vocational colleges in Hunan Province**

The questionnaire was designed from the components and indicators determined in the first phase.

##### **3.1.2 Investigation on the actual state and expected state of educational evaluation of higher vocational colleges in Hunan Province**

The actual state and expected state are studied, and the results are obtained.

#### **3.2 Questionnaire design and recovery**

To ensure the recovery rate of the questionnaire, the design of the questionnaire should be concise, accurate, logical, and logical. The content and title of the questionnaire should be concise and attractive; Instructions should be clear, not verbose; The question needs to be accurate. Write an honest cover letter and closing that is short, brief, and engaging. The appearance of the questionnaire should be beautiful.

#### **3.3 Design content validity expert evaluation form**

The design of the evaluation form mainly has the following aspects:





3.3.1 Title and brief description of the questionnaire: Introduce the research purpose, survey objects, and expected results of the questionnaire so that experts have an overall understanding of the content of the questionnaire.

3.3.2 Evaluation items: List each question or item in the questionnaire and provide an evaluation item for expert evaluation.

3.3.3 Evaluation indicators: Each evaluation item provides some evaluation indicators according to which experts can evaluate the content validity of the questionnaire. Evaluation indicators can include accuracy, completeness, relevance, etc.

3.3.4 Evaluation criteria: Set certain evaluation criteria for each evaluation index, and the content validity of the price questionnaire will be evaluated by experts according to these criteria.

#### **4. Data collection methods**

##### **4.1 Pre-investigation phase**

In the pre-investigation stage, 150 enterprises in the non-sample group were selected to issue questionnaires, pass the questionnaire survey, and then collect.

##### **4.2 Formal investigation phase**

In the formal survey phase, this phase in the form of questionnaires were distributed to the top management of 384 enterprises distributed questionnaires. To guarantee the recovery rate of questionnaires, it is necessary to maintain contact with respondents, collect questionnaires, establish relationships, and inform them in advance of the upcoming survey and the time frame of the questionnaire to ensure that respondents can submit.

##### **4.3. Collect survey results of respondents.**

The reliability analysis of the questionnaire results was carried out. Reliability analysis is often estimated by the Cronbach- $\alpha$  coefficient. The larger the Cronbach $\alpha$  coefficient, the greater the correlation of each item of the variable, that is, the higher the degree of internal consistency. Statisticians generally believe that a Cronbach  $\alpha$  greater than 0.7 is a high reliability. In general, a Cronbach  $\alpha$  coefficient between 0.8-0.9 is considered very good, and between 0.7-0.8 is better. In this stage, SPSS software was used for reliability analysis of the scale part of the questionnaire, and Cronbach's Alpha coefficient was obtained after detection. After the questionnaire passed the validity and reliability analysis, the formal investigation phase began.

##### **4.4 Data Analysis**

4.4.1 Reliability analysis of the questionnaire results. Reliability analysis is usually estimated by a Cronbach- $\alpha$  coefficient. The larger the Cronbach- $\alpha$  coefficient, the higher the correlation of the variables, that is, the higher the degree of internal consistency. Statisticians generally consider Cronbach's  $\alpha$  greater than 0.7 as high reliability. In general, a Cronbach  $\alpha$  coefficient between 0.8-0.9 is good, and between 0.7-0.8 is better. In this stage, SPSS software was used for reliability analysis of the scale, and Cronbach's Alpha coefficient was calculated. Through the reliability analysis, the questionnaire formally begins the investigation phase.

4.4.2 Calculation of actual state of questionnaire survey results, expected state of questionnaire survey results, and PNI results

4.4.3 Analysis of the mean and standard deviation results of the questionnaire

4.4.4 Summary of results of open questions

### **Phase 3: To design the appropriate educational evaluation model for higher vocational and technical colleges in Hunan Province**

#### **1. Experts**

Fifteen experts in this field have both practical work experience and deep theoretical accomplishment, among whom 8 are the top managers of enterprises, and the other 7 are the directors of the human resources department of enterprises.

#### **2. Research content**





Through the research results of the first two stages, the relevant indicators of educational evaluation in vocational colleges in Hunan Province are summarized 15 experts who have both practical work experience and profound theoretical basis in this field are selected for expert interviews, indicators are selected, indicators are assigned weights, and an educational evaluation indicator system of vocational colleges in Hunan Province is constructed. Through the components of the educational evaluation model, the paper constructs the educational evaluation model of Hunan higher vocational colleges.

### 3. Research tools

The expert online interview.

### 4. Data collection methods

4.1 Designing Interview Guidelines: Before conducting expert interviews, design a detailed interview guide that covers the following:

4.1.1 The purpose and background of the study are introduced

4.1.2 Explain the components of the indicator system and the problems to be solved

4.1.3 Clearly define the criteria and criteria for evaluation indicators

4.1.4 Provide a list of indicators and ask experts to rank or score them

4.1.5 Provide blank or open-ended questions for expert input and recommendations.

4.2 Conducting an Interview

4.2.1 Conduct online interviews with each expert to ensure that they understand the purpose and process of the interview and answer their questions.

4.2.2 Guide experts to rank, score, or provide opinions on indicators according to the requirements of the interview guide.

4.3 According to the opinions of experts, determine the principles, components, and index system of the educational evaluation model of higher vocational and technical colleges in Hunan Province and integrate them to form the educational evaluation model of higher vocational and technical colleges in Hunan Province.

### 5. Data analysis

To sort out and analyze the data provided by experts and update and optimize the educational evaluation model of higher vocational colleges in Hunan Province.

## Phase 4: Assess the educational evaluation model for higher vocational and technical colleges in Hunan Province

### 1. Experts

Through the research results of the second stage, this stage will evaluate the educational evaluation model for higher vocational and technical colleges in Hunan Province. Fifteen experts, including 8 top managers of enterprises and seven directors of human resources departments, will be selected to evaluate the model.

### 2. Research content

Through the evaluation of the educational evaluation model for higher vocational and technical colleges in Hunan Province, the model is more scientific and feasible, and the model is more reliable.

### 3. Research tools

In connoisseurship, through expert online interviews, experts evaluate the model from two aspects: feasibility and suitability.

### 4. Data collection methods

4.1 Select 15 experts to conduct the connoisseurship. First, determine the form of the connoisseurship, whether online or offline, and determine the date, time, and place of the seminar.

4.2 Implementation of Hunan higher vocational and technical colleges' educational evaluation model: evaluation connoisseurship, full participation in the connoisseurship, and listening to the opinions and suggestions of experts.

### 5. Data analysis





Summarize the opinions of experts, summarize the opinions of experts in the evaluation seminar, and revise and improve the educational evaluation model for higher vocational and technical colleges in Hunan Province according to the opinions and suggestions of experts.

## Results

### **Phase 1: To investigate the components and indicators of educational evaluation of higher vocational and technical colleges.**

#### 1. Implementation of expert consultation

##### 1.1 Methods for Holding Expert Consultation Meetings

Online interview.

##### 1.2 The process of expert consultation

Distribute a score sheet to each expert through an online interview, explain the principles and standards of the score sheet, and request them to provide their scores. Instruct the experts to return the completed form within three days. Once the forms are received, compile and analyze the scoring results.

#### 2. Summary of expert consultation scores

### **Phase 2 To explore the actual statutes, expected states, and needs of educational evaluation of higher vocational and technical colleges in Hunan Province.**

#### 1. The questionnaire content validity analysis

After the questionnaire design is completed, the pre-survey stage is to be carried out. Before the pre-survey, the content validity of the questionnaire should be analyzed first. The expert assessment of content validity ensures that the questionnaire covers all the content needed for the research or investigation and that the content is closely related to the research question or survey objective.

##### 1.1. Questionnaire content validity analysis

###### 1.1.1 Expert selection

Five national enterprises were selected in the content validity analysis. These five relevant personnel working in national enterprises were selected as experts because they have detailed and extensive knowledge of educational evaluation research issues and survey objectives in higher vocational and technical colleges. See the table below for details:

**Table 2** List of content validity experts

Enterprise Name	Type of Expert	Expert Name	Work experience
Yueyang Investment Park Construction Management Co., LTD	Human resources manager	SLX	25 years of experience
Zhuzhou Chunfeng Yamaha Motorcycle Co., LTD	Assistant Manager of Human Resources Department	ZJQ	28 years of experience
Hunan Yifeng food Co., LTD	Commercial manager	PGM	22 years of experience
Hunan Switch Limited Liability Company	Human resources manager	CJH	30 years of experience
Hunan Traffic Logistics Information Service Co., LTD	Manager of the Foreign Cooperation Office	LZW	31 years of experience



These five relevant personnel working in national enterprises were selected as experts because they have detailed and extensive knowledge of educational evaluation research issues and survey objectives in higher vocational and technical colleges.

#### 1.1.2 Design content validity expert evaluation form

Designing an expert evaluation form for content validity needs to consider several key factors to ensure that the expert can effectively evaluate the content quality and relevance of the questionnaire.

##### 1.1.2.1 Introduction

The introduction mainly introduces the purpose and background of this survey, explains the importance of the expert evaluation form, and clarifies the role and task of the expert.

##### 1.1.2.2 Expert Information

The expert information section mainly collects the basic information of the expert, including name, title, company name, research field, etc. To help the later analysis of the reliability and authority of expert feedback.

##### 1.1.2.3 Description of evaluation criteria

The evaluation criteria are the key to determining whether the content validity of the educational evaluation questionnaire of Hunan Higher Vocational and Technical College meets the requirements. The comprehensiveness of the questionnaire is evaluated and verified from four aspects: the relevance of the questions and the survey objectives, the clarity of the questions, the completeness of the questions, and the appropriateness of the questions. Evaluation criteria were rated using a five-level scale (1= very irrelevant/unclear/incomplete/inappropriate, 5= very relevant/clear/complete/appropriate).

$$IOC = \frac{\sum R}{N}$$

$\sum R$  = Expert summation     $N$  = Number of experts

The scoring results are determined by the IOC formula. If the IOC value of the content validity score of all questions is above 3.5, this score means that experts generally believe that all questions in the questionnaire are valid and the content validity is qualified.

##### 1.1.2.4 Evaluation methods

This expert evaluation will use the online interview to send the evaluation form to the experts and ask the experts to evaluate

#### 1.1.3 Analysis of IOC results of content validity expert evaluation scoring table.

##### 1.1.4 Overall evaluation

According to the expert's examination of the above list of questions, the expert's rating of the entire questionnaire is as follows:

**Table 3** Content validity expert overall evaluation score table

Evaluation content	Evaluation score
Overall relevance score (1-5)	4.09
Overall clarity rating (1-5)	4.22
Overall integrity rating (1-5)	3.97
Overall appropriateness rating (1-5)	4.07



Overall opinions and suggestions of the experts: After the content validity test of the educational evaluation questionnaire of Hunan Higher Vocational and Technical Colleges, the five experts agreed that the questionnaire passed the content validity test and met the conditions for issuing the questionnaire.

### Phase 3 To design the appropriate educational evaluation model for higher vocational and technical colleges in Hunan Province

The educational evaluation model of higher vocational and technical colleges in Hunan Province includes the following aspects: evaluation purpose and goal, evaluation object and scope, evaluation index system, evaluation standards and criteria, evaluation methods and techniques, evaluation process and steps, evaluation model evaluation, legal and ethical considerations.

**Table 4** Summary of weights of primary and secondary indicators

Level 1 Indicator	Level 2 Indicator	Indicator Weight
Teaching quality	The frontier of teaching theory	0.88%
	The practicability of teaching theory	1.36%
	The practical operation of teaching practice	2.02%
	Diversity of teaching methods	0.19%
	The rationality of teaching methods	1.78%
Teaching staff	The overall quality of teachers	0.74%
	The level of professional knowledge of the teacher	0.22%
	Teachers' practical experience	2.04%
	The teaching ability of teachers	0.58%
	The professional ethics of teachers	0.44%
	Teachers' ability to innovate	2.23%
	Cooperation and exchange between teachers and enterprises	1.94%
Major and curriculum	The degree to which the professional setting matches the needs of the industry	3.37%
	The content of professional courses is practical	1.88%
	Diversity of professional courses	1.05%
	The practical nature of the professional curriculum	2.68%
	The innovation of the professional curriculum	1.81%
	The setting of a professional, innovative curriculum	1.37%
	The establishment and introduction of new majors	1.70%
Update and optimize the professional curriculum	1.86%	
Educational fund	Investment in the construction of laboratories and training bases	2.98%
	The funding support for teaching funds for school-enterprise cooperation projects	2.47%
	The financial support of teaching funds for students' practical activities	2.41%
	Funding support for student entrepreneurship projects from teaching funds	2.04%
Experimental training base	Training base facilities and equipment level	1.40%
	Practical operation of the training project	3.02%
	The degree of matching between the training base and industry demand	4.00%
	The degree of openness and sharing of the training base	1.94%
	Training base experiment, training equipment update speed	3.00%
	Design and implementation of the experimental training programs of the training base	1.50%





Level 1 Indicator	Level 2 Indicator	Indicator Weight
	Training base: Situation of the school-enterprise co-construction experimental training base	2.82%
	The practical teaching effect of the experimental training base	2.34%
Graduate ability	The ability of graduates to work in teams	2.33%
	Communication skills of graduates	3.15%
	Problem-solving skills of graduates	1.78%
	The innovation ability of graduates in cooperation	1.66%
	Graduates' ability to think independently	1.32%
	Graduates' ability to develop technology applications	3.34%
	Basic foreign language communication skills of graduates	3.17%
	Foreign language written expression of graduates	1.19%
	Foreign language reading comprehension of graduates	2.98%
School-enterprise cooperation	The degree of satisfaction with school-enterprise cooperation	1.95%
	Quality of school-enterprise cooperation projects	3.36%
	The degree of matching between the school-enterprise cooperation project and the actual needs of the enterprise	2.72%
	The practical ability of students in the school-enterprise cooperation project	2.79%
	The perfection of school-enterprise cooperation and communication	2.12%
	Continuity and stability of school-enterprise cooperation	2.43%
	Cooperative research and project development with enterprises in school-enterprise projects	3.58%

#### Phase 4: Assess the educational evaluation model for higher vocational and technical colleges in Hunan Province.

Connoisseurship evaluation conclusions

To evaluate the educational evaluation model of higher vocational colleges in Hunan Province. After the appreciation, experts evaluated the model from two aspects of feasibility and suitability through scoring. The results show that the educational evaluation model of Hunan higher vocational colleges has higher feasibility and suitability, indicating that the educational evaluation model of Hunan higher vocational colleges is established. Three aspects of risk management, resource allocation and support, and model sustainability are added to the model.

**Table 5** Connoisseurship expert marked the score sheet.

Evaluation item	Feasibility Score (1-5)	Suitability score (1-5)
Evaluation purpose	4.20	4.46
Evaluation objective	4.33	4.40
Evaluation object	4.26	4.40
Evaluation Scope	4.20	4.40
Evaluation index system	4.46	4.40
Evaluation criteria	4.33	4.33
Evaluation guidelines	4.40	4.53
Evaluation method	4.40	4.53
Evaluation process and steps	4.26	4.53
Evaluation model evaluation	4.60	4.53
Legal and ethical considerations	4.46	4.60
<b>overall</b>	<b>4.35</b>	<b>4.46</b>





## Discussion

The research results were discussed in detail according to the four research objectives set by the research, and it was found that the following four aspects needed to be discussed.

### **1. The results of the investigation of the components and indicators of educational evaluation of higher vocational and technical colleges in Hunan Province.**

The first research objective is to investigate the components and indicators of educational evaluation of higher vocational and technical colleges in Hunan Province.

After literature and consultation with five experts, the educational evaluation of higher vocational and technical colleges in Hunan Province consists of 4 components and 17 indicators. The four components are teaching quality evaluation, student development evaluation, school-enterprise cooperation evaluation, and school management evaluation. The review of teaching quality includes six indicators: courses and majors, teaching methods and means, teaching staff, practical practice, assessment and examination of foreign language ability in teaching courses, and advanced teaching theory and practice. Student development assessment includes five indicators: communication and solving problems, innovation ability, cooperative ability, technical application capability, and foreign language proficiency. School-enterprise cooperation includes four indicators: cooperation satisfaction, perfection of communication, cooperation continuity and stability, and the school-enterprise cooperation project. School management evaluation includes two indicators: financial management and experimental training base.

In teaching quality evaluation, several documents are the same as the research results of this stage. Action plan for innovation and development of higher vocational education, the document points out that improving the teaching quality of vocational education is an important means to improve the overall level of vocational education. In educational evaluation, teaching quality is one of the important indicators to measure the effect of vocational education. Through the educational evaluation mechanism, vocational colleges can be urged to continuously improve the quality of teaching and ensure that the quality of talent training meets the needs of society. Yang Hao (2012: 02), Research on educational evaluation of employment quality of vocational college students, the author points out that the teaching quality of higher vocational colleges directly affects students' employability and employment quality. The author also points out that the educational evaluation of vocational students' employment quality often considers the students' vocational skills and professional knowledge first, which all come from the teaching quality of the school.

In student development evaluation, several documents are the same as the research results of this stage, such as Wu Jing (2012: 68), The necessity and suggestion of educational evaluation of the quality of higher vocational personnel training, the author points out that the training goal of higher vocational colleges is not only to transport talents with vocational skills for the society, but also to pay attention to the all-round development of students, and the development level of students directly reflects the quality of education. Educational evaluation can urge higher vocational colleges to pay more attention to the all-round development of students and promote the reform of education and teaching. Zhou Fang (2010: 67), A probe into the educational evaluation of the quality of vocational personnel training, the author emphasizes that the development of students should be regarded as one of the core contents when constructing the educational evaluation system of higher vocational colleges. This not only helps to fully understand the actual effect of education but also helps to promote schools to improve teaching methods and promote the all-round development of students. Yang Hao (2012: 133), Research on educational evaluation of employment quality of vocational college students, the author believes that student development evaluation is an indispensable part of the educational evaluation system, which is of great significance for improving the quality of education in higher vocational colleges. Educational evaluation can help higher vocational colleges find out the problems in teaching and make targeted improvements.

In school management evaluation, several documents are the same as the research results of this stage, such as Chen Bo (2006: 123), Higher Vocational Education Society valuation research, mentioned in the literature that school management evaluation in educational evaluation should cover multiple levels, including administrative management, teaching management, student management, financial management,





experimental training base, and so on. The establishment of a special experimental training base is particularly important. Dai Lihua (2015: 2), Research on educational evaluation system of higher vocational education, financial management is a core component of school management and has a direct impact on stable school operations and resource allocation. Society's evaluation of a school largely depends on the standardization and efficiency of its financial management. At the same time, the author also believes that the construction and management of experimental training bases can significantly affect the educational quality and educational evaluation of schools.

## **2. The results of the exploration of the actual states, expected states, and needs of educational evaluation of higher vocational and technical colleges in Hunan Province.**

2.1 The expected state of the components and indicators is at a high level.

Zhang (2021), On the main favorable factors of developing higher vocational education in Hunan Province, the author points out that the experimental training base is an important platform for students to improve their practical ability. It is mentioned in the literature that through the survey, the respondents hope that Hunan vocational colleges can provide more high-quality practical teaching resources by continuously improving and expanding the construction of experimental and practical training bases, so the experimental and practical training bases are also rated as the highest expected level in the higher vocational education system.

2.2 The needs of the components from high to low are graduate ability, experimental training base, school-enterprise cooperation, major and curriculum, educational fund, teaching staff, and teaching quality. Peng Wei (2022: 69), Realistic logic and path of high-quality development of higher vocational internationalization from the perspective of structural functionalism: based on a case study of Hunan Province, the author points out that the construction of experimental training base is very important for improving students' practical ability and vocational skills to adapt to the international market, so the demand for an experimental training base in educational evaluation is very high. The author also points out that school-enterprise cooperation is a key factor in promoting the development of international higher vocational education. Through cooperation with enterprises, higher vocational colleges can provide students with more practical opportunities and employment channels, so the demand for school-enterprise cooperation is also high.

Zhang (2006), Discussion on the development strategy of Hunan higher vocational colleges, in the paper, the author points out that sufficient education funds are the guarantee for the development and improvement of teaching quality in higher vocational colleges and the investment of education funds in experimental and practical training bases and school-enterprise cooperation is a very concerned aspect of educational evaluation. It can be seen that the educational demand for education funds is very high.

## **3. The results of the design of the appropriate educational evaluation model for higher vocational and technical colleges in Hunan Province**

The educational evaluation model of Hunan higher vocational colleges includes the following contents: evaluation purpose, evaluation objective, evaluation object, evaluation scope, evaluation index system, evaluation criteria, evaluation guidelines, evaluation method, evaluation process and steps, evaluation model evaluation, legal and ethical considerations.

Sun Y. (2018), Retail enterprise educational responsibility evaluation system and structural model analysis. When constructing the evaluation model of educational responsibility of large retail enterprises in this paper, the author constructs the model from the evaluation object, evaluation scope, evaluation index system, and other aspects, which is similar to the research in this paper.

The content of the final index system is scientific, rational, and practical, and this achievement has important practical significance for improving the educational adaptability and competitiveness of higher vocational colleges in Hunan Province and also provides a reference for follow-up research in related fields.

## **4. The results of the assessment of the educational evaluation model for higher vocational and technical colleges in Hunan Province**





The educational evaluation model of Hunan higher vocational and technical colleges had high feasibility and suitability, indicating that the educational evaluation model of Hunan higher vocational and technical colleges was established. Include evaluation purpose, evaluation objective, evaluation object, evaluation scope, evaluation index system, evaluation criteria, evaluation guidelines, evaluation method, evaluation process and steps, evaluation model, and legal and ethical considerations should be considered. Three aspects of risk management, resource allocation and support, and model sustainability should be added to the model.

In summary, the research results of this stage not only enrich the theoretical foundation of educational evaluation model construction but also provide valuable reference and innovative ideas for further research and practice in this field.

## Conclusion

There are four research objectives in this paper, so the research summary is also explained from four aspects.

1. The educational evaluation of higher vocational and technical colleges in Hunan Province consists of 4 components and 17 indicators. The four components are teaching quality evaluation, student development evaluation, school-enterprise cooperation evaluation, and school management evaluation. The assessment of teaching quality includes six indicators: courses and majors, teaching methods and means, teaching staff, practical practice, assessment and examination of foreign language ability in teaching courses, and advanced teaching theory and practice. Student development assessment includes five indicators: communication and solving problems, innovation ability, cooperative ability, technical application capability, and foreign language proficiency. School-enterprise cooperation includes four indicators: cooperation satisfaction, perfection of communication, cooperation continuity and stability, and the school-enterprise cooperation project. School management evaluation includes two indicators: financial management and experimental training base.

2. The actual state, expected state, and needs of each component and indicator are as follows:

2.1 The actual state of the components and indicators is at a high level. The teaching staff is the highest, which shows that the teaching staff got the highest score in the survey of the actual situation, indicating that the respondents had the highest evaluation of the teaching staff.

2.2 The expected state of the components and indicators is at a high level.

School-enterprise cooperation, teaching quality, teaching staff, major and curriculum, and experimental training base are at the highest level. It can be seen that the respondents have very high expectations for these aspects of Hunan higher vocational and technical colleges and hope that Hunan higher vocational and technical colleges have better performance in these aspects.

2.3 The needs from high to low are graduate ability, experimental training base, school-enterprise cooperation, major and curriculum, educational fund, teaching staff, and teaching quality.

3. The educational evaluation model of Hunan higher vocational colleges includes the following contents: evaluation purpose, evaluation objective, research purpose, evaluation scope, evaluation index system, evaluation criteria, evaluation method, evaluation process and steps, assessment model, legal and ethical considerations.

4. The feasibility and suitability of the educational evaluation model for higher vocational and technical colleges in Hunan Province are at a high level. Through the connoisseurship, the results are that the overall feasibility score is 4.35, and the overall suitability score is 4.46. The results showed that the educational evaluation model of Hunan higher vocational and technical colleges was established.

## Suggestions

According to the research on the construction of the educational evaluation model of higher vocational and technical colleges in Hunan Province, the following suggestions are summarized.

### 1. Suggestions for research results





## 1.1 Current situation and expected suggestions for educational evaluation of higher vocational and technical colleges in Hunan Province in the second stage

According to the results of the second phase of the study, the following suggestions are made:

### 1.1.1 Optimize the docking of curriculum and enterprise needs

It is suggested that the higher vocational and technical colleges in Hunan Province should further optimize the course setting according to the specific industrial needs of each city in Hunan Province. Especially for Changsha, Zhuzhou, Xiangtan, and other cities with concentrated manufacturing and high-tech industries, relevant technology and management courses should be strengthened, such as construction machinery, intelligent manufacturing, and electronic information technology.

### 1.1.2 Deepening school-enterprise cooperation

Higher vocational and technical colleges in Hunan Province should strengthen the cooperative relationship with industry enterprises and improve students' practical skills and professional quality by jointly developing courses, setting up practice bases, and conducting joint research and development projects. In particular, it is necessary to promote the construction of "double-qualified" teachers and the two-way flow of school-enterprise talents to ensure that teachers can grasp the latest trends in the industry and improve the quality of teaching.

### 1.1.3 Strengthen the connection between educational welfare activities and majors

It is suggested that higher vocational and technical colleges in Hunan Province actively participate in educational welfare activities, enhance the educational influence of the school, and carry out relevant continuing education and skill training courses according to the development needs of the industry. In addition, educational welfare activities, such as free clinics, health lectures, etc., strengthen the connection and cooperation between the university and society.

### 1.1.4 Introducing industry experts and updating course content

Regularly invite industry experts and practitioners to give lectures and training to enhance the professionalism and cutting-edge nature of the course. Especially in specialized areas such as aviation, funerals, and pharmaceuticals, ensure that course content is updated to reflect new technologies and standards in the industry.

### 1.1.5 Focus on policy support and development strategies

It is suggested that higher vocational and technical colleges in Hunan Province strengthen the research and analysis of national and local education policies, provide policy suggestions for the government and educational institutions, and jointly formulate the development strategy of vocational education to promote the deep integration of vocational education and industrial needs.

## 1.2 Suggestions on the educational evaluation index system of higher vocational and technical colleges in Hunan Province

In the third stage of this study, aiming at the construction of the educational evaluation index system of vocational colleges in Hunan Province, it is proposed to add the following indicators to the educational evaluation index of vocational colleges in Hunan Province through the evaluation of enterprises, combined with expert opinions. Including professional talent demand, graduate employment rate, graduate international vision, graduate environmental protection ability, professional curriculum development, and personnel training mode. At the same time, the 34 third-level indicators under the second-level indicators are updated and optimized, and the educational evaluation index system of Hunan higher vocational colleges is improved to a greater extent. The index system can better serve the educational evaluation of higher vocational colleges in Hunan Province.

### 1.3 Suggestions for the evaluation model

In the suggestions of the evaluation model, according to the suggestions given by experts, the author puts forward suggestions on three aspects: the wind selection management of the educational evaluation model of Hunan higher vocational and technical colleges, the resource allocation and support of the educational evaluation model of Hunan higher vocational and technical colleges, and the sustainability of the educational evaluation model of Hunan higher vocational and technical colleges.





## 2. Suggestions for further research

2.1. Pilot application of educational evaluation model in higher vocational and technical colleges in Hunan Province

2.1.1 Select pilot colleges: Select representative higher vocational and technical colleges in Hunan Province for the pilot application of the model, and the trial should cover colleges of different types, scales, and professional directions, especially for the industries and regions with many open questions in the second stage to carry out key applications.

2.1.2 Implementation evaluation: According to the evaluation objectives, objectives, evaluation objects, index system, and methods in the educational evaluation model of higher vocational and technical colleges in Hunan Province, the evaluation data and feedback of pilot colleges are collected.

2.1.3 Adjustment and optimization: According to the actual effect of the pilot application, the evaluation criteria, methods, and indicators in the educational evaluation model of higher vocational and technical colleges in Hunan Province shall be adjusted and optimized to ensure its adaptability and effectiveness.

### 2.2 Data collection and analysis

#### 2.2.1 Establishing a Data Platform

Develop or use existing data platforms to systematically collect evaluation data, including questionnaires, interview records, school-enterprise cooperation data, etc.

#### 2.2.2 Data Analysis

Statistical analysis tools (such as SPSS) are used to analyze the collected data deeply, and the practical application effect and the actual performance of indicators of educational evaluation models in higher vocational and technical colleges in Hunan Province are evaluated.

### 2.3. Provide guidance services

Provide detailed operational guidelines and technical support for participating institutions to ensure that they can accurately evaluate according to the model.

### 2.4. Solicit feedback widely

#### 2.4.1 Collecting Comments

The feedback opinions on the application of the educational evaluation model in Hunan higher vocational and technical colleges were collected from participating colleges and universities to understand the advantages and disadvantages of the model in practical application.

2.4.2 Improve the educational evaluation model of higher vocational colleges in Hunan Province

According to the feedback, the educational evaluation model of higher vocational and technical colleges in Hunan Province is further adjusted and improved, and the model is further optimized and improved.

### 2.5. Policy recommendations and applications

#### 2.5.1 Policy recommendations

According to the evaluation results and the application effect of the model, policy suggestions are put forward to the relevant government departments and institutions in Hunan Province to promote the reform and development of higher vocational and technical colleges in Hunan Province.

#### 2.5.2 Application Promotion

Promote the verified educational evaluation model of higher vocational and technical colleges in Hunan Province and help higher vocational and technical colleges and enterprises in Hunan Province to understand and apply the model and improve their educational evaluation level.

### 2.6. Continuous tracking and evaluation

#### 2.6.1 Setting up the evaluation mechanism

Establish a long-term tracking and evaluation mechanism and regularly evaluate and update the educational evaluation model of higher vocational and technical colleges in Hunan Province to ensure that it can continuously adapt to the changes in the educational environment and market demand.





### 2.6.2 Releasing a Report

The evaluation report on the application effect of the educational evaluation model in higher vocational and technical colleges in Hunan Province is regularly released, and successful cases and experiences are shared to provide more valuable references for subsequent research and practice.

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