

# *Research on the Developmental Evaluation Indicators System for Commerce and Business Teachers in Shaanxi Higher Vocational Colleges*

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**Keywords:** Development evaluation index system, business teachers, Higher vocational colleges in Shaanxi Province

**Abstract:** Teacher development evaluation is a development-oriented formative evaluation, which judges and evaluates the value of teachers' current work and development potential based on the process of teachers' professional development, and objectively measures and evaluates teachers' professional level. The establishment of teacher development evaluation index system can effectively evaluate teacher professional development. Based on the analysis and research of business teachers in Shaanxi higher vocational colleges. This study is based on business teachers in higher vocational colleges in Shaanxi province, using a variety of methods for analysis and research. The paper attempts to construct a multi-dimensional teacher development evaluation index system, which includes four first-level indicators, eight second-level indicators and fifty-one third-level indicators, and uses the analytic hierarchy Process (AHP) to calculate and determine the index weights for each indicator at different levels. In order to ensure the correctness and rationality of the weights obtained, the judgment matrix test is used for consistency test,  $CR=0.0685<0.1$ , indicating that the degree of inconsistency of the judgment matrix is within the allowable error range and has strong reliability. At the same time of calculating the weight, it also makes subtle adjustments and modifications to the specific index content, and finally calculates the comprehensive weight of each index, thus obtaining the final teacher development evaluation index system, which provides an evaluation tool for the development of business teachers in higher vocational colleges in Shaanxi. The index system combined with the fuzzy comprehensive evaluation method can comprehensively evaluate the development of business teachers in higher vocational colleges in Shaanxi.

## **1. Introduction**

Since the 18th National Congress of the Communist Party of China, the General Secretary Xi has made a series of important instructions and instructions on deepening the reform of educational evaluation from the perspective of the overall development of the Party and the country, which has pointed out the direction and provided guidelines for the reform and development of higher education in the new era. The Outline of the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the 2035 Vision Goals clearly states that

"Deepening the reform of educational evaluation in the new era and establishing and improving the educational evaluation system and mechanism". "For a hundred years, education is the foundation. The plan of education is teacher-based." Teachers are the foundation of education, the source of education, and also the key subject of educational evaluation reform. In order to improve teacher evaluation, we should focus on the main responsibility of education, and build a cultural ecology that is conducive to teachers' dedication to teaching, education and learning [1]. The function of educational evaluation makes it play an important role of "baton" in the process of deepening the reform of higher education. This role is not a simple value measurement and value judgment, but a kind of ideological guidance and concept guidance, which plays an important role in guiding, motivating, standardizing and supervising the development of colleges and universities, and has a direct impact on the allocation of resources in colleges and universities [2]. Therefore, colleges and universities should take "evaluation" as a breakthrough point, carry out comprehensive reform of higher education, and reform teachers' teaching evaluation based on the concept of developmental evaluation, so as to achieve the resonance between teachers' professional growth and the overall development of schools [3].

## **2. The Principles of Constructing the Development Evaluation Index System of Shaanxi Higher Vocational Business Teachers**

### **2.1. Be Scientific**

The evaluation system of higher vocational teachers' development should be guided by modern education evaluation theory, follow the law of higher education development, set reasonable and accurate indicators, and strive to make an objective and realistic evaluation of the professional development level of higher vocational teachers. Scientific means that the evaluation standards, procedures and methods of higher vocational teachers should not only conform to the laws of education, professional characteristics and psychological characteristics of higher vocational teachers, but also conform to the actual situation of the school, so that the scientific evaluation system of higher vocational teachers can be carried out and implemented in the school. The scientificity also requires that in the process of evaluation, we should pay attention to the scientificity of evaluation methods and methods.

### **2.2. Orientation**

The purpose of professional development evaluation of higher vocational teachers is to promote the growth of teachers, improve their professional quality, and then promote the overall development of higher education. To promote the development evaluation of higher vocational teachers, we must first distinguish the evaluation results from the reward and punishment system, otherwise the ideal effect will not be achieved. The guiding principle also requires that during and after the evaluation of higher vocational teachers, feedback information should be provided to the evaluation objects and the relevant leaders of colleges and universities in time to help the teachers improve their shortcomings. Without timely feedback, the evaluation of higher vocational teachers with development as the core will lose its due value and significance [4].

### **2.3. Operability**

The establishment of evaluation system and indicators should be clearly worded, accurate in connotation and clear in extension. The evaluation of higher vocational teachers can not only use one of the evaluation methods, it needs to combine qualitative analysis and quantitative analysis,

and adopt targeted and operational evaluation methods according to the specific evaluation content.

## **2.4. Completeness**

In the process of establishing the evaluation system, we should comprehensively examine the theory and practice of the development of higher vocational teachers, establish a dimensional framework that can fully reflect the professional development of higher vocational teachers, set up a reasonable index level and content, and form an index system with a good logical relationship. Completeness also includes weakening the tendency of administrative management, carrying out bottom-up comprehensive evaluation, allowing all teachers in higher vocational colleges to participate in evaluation, and all teachers and students to participate and make progress together.

## **2.5. Developmental**

The evaluation system is malleable in function, which can not only consider the current working status and professional level of higher vocational teachers, but also apply to the future professional development needs of higher vocational teachers. Development evaluation should be advanced with The Times and dynamic, rather than rigid and immutable.

## **3. The Construction of the Development Evaluation Index System of Shaanxi Higher Vocational Business Teachers**

### **3.1. Determination of Evaluation Subject**

After consulting materials and referring to the evaluation habits recognized by relevant domestic universities in relevant research and practice, which are frequently adopted, and the need for developmental evaluation, this study considers that the evaluation subject should not only be able to comprehensively and effectively observe the performance of teachers in all aspects of their own work, but also be able to objectively evaluate the evaluated. Therefore, when constructing the developmental evaluation index system, multidimensional evaluation subjects from higher education administration departments, school administration departments, teachers and students of higher vocational colleges, and third-party enterprises are included to conduct an all-round evaluation of the development of business teachers in Shaanxi higher vocational colleges. The evaluation subjects of the development evaluation system of Shaanxi higher vocational business teachers are the provincial education department, the school management department, the teachers and students of higher vocational colleges, and the third party enterprises. The Department of Education has the responsibility and obligation to supervise the teaching quality of teachers, plays a macro-control role in the whole evaluation process, and its evaluation management should be the meaning of teacher development evaluation. The school management department has a deep understanding of the teachers' code of conduct and the teaching requirements of the state and the school, and can adjust the relationship between teachers and students at the organizational level. The evaluation of teachers' teaching situation is of great reference value in accordance with the teachers' code of conduct and the teaching requirements of the state and the school. Teacher and student evaluation can play a radiating role of excellent teachers, eliminate the sense of isolation among peers, and promote the professional development of all teachers [5]. Teacher peer evaluation can make teachers participate in all aspects of evaluation. Participating in evaluation can enhance teachers' sense of ownership, objectively analyze themselves, and humbly accept external criticism and guidance. Students' evaluation of teachers can truly reflect teachers' classroom teaching effect and directly improve teaching quality. The feedback of students' evaluation information and

evaluation results can guide and assist teachers' teaching. The evaluation of teachers' social services by third-party enterprises reflects teachers' functions and their ability to serve the society, which is in line with the requirements of the state for college teachers.

### 3.2. Selection of Evaluation Indicators and Determination of Evaluation System

The construction of the teacher development evaluation index system in this study starts from the value orientation of development evaluation, takes teacher specialization as the cornerstone, focuses on the goal of teacher professional development, analyzes various factors affecting teacher professional development and researches on the teacher development evaluation index system in some universities. Four first-level indexes, namely top-level system evaluation, college teaching management evaluation, teacher behavior evaluation and social evaluation, are constructed, and then each index is carefully analyzed until the final index is determined.

In this study, the teacher development evaluation index system is based on practical research, using rooted theory to analyze data, extract indicators, and determine the index system.

The interviewees selected in this study included 10 executives from 5 enterprises, 2 managers from the competent education department, and 12 teachers from 6 colleges and universities in the province. The design of the interview outline focuses on the development goals of higher vocational teachers, as well as the factors affecting the professional development of business teachers, existing problems and countermeasures. The interview was conducted in the form of semi-structured interview. The interview questions focused on "development evaluation of business teachers in higher vocational colleges". According to literature collection, the interview outline included: ① Please talk about your understanding of the positioning and development of higher vocational business teachers; ② What aspects do you think should be emphasized in the development evaluation of business teachers in higher vocational colleges? ③ Please talk about your views on the ethics, teaching quality, teaching ability, scientific research ability, and social service ability that vocational business teachers should have; ④ Talk about your understanding of the institutional environment for the development evaluation of business teachers in higher vocational colleges; (5) How to improve teacher evaluation to promote the professional development of business teachers; What do you think are the development paths of vocational business teachers, etc., the specific interview outline is in Appendix II.

After the interview, the interview materials were sorted out and identified, and the written materials of the interview were sorted out according to the interview notes. After sorting out and identifying the interview records, qualitative analysis software nvivo12 was used to conduct a sentence by sentence connotation analysis of the text materials, dig out the connotation of the text content, conceptualize it, and extract the initial category. After software automatic coding and manual coding, 13 basic concepts are finally extracted, and 6 initial categories such as "development evaluation of higher vocational business teachers" are clustered. After consolidation and optimization, 8 basic concepts and 4 initial categories are formed..

Next, according to the process of mainline coding, the initial category of open coding is further clustered to form the main category of "development evaluation of business teachers in higher vocational schools". According to this method, four main categories are coclustered, which are multi-evaluation subject, social evaluation, teacher development evaluation and individual evaluation.

In the next step, according to the connotation and internal relationship of the main category, combined with the analysis of the survey results, this research preliminarily constructs the developmental evaluation index system of Shaanxi higher vocational business teachers around the core category of "developmental evaluation of business teachers", and describes the interpretation

framework of the teacher developmental evaluation index system as a logical framework of hierarchical indicators with developmental evaluation as the core..

Finally, nvivo12 qualitative analysis software is used for theoretical saturation analysis. After analysis, there is no new concept and category in the new data, and the subordination and internal connection between the categories have not changed. Therefore, it can be said that the theoretical saturation of the logical framework based on the grounded theory in this study is good and has strong interpretability. Therefore, four dimensions of the development evaluation index system of business teachers in higher vocational colleges in Shaanxi are obtained: top-level system evaluation, college teaching management evaluation, teacher behavior evaluation and social evaluation.

#### 4. Determination of the Weight of the Developmental Evaluation Index System for Business Teachers in Higher Vocational Colleges in Shaanxi

In this study, the analytic hierarchy process (AHP) is used to determine the index weight. The index sets were compared using Likert scale (see Table 1).

Table 1: Scale of relative importance

Relative importance	Instructions
1	Equally important
3	Slightly important
5	Basic (or high) importance
7	Really matter
9	Absolutely vital
2,4,6,8	The middle of two adjacencies

The evaluation subjects are: student evaluation A, social evaluation B, teacher evaluation C, school management department evaluation D, education management department evaluation E. Compare each evaluation subject one by one: After calculation, the final comparison results of each evaluation subject are shown in Table 2 below (3 decimal places).

Table 2: Comparison results of primary indicators

	Top-level system evaluation A	College evaluation B	Teacher evaluation C	Social evaluation D	weight
Top-level system evaluation A	1	3	3	1	0.408
College evaluation B	1/3	1	1	2	0.205
Teacher evaluation C	1/3	1	1	2	0.205
Social evaluation D	1	1/2	1/2	1	0.181
total	2.666	5.5	5.5	6	1

Similarly, the weight division of teacher self-evaluation, student evaluation, peer (expert) evaluation and leadership evaluation is also carried out, that is, the weight of each evaluation subject can be obtained.

Table 3: Comparative results of each evaluation subject

	Student evaluation A	Social evaluation B	Teacher evaluation C	College evaluationD	Educational management department evaluationE	$M_i$	$\overline{W}_i$	$W_i$
Student evaluation A	1	2	3	1	1/3	2	1.072	0.186
Social evaluationB	1/2	1	2	1/2	1/3	0.167	0.699	0.121
Teacher evaluation C	1/3	1/2	1	1/3	1	0.056	0.562	0.098
College evaluationD	1	2	3	1	2	12	1.644	0.285
Educational management department evaluation E	3	3	2	1	1	18	1.783	0.310
total	5.833	8.5	10	3.833	4.666	32.223	5.76	1

According to the formula  $M_i = \sum_{j=1}^n U_{ij}$ , calculate the product  $M_i$  of the elements in each row;

According to the formula,  $\overline{W}_i = \sqrt[n]{M_i}$ , calculate the geometric mean  $\overline{W}_i$  of each row of elements;

According to the formula  $W_i = \overline{W}_i / \sum_{i=1}^n \overline{W}_i$ , the normalization of  $\overline{W}_i$  is carried out, calculate the indicator weights  $M_i$ , The specific results are shown in Table 3.

According to the positive and reciprocal matrix in Table 3,  $A = \begin{bmatrix} 1 & 2 & 3 & 1 & 1/3 \\ 1/2 & 1 & 2 & 1/2 & 1/3 \\ 1/3 & 1/2 & 1 & 1/3 & 1 \\ 1 & 2 & 3 & 1 & 2 \\ 3 & 3 & 3 & 3 & 3 \end{bmatrix}$ . Its

columns are normalized after summing, and each row is averaged,  $V = \begin{bmatrix} 0.2022 \\ 0.1174 \\ 0.1016 \\ 0.2738 \\ 0.3048 \end{bmatrix}$ ,  $A * V = \begin{bmatrix} 1.1171 \\ 0.4889 \\ 0.6236 \\ 1.3684 \\ 1.7406 \end{bmatrix}$ ,

characteristic root =  $\begin{bmatrix} 1.1171/0.2022 \\ 0.4889/0.1174 \\ 0.6236/0.1016 \\ 1.3684/0.2738 \\ 1.7406/0.3048 \end{bmatrix} = \begin{bmatrix} 5.5247 \\ 4.1644 \\ 6.1378 \\ 4.9978 \\ 5.7106 \end{bmatrix}$ .

In order to ensure the correctness and rationality of the weights obtained, the consistency test of the judgment matrix is also needed. When the consistency ratio  $CR = CI/RI < 0.1$ , it shows that the degree of inconsistency of the judgment matrix is within the allowable error range and has strong reliability. The random consistency index RI is shown in Table 4.

$$\lambda_{\max} = \frac{1}{n} \sum_{i=1}^n \frac{AW_i}{W_i}$$

$$\lambda = (5.5247 + 4.1644 + 6.1378 + 4.9978 + 5.7106) / 5 = 26.5353 / 5 = 5.3071$$

$$\frac{\lambda - n}{n - 1}$$

CI =  $\frac{\lambda - n}{n - 1} = 5.3071 - 5 / 5 - 1 = 0.076775 < 0.1$ . The weights of these five features are desirable. N=5. We get CR=CI/RI=0.076775/1.12=0.0685<0.1, then the judgment matrix passes the consistency test.

Table 4: Random consistency index RI

n	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49

After calculating the weight of each evaluation subject, the judgment matrix is used again to calculate the weight value of indicators at different levels, and finally the comprehensive weight of each indicator is calculated. While calculating the weight, subtle adjustments and modifications are also made to the specific index content. The final index system and weights are shown in Table 5.

Table 5: Summary of weights of developmental evaluation indicators for business teachers in higher vocational colleges in Shaanxi

Initial category	Basic concept	Typical references to textual material	
First level index and weight	Secondary index and weight	Evaluation content (three-level indicators)	Comprehensive weight
<b>Top-level system evaluation</b> 0.408	<b>Leadership responsibility</b> 0.306	1. The Department of Education establishes policies and systems for teacher development 0.204	0.062
		2. The relevant teacher policies and systems formulated by the Department of Education are reasonable and feasible 0.189	0.058
		3. The school's future development plan includes aspects related to teacher development 0.044	0.013
		4. The leadership team formulated and implemented relevant systems and policies for teacher development 0.342	0.105
		5. The school has a detailed construction plan for the development of teachers and promotes the development of teachers as a whole 0.222	0.068
	<b>Institutional guarantee</b> 0.102	6. The school regularly holds special meetings on teacher development to deploy relevant work plans 0.108	0.011
		7. The school shall establish a leading group for teacher development or a teacher development center led by school leaders 0.037	0.004
		8. The school pays attention to teachers' mental health and provides psychological counseling 0.066	0.007
		9. The school provides special funding support for teacher development 0.649	0.066
		10. The school considers the development of teachers in the evaluation of professional titles, assessment and reward policies 0.147	0.015
<b>College</b>	<b>Teachers'</b>	1. Correct expression of political speech and thought	0.0310

<b>teaching management evaluation</b> 0.205	<b>ethics and manners</b> 0.118	0.263	
		2. Teach according to law and abide by the professional ethics of teachers 0.127	0.0149
		3. Be decent and not pompous 0.085	0.0100
		4. Don't be late and leave early, don't answer or call in class 0.032	0.0038
		5. Focus on guiding and shaping students' three views 0.284	0.0334
		6. No prejudice and discrimination against students, often encourage and support students 0.116	0.0137
		7. Good relationship between teachers and students 0.088	0.0104
	<b>Teacher teaching process ,content and method evaluation</b> 0.059	8. Explain clearly, easy to understand, reasonable arrangement of knowledge points, rich content 0.069	0.004
		9. Intersperse curriculum ideological and political content with professional knowledge 0.048	0.003
		10. Flexibly apply teaching methods, strategies and teaching resources to carry out understanding teaching 0.129	0.008
		11. Effectively maintain classroom order, flexibly mobilize students' interest in learning and create a good learning environment 0.207	0.012
		12. Respect students' ideas and viewpoints, interact with students, and make students actively participate in classroom teaching activities 0.129	0.008
		13. Skilled use of the latest information technology in the teaching process 0.103	0.006
		14. Timely update the latest knowledge in the field of expertise 0.289	0.017
	<b>Scientific research evaluation</b> 0.029	15. Publish high-level papers 0.202	0.006
		16. Complete the research task 0.142	0.004
		17. Scientific research awards 0.199	0.006
		18. Scientific research team building 0.148	0.004
		19. Research and innovation 0.259	0.008
		20. Attend research lecture training 0.05	0.001
<b>Teacher behavior evaluation</b> 0.205	<b>Teacher peer and student evaluation feedback</b> 0.154	1. Teaching objectives achieved 0.058	0.009
		2. Professional course teachers can understand professional content 0.051	0.008
		3. Professional teachers update the content of professional courses in time 0.072	0.011
		4. Professional teachers guide students' opinions timely and correctly 0.097	0.015
		5. Professional teachers respond effectively to students' confusion and needs 0.090	0.014
		6. Professional teachers participate in professional teaching training to improve their teaching ability 0.064	0.010
		7. Professional teachers actively participate in professional construction 0.077	0.012
		8. Professional teachers get teaching achievement award or talent title 0.062	0.010
		9. Student attendance 0.075	0.012
		10. Student head-up rate 0.080	0.012
		11. Students are satisfied with the teacher's course content 0.084	0.013
		12. Students actively participate in course tasks 0.094	0.014
		13. Students communicate and cooperate with others 0.049	0.008
		14. The students have positive suggestions for the teachers	0.005

	<b>Teacher career development</b> 0.051	0.032	
		15. Teachers' professional identity 0.111	0.006
		16. Teacher happiness 0.095	0.005
		17. Mental health of teachers 0.068	0.003
		18. Cognition and planning of teacher career promotion 0.083	0.004
		19. Number of in-service training attended by teachers 0.188	0.010
		20. The number of times teachers participated in academic exchange studies 0.141	0.007
		21. The number of times teachers participated in enterprise practice 0.083	0.004
		22. Teachers' self-cognition evaluation 0.076	0.003
		23. Teachers participate in teamwork 0.068	0.006
		24. Teachers' evaluation of school support for teachers 0.118	0.051
<b>ocial evaluation</b> 0.181	<b>Teacher service forsocal</b> 0.181	1. Provide consulting services to enterprises 0.188	0.034
		2. Undertake off-campus training services 0.256	0.046
		3. Participate in school-enterprise cooperation projects 0.205	0.037
		4. Provide services to the community 0.048	0.011
		5. Go out and exercise 0.069	0.013
		6. Volunteer to teach 0.083	0.018
		7. Volunteer 0.118	0.022
Final score			
<b>Reflection and improvement</b>	(1) Teachers analyze the shortcomings in teaching, objectively comment on the problems existing in teachers, and form written materials. This part does not calculate the score, but is only used for teachers' self-cognition and the basis for experts and leaders to provide targeted guidance to help teachers' professional development.(2)Teachers describe their expectations and needs for enhancing their own professional development, and outline their future development plans. This part is not used for score calculation, but only for teachers' self-cognition and the basis for experts and leaders to provide targeted guidance to help teachers' professional development.		
<b>Guiding opinion</b>	It is suitable for the evaluation of experts and leaders to objectively evaluate the advantages and disadvantages of teachers, provide written evaluation opinions and materials, and put forward targeted guidance and suggestions to strengthen the help and guidance of teachers.		

At the end of the evaluation form, there are teachers' reflection and improvement and teacher development opinions. These two parts serve as the basis for experts and leaders to put forward targeted guidance to help teachers develop. The purpose is to strengthen the help and guidance for teachers, and they are not included in the total score.

## 5. Conclusion

Based on grounded theory and qualitative analysis of interview data, combined with a large number of literature, the author initially constructed a developmental evaluation index system for business teachers in higher vocational colleges in Shaanxi, and then calculated and determined the weights of each index by using AHP. In practical application, the evaluation index system can be further verified, adjusted and improved. At the same time, through practical application, it can judge the overall development level of Shaanxi higher vocational business teachers, reveal the weak points of teachers' development, and promote the comprehensive development and continuous progress of teachers. However, due to the limitations of research capacity and research cycle, as

well as the dynamic nature of teacher development evaluation itself, this study still has shortcomings: the evaluation method needs to be further optimized and the degree of intelligence of evaluation needs to be further improved. In the future research, it is necessary to further adjust the evaluation index to make the evaluation index system more reasonable, detailed and clear.

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