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Research on Optimization Strategies of Language Curriculum Design and Teaching Activities in Higher Vocational Colleges and Universities Based on Hierarchical Analysis Approach

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ABSTRACT

Scientific and efficient curriculum design and teaching activity plan is the key to the quality of teaching in higher vocational colleges and universities. Based on the principle of SPOC segmented teaching, this paper proposes a "two-line hybrid" language teaching model. Combined with the implementation process of blended teaching, a blended teaching quality evaluation index system for higher vocational colleges is constructed, which includes the dimensions of rule of law and ethics, professionalism, learning ability, skills and technology. Using the standardization principle of hierarchical analysis, the judgment matrix was constructed by comparing two by two to achieve the empowerment of the indicator system. Introducing cloud model comprehensive evaluation, combining the weights of indicators from the forward cloud generator to get the cloud diagram, and derive the evaluation results. The initial matrix is constructed according to the scores of experts, and all the items passed the consistency test, which verifies that the index system has high reliability and validity. The obtained cloud diagram shows that the cloud model parameter Ex = 5.462, in which the A rule of law ethical dimension Ex is about 5.58, closest to the medium level. This paper makes a useful exploration for actively promoting the teaching reform of higher vocational discipline courses.

Keywords: blended teaching, hierarchical analysis, judgment matrix, cloud model, language course design

1. Introduction

The university language course is a quality education course for students in general colleges and universities majoring in arts, science, engineering, agriculture, medicine, finance and economics, politics and law, foreign languages, arts, education and other majors. The purpose of the course is to cultivate students' ability to read, appreciate, understand and express themselves in Chinese language and literature. This is an important aspect of the cultural quality of college students. It can be seen that

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the university language course aims to cultivate and improve the language quality of non-Chinese language and literature majors, and occupies an important position in the curriculum system of students' quality composition.

Higher vocational language courses generally involve the first representative literary works of all periods in China, which bring the charm of Chinese language and writing to the extreme, and between the lines, also conveys the spirit of continuous national culture [1]. Constant exposure to these beautiful literary works is not only to receive the inculcation of beauty, but also to help students to find the cultural roots, so that they can still remove the impatience to adhere to their own piece of spiritual home when they become adults [2]. In addition, higher vocational education is to cultivate high-quality skilled practical talents, this talent cultivation goal determines the higher vocational education in the curriculum focus on vocational, the construction of the curriculum system highlights the relevance of the teaching link focus on practical [3-4]. These basic characteristics of higher vocational education, but also decided that higher vocational university language must also highlight the vocational characteristics of talent training, around the vocational ability to strengthen the practical characteristics of the language [5]. Higher vocational education is also higher education, which is different from secondary and middle school education, and cultivates highly skilled talents with good work ethics and high quality. Therefore, the university language in higher vocational education should effectively implement the concept of "vocational core competence cultivation as the main point", try to realize the integration of vocational education and curriculum teaching, and coordinate the development of students' knowledge, ability and quality.

Literature [6] studied the humanistic education mode in higher vocational language teaching, for the current problem of low cultural literacy of students, emphasized that students should be actively cultivated to adapt to the social development of comprehensive quality, including professional skills and vocational literacy, and humanistic education in the language course plays an important role. Literature [7] specifies that the talent cultivation goal of higher vocational Chinese language courses under the current economic and social forms should deviate from the "one-way bias" centered on knowledge learning, and should strive to cultivate the composite talents with a collection of cultural heritage, professional knowledge and operational skills. Based on the analysis of the current situation of vocational language education, [8] puts forward a series of teaching optimization measures, including the establishment of special courses, optimization of cultivation objectives, etc., emphasizing that higher vocational students should have a clear vocational orientation, and cultivate all-around comprehensive talents through the paradigm of school-enterprise cooperation. Literature [9] explored students' motivation to learn Chinese as a foreign language and the important factors affecting their Chinese language performance, and found that a positive learning environment promotes students' motivation to learn Chinese and is closely related to their second language performance, while language learning motivation does not motivate their professional knowledge. Literature [10] examined the educational advantages embodied in higher vocational language teaching strategies that incorporate traditional culture, which deepened higher vocational students' understanding and inheritance of traditional culture and made outstanding contributions to the cultivation of higher vocational students with cultural confidence and humanistic literacy. Literature [11] describes the challenges of integrating traditional culture into higher vocational language teaching, and proposes that with the help of innovative teaching methods of digital technology such as deep learning, we can continuously stimulate students' interest in learning and cultural identity, so as to improve the effect of higher vocational language teaching and at the same time pass on the excellent traditional Chinese culture. Literature [12] analyzes the problems existing in the process of the development of language education in higher vocational education, and puts forward the improvement measures of teaching methods, such as determining the development goals, enriching the teaching content, and improving the level of informatization, so as to make full use of the advantages of vocational education to strengthen the traditional culture education of higher vocational students and cultivate their

comprehensive qualities. Literature [13] describes the design of higher vocational language teaching under the support of computer multimedia technology, which integrates a variety of equipment and technology into the teaching process to build a new type of interactive classroom teaching system, which plays an important role in higher vocational language teaching.

This paper constructs a teaching quality evaluation index system, uses the hierarchical analysis method to assign weights and then utilizes the cloud model to realize the comprehensive evaluation of the "two-line hybrid" higher vocational language teaching mode proposed in this paper. First of all, according to the "five-stage" course design principle of SPOC, we design a hybrid language teaching model with cyclic promotion and strict steps. Then, the relevant indicators are selected to construct a teaching quality evaluation system, and the four first-level indicators, including learning ability, are hierarchically decomposed to establish a hierarchical model with intrinsic connection and affiliation. The evaluation results of blended language teaching in higher vocational education are obtained through the comprehensive evaluation of the cloud model after empowerment.

2. Curriculum design for the "two-line hybrid" teaching model

2.1. "Two-line hybrid" teaching model

The selection or design of the teaching mode should be based on the content of the lesson, the target audience, the ability of the teacher and the available resources. Generally speaking, in order to achieve the ideal effect of "two-line hybrid" teaching, the teaching design should implement the idea of "learner-centered" from the beginning to the end, and plan the following points:

1) Define the teaching objectives of the course. In the specific course design, teaching objectives is an important prerequisite, is the starting point and ultimate destination of teaching design activities.

2) Create a high-quality course system. Course design can be combined with the project-based practice teaching system, guiding the course students to "online and offline integration" learning mode change, learning is under the teaching of learning, teaching is to promote learning and teaching.

3) Online and offline complement each other's advantages. Online teaching can reduce the cost of teaching, reduce teacher expenditures, solve the traditional classroom time is limited, the content is not enough to expand and many other problems.

4) Good course evaluation design. Vocational skills courses focus on students' mastery and internalization of knowledge and ability. Therefore, the design of learning evaluation should focus on the combination of process evaluation and summative evaluation.

5) Flexible configuration of teaching mode. The "two-line hybrid" teaching mode in higher vocational colleges and universities should be flexibly configured according to the specific situation.

2.2. Example of a "two-line hybrid" course design

"Higher vocational language teaching method" is an important professional course for higher vocational (language) education majors, whose main task is to enable teacher trainees to master the scientific theories and skills necessary for higher vocational language education, teaching and scientific research, and to develop their comprehensive qualities and abilities in order to adapt to the needs of future higher vocational language education.

2.2.1. Orientation of course objectives. Higher vocational language teaching method is a discipline closely integrated with theory and practice, the course teaching is based on the theory of language

teaching method, with higher vocational language teaching skills as the main line, focusing on the cultivation of higher vocational teacher trainees' teaching practice ability.

2.2.2. Course content design. Higher vocational language teaching method not only has high requirements for theory, but also synthesizes theoretical analysis to solve practical problems in language teaching. It mainly adopts the blended learning method that combines face-to-face teaching and online teaching, and carries out the characteristic teaching design of blended learning from the perspectives of sequencing of learning activities, integration of learning activities and learning resources.

1) Face-to-face course learning design. When designing the face-to-face teaching content of the course "Language Teaching Method for Higher Vocational Training", we pay attention to the interpretation of theories, emphasize on highlighting the important and difficult points in combination with the cases of theoretical knowledge, in order to achieve the effect of in-depth and easy-to-understand, and focus on the teaching form of open and interactive teaching and learning, and set up the links of teaching experience to enrich the classroom activities. Activities. For example: independent learning results exchange, classroom activities, group results display, the display of various teaching skills, students can communicate and display, experience micro-classroom teaching.

2) Online course learning design. The design of the online course is closely related to the vocational characteristics of higher vocational education, and the course is divided into 3 modules, 11 projects and 32 tasks. The content covers the analysis skills of higher vocational Chinese textbooks, the preparation skills of higher vocational Chinese classroom teaching, the implementation skills of higher vocational Chinese classroom teaching, the teaching skills of literacy and writing, the teaching skills of reading, the teaching skills of writing and assignments, the teaching skills of oral communication, the teaching and teaching skills of comprehensive learning, the teaching and research skills of higher vocational Chinese courses, the evaluation skills of higher vocational Chinese courses, the practical skills of higher vocational Chinese teaching, and the practical skills of higher vocational Chinese teaching. In the learning process, it can be based on the network online independent or cooperative learning.

3) Online media application design. Relying on the "Super Star Learning Channel" teaching platform and complying with the online course construction specifications, the online course content can be divided into two major parts: video and non-video. The video part of each video is limited to 8-10 minutes, and comprehensively utilizes charts, animations and cases to increase the information content of the video lectures and improve the vividness of learning. The teaching content is complete, and it is convenient for students to flexibly utilize their fragmented time for learning. The non-video part mainly includes online lesson plans, exercises, tests, homework, and featured cases for learning and discussion.

4) Design of Blended Teaching Activities. According to the teaching needs, "online" or "offline" teaching activities are selected in a targeted manner. The flow of blended teaching activities is shown in Figure 1.

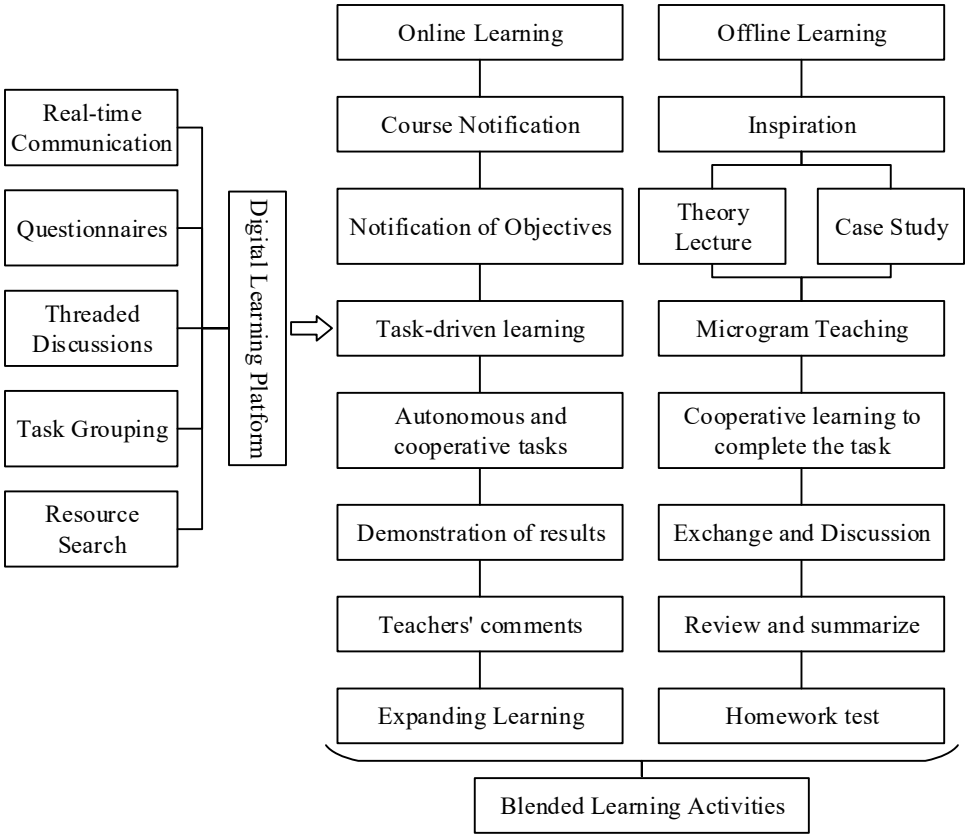

Fig. 1. "Chinese teaching method" hybrid teaching activities

3. Quality Evaluation Index System for Blended Teaching in Higher Education Institutions

3.1. The basic process of the blended teaching model

In this study, the framework diagram of blended teaching mode is shown in Figure 2, which is based on the SPOC "teaching preparation - pre-course imitation practice and difficulty discovery - in-class difficulty breakthrough and special training - post-course reinforcement training and application migration Timely evaluation and reflection to improve the "five-stage" cycle of promotion, spiral enhancement, teaching and learning hybrid teaching model [14].

The basic process includes the following stages, the teaching preparation stage, where teachers build learning platforms, release teaching standards, teaching plans, related resources, pre-course learning task lists, etc., where students familiarize themselves with the learning platforms, consult course materials, clarify the blueprints for the outcomes of the course or unit of study, etc., and where teachers and students fully communicate with each other and give each other learning suggestions or teaching suggestions; Before class, students analyze the pre-course learning tasks, consult learning suggestions, clarify learning objectives, carry out personalized learning, complete pre-course quizzes, communicate and interact online and offline, summarize pre-course learning, and sort out the difficulties, etc. Teachers answer questions online, provide timely guidance, assess the pre-course learning situation, determine the key and difficult points that need to be broken through during classroom teaching, design classroom training topics, and further optimize the classroom teaching design; during class, teachers guide students to break through difficult points together, students use appropriate methods to complete classroom training, teachers monitor the classroom, timely guidance, provide assistance, students report results, students assess each other, teachers comment, reveal errors, affirmation of achievements, student reflection, improvement and enhancement; after the class,

students are divided into different levels of intensive training, assess each other's work, teachers online Q&A, comment on the work, students reflect on the correction of errors, and realize the transfer of the application; Reflection Evaluation stage, for a complete learning process, mainly on learning methods, teaching methods, teaching content, presentation forms, teaching resources and conditions, etc., student mutual evaluation, teacher-student mutual evaluation, teacher evaluation, student self-reflection, improve student attitudes and methods, teacher reflection, improve teaching methods, improve teaching conditions, optimize teaching resources and processes, and actively participate in the next teaching.

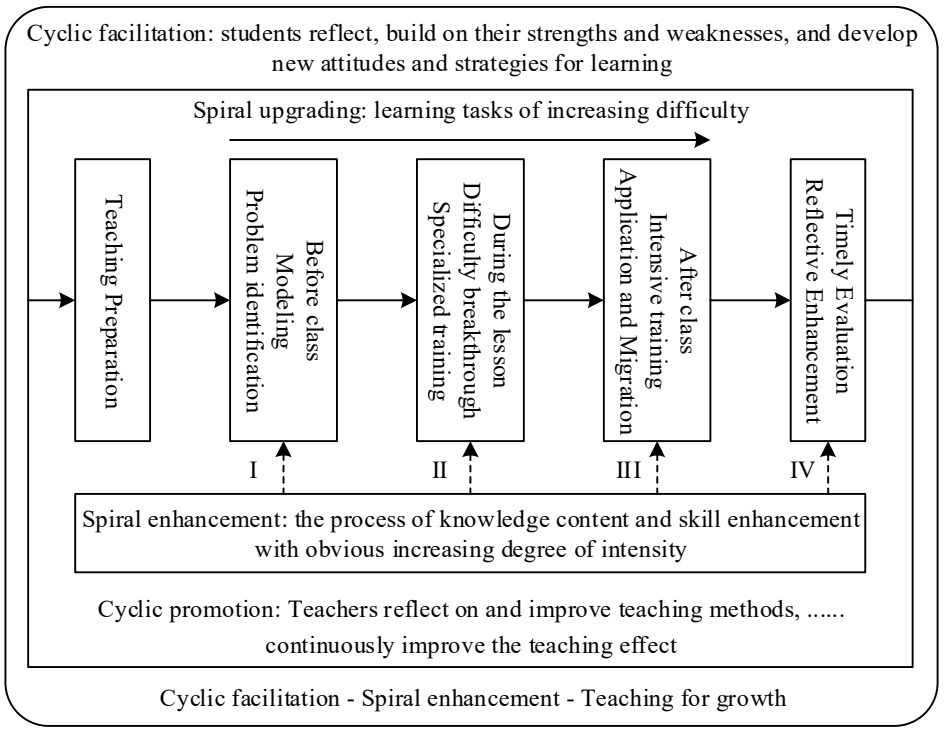

Fig. 2. A "five-segment" hybrid teaching pattern based on SPOC

3.2. Design of teaching quality evaluation index system

This study proposes the construction process of hybrid teaching quality evaluation index system by analyzing the strengths and weaknesses of the current index system. The process is shown in Figure 3. There must be sufficient and scientific theoretical basis in the whole process of quality evaluation index system construction. After the initial formation of the quality indicator system, the credibility and validity of its evaluation and the operability of the evaluation implementation should be evaluated, and according to the evaluation results, the content or weight of the indicators at all levels should be adjusted or the final indicator system should be formed. The indicator system is divided into 3 levels, in order of first-level indicators, second-level indicators and observation points. There are four first-level evaluation indicators, namely, moral development, learning methods and ability development, professionalism development and professional knowledge and skills.

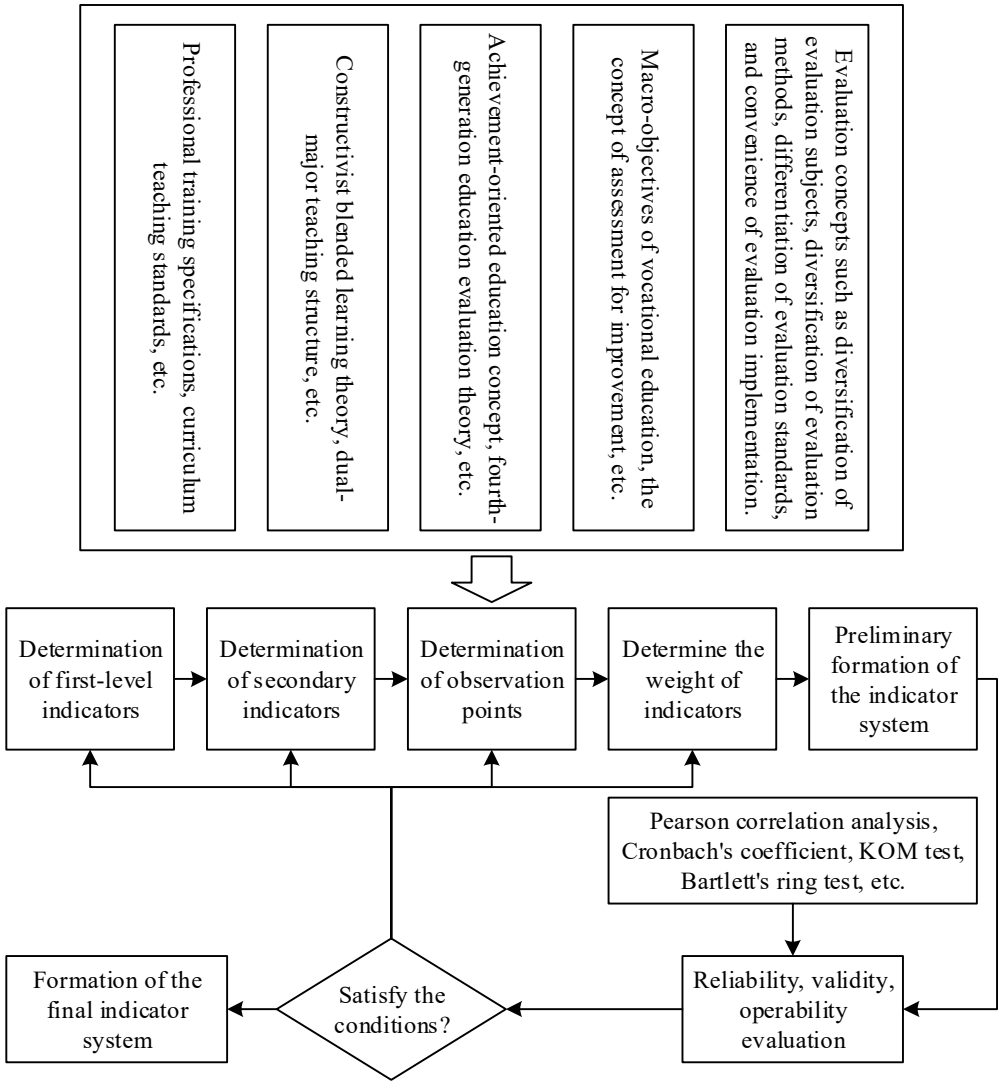

Fig. 3. The construction process of the mixed teaching evaluation index system

According to the above analysis, the preliminary construction of blended teaching quality evaluation index system for higher vocational colleges is shown in Table 1.

Table 1. The evaluation index system of mixed teaching in higher vocational colleges

A Moral law	A1	Good faith	A11	Answer questions without cheating
			A12	No cheating at average
			A13	No cheating in the exam
			A14	Homework and work without plagiarism
			A15	Complete the learning task rate on time
			A16	Follow the learning conventions
	A2	law-abiding	A21	absenteeism
			A22	Observe class discipline
			A23	Subject to examination
			A24	Follow the rules of the class before and after the class
B Learning ability	B1	Learning attitude	B11	Classroom attendance
			B12	Pre-class, class, and after-school learning tasks
			B13	Online learning time
			B14	Login number
			B15	After-school reflection and improvement effect
			B16	Group discussion engagement
			B17	Classroom interaction
	B2	Learning ability	B21	Autonomous learning ability
			B22	Team contribution
			B23	Learn the task
			B24	Exhibit effect
			B25	Reflective improvement ability
	B3	Practical innovation ability	B31	Clarity of operation
			B32	Skill proficiency
			B33	Innovative thinking and innovation
	B4	Communicatio n skills	B41	Effective Posting
			B42	Effective reply number
			B43	Group discussion contribution
			B44	Effective teaching advice
C Professionalism	C1	Dedication responsibility	C11	Learning task on time
			C12	Online learning time
			C13	Login learning platform times
			C14	Implement the planning target effectiveness
			C15	Team contribution
	C2	Social adaptability	C21	Adaptability to the new learning environment
			C22	Acceptance of new technologies
			C23	Adaptability to new learning groups
	C3	Lifelong learning consciousness	C31	Feasibility of course objective planning
			C32	Implement the planning target effectiveness
			C33	Attitude towards new technologies
D Skill	D1	Professional knowledge and skills	D11	Job completion
			D12	Knowledge and skill testing
			D13	Final examination

4. Hierarchical analysis-based evaluation model

4.1. Hierarchical modeling

The blended teaching evaluation was used as the objective level (Q) of the hierarchical analysis method, the identified multiple blended teaching evaluation indicators were used as the criterion level (P), and the classified blended teaching levels were used as the program level (L) [15].

4.2. Constructing a two-by-two comparison judgment matrix

Since the hierarchical model determines the affiliation between the elements of the upper and lower levels, the two-by-two judgment matrices of different levels can be constructed for the criteria of the upper level [16]. Let the two-by-two judgment matrix be $\left(a_{ij}\right)_{n\times n}$, $a_{ij}>0$, $a_{ji}=1/a_{ij}$, $i,j=1,2,3,\cdots,n$. In this paper, the ratio of the monitoring value of the evaluation index and its corresponding upper limit value of seawater intrusion level I is used as a scale to quantify the importance judgment results, and the two-by-two ratio of the quantified value is used as an element of the judgment matrix to construct the judgment matrix of the criterion level; the absolute value of the difference between the monitoring value of the evaluation index and its corresponding upper limit value of seawater intrusion level The inverse of the absolute difference between the monitoring value of the evaluation index and its corresponding upper limit of each seawater intrusion level is used as a scale to quantify the judgment results of the importance of the program layer, and the two-to-two ratio of the quantified values is used as the element of the judgment matrix to construct the judgment matrix of the program layer. The weights and maximum eigenvalues of the judgment matrix are calculated by the geometric mean approximation method (square root method), and the calculation steps are as follows:

1) Calculate the product of each element of the rows of the judgment matrix (m_i):

$$m_i=\prod_{i=1}^{n}a_{ij}\left(i=1,2,3,\cdots,n\right) \tag{1}$$

where: m_i is the product of each element of the rows of the judgment matrix; a_{ij} is each element of the judgment matrix.

2) Calculate the root of the n rd power:

$$\overline{w}_i=\sqrt[n]{m_i} \tag{2}$$

where: $\overline{w}_i$ is the square root of the product of the elements of each row of the judgment matrix several times.

3) Normalize the vector $\overline{w}=\left(\overline{w}_1,\overline{w}_2,\cdots,\overline{w}_n\right)^T$:

$$\hat{w}_i=\frac{\overline{w}_i}{\sum_{j=1}^{n}\overline{w}_j}(j=1,2,3,\cdots,n) \tag{3}$$

Obtain $\hat{w}=\left(\hat{w}_1,\hat{w}_2,\cdots,\hat{w}_n\right)^T$, which is the approximation of the desired eigenvector, i.e., the value of the weights of the factors.

4) Calculate the maximum eigenvalue of the matrix $\lambda_{\max}$:

$$\lambda_{\max} = \frac{1}{n}\sum_{i=1}^{n}\frac{\left(A\hat{w}\right)_i}{w_i} \tag{4}$$

where: $\left(A\hat{w}\right)$, is the i rd element of vector $A\hat{w}$.

4.3. Calculate the consistency index of the judgment matrix and test it

To test the consistency of the matrix, the consistency ratio CI is defined:

$$CI = \frac{\lambda_{\max} - n}{n-1} \tag{5}$$

where: CI is the judgment matrix consistency ratio; $\lambda_{\max}$ is the maximum eigenvalue of the matrix; n is the matrix order.

When order $n \le 2$, the matrix always has full consistency; when the matrix order $n > 2$, the stochastic consistency ratio CR is defined:

$$CR = CI / RI \tag{6}$$

where: CR is the stochastic consistency ratio of the matrix; RI is the average stochastic consistency index.

When $CR < 0.10$, the matrix has satisfactory consistency, otherwise the matrix needs to be corrected. For matrices of order 1 to 9.

5. Integrated cloud model evaluation

5.1. Cloud Modeling Concepts

The cloud model can synthesize fuzzy mathematics and probability statistics in one piece, and can achieve the purpose of qualitative and quantitative conversion, the reason why things show uncertainty is because of its randomness and fuzzy characteristics, but the cloud model can realize the comprehensive evaluation of things, and improve the fuzzy evaluation which is often used in the past [17]. We consider U as a quantitative domain, C as a qualitative expression on U, if the quantitative value is $x \in U$, while x is a chance occurrence of C, and the certainty of x over C is $\mu(x) \in (0,1)$ as an uncertainty with a smooth direction:

$$\mu : U(x) \to [0,1] \forall x \in U x \to \mu(x) \tag{7}$$

The layout of x over the domain U of the argument is then called a cloud, and each x has a corresponding cloud drop.

The cloud model is always represented by three major numerical features: expectation $Ex\left(Expect\ value\right)$, entropy $En\left(Entropy\right)$ and superentropy $He\left(Hyper\ entropy\right)$.

1) Expectation Ex: that is, the expectation within the domain of the cloud droplet, is a central point, the most representative, and more applicable in statistics.

2) Entropy En: usually appears in the field of chemistry and thermodynamics appear, meaning qualitatively expressed uncertainty measure, from one point of view is qualitatively expressed randomness measure, can express this qualitative concept of the cloud droplets of the discrete level; another point of view and qualitatively expressed interdependence measure, reflecting the value interval of the cloud droplets within the space of the domain of the theory can be allowed by the theory. The connection between randomness and ambiguity can also be illustrated.

3) Hyperentropy He: It is used to express the uncertainty of the direction, that is, the entropy of the direction, and through the value of the hyperentropy we can understand the discrete level and thickness of the cloud.

5.2. Cloud Generator

There are two computational modes of cloud modeling, forward cloud generator and inverse cloud generator.

1) Forward cloud generator. After entering the cloud's are 3 numerical features E_x, E_n, H_e, you can obtain an example that occurs once by chance under that definition.

Inputs: the 3 eigenvalues, En, He with the number of cloud drops N under this qualitative definition.

Process:

(1) Generate a normal random number E'_n that matches $E'n \sim N\left(En, He^2\right)$;

(2) Generate a normal random number xi, conforming to $xi \sim N\left(Ex, E'n^2\right)$;

(3) Perform the calculation for yi: $yi - \exp\left[-(xi - Ex)^2 / 2\left(E'n\right)^2\right]$;

(4) Generate cloud droplets (xi, yi) and repeat 1) to 3) until you get the expected number of cloud droplets N.

Output: N cloud droplet and its certainty are obtained.

2) Inverse cloud generator. A qualitative theory that transforms actual numerical information into numbers characterized by E_x, E_n, H_e

Input: N cloud drops with their determinants;

(1) Calculate the mean of the sample $\bar{X} = 1/n\sum_{i=1}^{n} xi$, the absolute center distance of the first order sample $1/N\sum_{i=1}^{n}\left|xi - \bar{X}\right|$, and the variance of the sample is $S^2 = 1/(n-1)\sum_{i=1}^{n}(xi - \bar{X})^2$.

(2) Then the expectation of the sample can be obtained as:

$$Ex = 1/n\sum_{i=1}^{n} xi \tag{8}$$

(3) Then the entropy of the sample can be obtained as:

$$En = \sqrt{\Pi/2} \times 1/N\sum_{i=1}^{n}\left|xi - \bar{X}\right| \tag{9}$$

(4) Then the superentropy of the sample can be obtained as:

$$He = \sqrt{S^2 - En^2} \tag{10}$$

Output: qualitative definition of the sample along with Expectation Ex, Entropy En and Hyperentropy He.

5.3. Basic Cloud Modeling Operations

Cloud computing is utilized in the evaluation phase of hybrid teaching. It is actually the process of forming a virtual cloud after applying multiple computations to a cloud model. If there are different cloud models $C_1\left(Ex_1, En_1, He_1\right)$ as well as $C_2\left(Ex_2, En_2, He_2\right)$ on the same domain, the resulting virtual cloud $C(Ex, En, He)$.

5.4. *Cloud Model Evaluation Synthesis Operations*

The synthesis operation is to generalize and unify the clouds of the same category in one piece with the help of some algorithms to obtain a broader view, and the related formulas are as follows:

$$\begin{aligned} Ex &= \frac{Ex_1En_1 + Ex_2En_2 + \cdots + Ex_nEn_n}{En_1 + En_2 + \cdots + En_n} \\ En &= En_1 + En_2 + \cdots + En_n \\ He &= \frac{He_1En_1 + He_2En_2 + \cdots + He_nEn_n}{En_1 + En_2 + \cdots + En_n} \end{aligned} \tag{11}$$

The cloud numerical characteristics of each indicator can be calculated by synthesizing the cloud in equation (11), which is given below:

$$\begin{aligned} Ex_{c11} &= \frac{Ex_{c11\max}En_{c11\max} + Ex_{c11\min}En_{c11\min}}{Ex_{c11\max}En_{c11\max}} \\ En_{c11} &= En_{c11\max} + En_{c11\min} \\ He_{c11} &= \frac{He_{c11\max}En_{c11\max} + He_{c11\min}En_{c11\min}}{En_{c11\max} + En_{c11\min}} \end{aligned} \tag{12}$$

The comprehensive evaluation process is therefore shown in Figure 4.

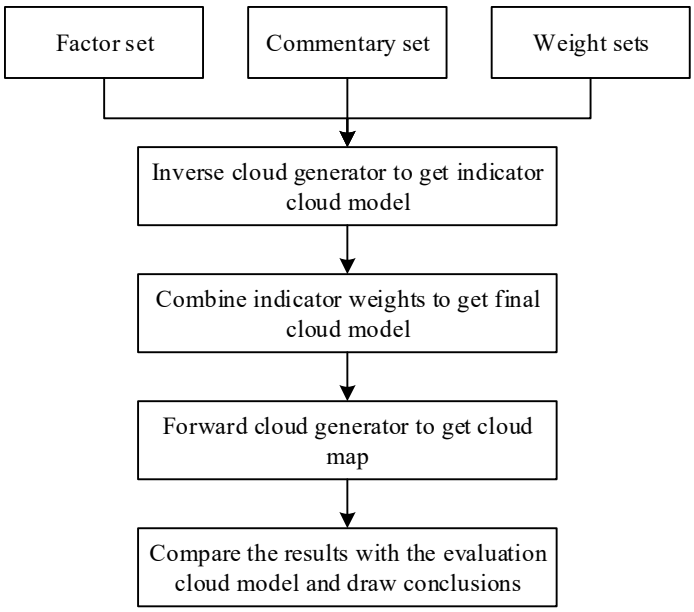

Fig. 4. Cloud model integrated process

1) According to the required results, select the evaluation indicators that have a greater effect, from the first level indicators to the second level indicators can be written as $U = \{U_1, U_2, \cdots, U_n\}$, the second level indicators U_i can be decomposed into a number of third level indicators $U_i = \{U_{i1}, U_{i2}, \cdots, U_{in}\}$, $i = 1, 2, \ldots, n$, the collection of these indicators is called the set of factors.

2) After completing the evaluation of the above indicators, the set of all the comments related to them is the comment set, which is written as $V = \{V_1, V_2, \cdots, V_n\}$.

3) Obtaining the weights for each indicator described above based on the cloud model. In the first step, a number of experts score the importance level of the lower-level indicators in the upper-level indicators, and the importance level can be divided into five grades, and at the same time construct a reasonable cloud scale according to this grade; in the second step, the scores obtained can be formed into a cloud model by using the inverse generator processing, and if the layout of the formed weight cloud droplets is scattered and messy, then it needs to be fed back and modified until the formation of a stable weight cloud map; finally, the weights are normalized. Finally, the weights are normalized, and the weights of all indicators belonging to the upper level can be obtained. The importance level of indicators is shown in Table 2, and the cloud scale of importance level of indicators is shown in Table 3.

Table 2. Index importance scale

Weight grade	Very important	Importance	Slightly important	General	Inimportance
Assignment interval	[0.8,1]	[0.6,0.8)	[0.4,0.6)	[0.2,0.4)	[0.0,0.2)

Table 3. Indicators important scale cloud scale

Weight grade	Cloud model
Very important	(1,0.103,0.013)
importance	(0.691,0.064,0.008)
Slightly important	(0.500,0.039,0.005)
general	(0.309,0.064,0.008)
Inimportance	(0,0.103,0.013)

4) Based on the actual situation of blended teaching evaluation, educational experts with rich teaching experience are organized to score, and they are asked to analyze the highest and lowest evaluation values of the relevant evaluation indexes, which are divided into five levels. Then the acquired evaluation values are used to form the relevant cloud model by using the inverse generator, and finally the highest and lowest evaluation cloud model is integrated and calculated, then the cloud model with a wide range can be acquired. Table 4 shows the evaluation levels of risk indicators.

Table 4. Risk index rating

Evaluation grade	Low	Slightly lower	General	Slightly Higher	Height
Assignment interval	[0.0,0.2)	[0.2,0.4)	[0.4,0.6)	[0.6,0.8)	[0.8,1]

5) the hybrid teaching evaluation risk evaluation of each level of indicators of the weight and evaluation of the value of the two, and the use of formula $C_i = \sum_{j=1}^{m} \left(C_{ij} \times W_{ij} \right)$ can be obtained at all levels of indicators of the cloud model, to obtain the cloud model C of the cloud map and risk evaluation results of each level of the cloud map compared to the final formation of the cloud map of the evaluation results of the most similar level is the evaluation results. Table 5 shows the cloud scale of risk evaluation results.

Table 5. Risk evaluation results scale cloud scale

Evaluation grade	Cloud model
Low	(0,0.103,0.013)
Slightly lower	(0.309,0.064,0.008)
General	(0.500,0.039,0.005)
Slightly Higher	(0.691,0.064,0.008)
Height	(1,0.103,0.013)

6. Establishment of weightings for curriculum indicators

The weights of the indicators will be explored at this stage, and the main method of determining the weights will be Hierarchical Analysis (APH).

6.1. Analysis of the weights of level 1 indicators

Table 6 shows the judgment matrix for the level 1 indicators. Table 7 shows the results of the AHP analysis of the first-level indicators.

As can be seen from the presented results, the CR value of the first-level indicators is less than 0.10, which passes the consistency test, and the obtained weights are reasonable. Among them, A Rule of Law Ethics has the largest weight of 0.2604, followed by C Professionalism of 0.2527, B Learning Ability of 0.2493, and D Skills and Technology of the smallest weight of 0.2376.

Table 6. Judgment matrix graph

Mean value	Item	A Moral law	B Learning ability	C Professionalism	D Skill
5	A Moral law	1	1.048	1.027	1.092
4.782	B Learning ability	0.951	1	0.984	1.043
4.859	C Professionalism	0.974	1.012	1	1.068
4.573	D Skill	0.916	0.983	0.943	1

Table 7. First grade indicator AHP analysis results

Item	Eigenvector	Weight	Maximum eigenvalue	CI	RI	CR
A Moral law	1.045	26.04%	4	0	0.891	0
B Learning ability	0.997	24.93%				
C Professionalism	1.012	25.27%				
D Skill	0.953	23.76%				

6.2. Weighting analysis of secondary indicators

Due to the excessive number of secondary and tertiary indicators and space constraints, only the results of AHP indicator weights and consistency test are analyzed.

The hierarchical analysis method used in this paper to determine the weights is the relative weight value obtained by comparing the indicators two by two under the same situation of the indicators belonging to them. Table 8 shows the analysis of the relative weights of the secondary indicators.

Table 8. Secondary index relative weight analysis

Primary indicator	Secondary indicator	eigenvector	Relative weight	λmax	CI	CR
A Moral law	A1	0.975	0.481	4	0	0
	A2	1.008	0.519			
B Learning ability	B1	1.012	0.241	9	0	0
	B2	0.987	0.238			
	B3	0.994	0.275			
	B4	0.102	0.246			
C Professionalism	C1	0.999	0.343	5	0	0
	C2	0.979	0.318			
	C3	1.006	0.339			
D Skill	D1	0.993	1	3	0	0

6.3. Analysis of the weights of the three levels of indicators

Table 9 shows the analysis of the three-level indicators of A rule of law ethics. From the table, the CRs are all 0.000 less than 0.1, indicating that the consistency of the indicator judgment matrices are all within an acceptable range and the indicator weights are analyzed reasonably.

Table 9. A three-level index relative weight analysis

Primary indicator	Secondary indicator	Tertiary index	eigenvector	Relative weight	λmax	CI	CR
A	A1	A11	1.026	0.154	4	0	0
		A12	1.033	0.173			
		A13	1.007	0.198			
		A14	1.006	0.185			
		A15	0.983	0.149			

		A16	1.003	0.132			
	A2	A21	0.966	0.247	3	0	0
		A22	0.967	0.271			
		A23	1.034	0.234			
		A24	0.981	0.257			

Table 10 shows the analysis of the tertiary indicators of B learning ability.

Table 10. B three-level index relative weight analysis

Primary indicator	Secondary indicator	Tertiary index	eigenvector	Relative weight	λmax	CI	CR
B	B1	B11	0.975	0.164	5	0	0
		B12	1.039	0.145			
		B13	1.013	0.133			
		B14	0.991	0.158			
		B15	1.012	0.157			
		B16	0.982	0.139			
		B17	0.99	0.104			
	B2	B21	0.972	0.194	2	0	0
		B22	0.991	0.223			
		B23	0.959	0.176			
		B24	0.998	0.203			
		B25	0.985	0.204			
	B3	B31	0.985	0.347	4	0	0
		B32	0.992	0.316			
		B33	1.002	0.337			
	B4	B41	1.009	0.247	3	0	0
		B42	0.974	0.236			
		B43	1.025	0.256			
		B44	1.024	0.261			

Table 11 shows the analysis of the three levels of indicators of C-professionalism.

Table 11. C three-level index relative weight analysis

Primary indicator	Secondary indicator	Tertiary index	eigenvector	Relative weight	λmax	CI	CR
C	C1	C11	1.018	0.215	5	0	0
		C12	1.001	0.208			
		C13	0.969	0.183			
		C14	1.001	0.196			
		C15	0.972	0.198			
	C2	C21	0.98	0.317	6	0	0
		C22	0.969	0.356			
		C23	1.03	0.327			
	C3	C31	0.998	0.342	4	0	0
		C32	0.975	0.322			
		C33	1.005	0.336			

Table 12 shows the analysis of the tertiary indicators of technical skills.

Table 12. D three-level index relative weight analysis

Primary indicator	Secondary indicator	Tertiary index	eigenvector	Relative weight	λmax	CI	CR
D	D1	D11	0.997	0.332	3	0	0
		D12	1.005	0.319			
		D13	0.969	0.349			

7. Risk assessment case studies

7.1. Case background

The constructed evaluation index system was applied to a blended language teaching in a higher vocational language, and eight experts were invited from different units to assess and score the factors affecting the effectiveness of blended language teaching, and finally analyze the risk level by using the comprehensive evaluation model.

7.2. Model utilization

Once again, eight experts from the evaluation team were organized to score according to the grade criteria, and the scoring is shown in Table 13. The 2000 cloud drops were taken to generate the evaluation cloud diagram for each indicator as shown in Figures 5 to 8.

Table 13. Expert scoring table

Experts	A Moral law		B Learning ability				C Professionalism			D Skill
	A1	A2	B1	B2	B3	B4	C1	C2	C3	D1
1	8	5	9	7	7	8	5	7	5	4
2	5	8	7	7	8	7	6	6	6	3
3	7	7	6	6	9	5	8	8	5	6
4	6	8	8	7	5	7	6	4	7	4
5	9	5	7	8	7	6	4	5	7	3
6	5	6	9	7	8	7	6	5	6	3
7	7	7	6	9	6	7	4	4	4	1
8	5	5	8	8	7	8	6	5	6	6

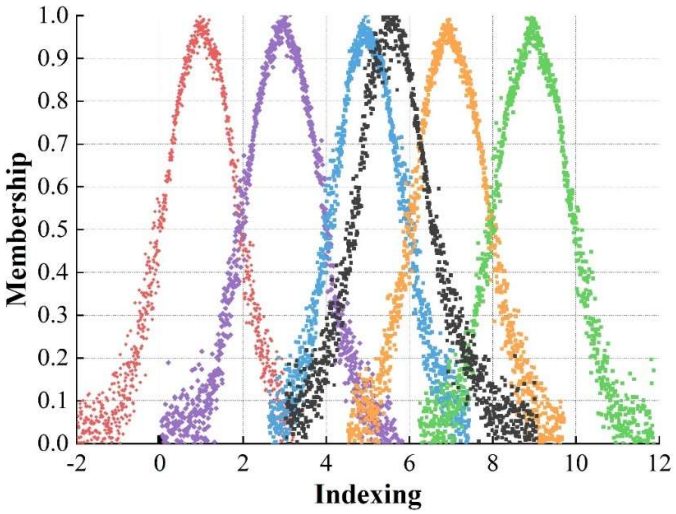

Fig. 5. Risk cloud of indicator A

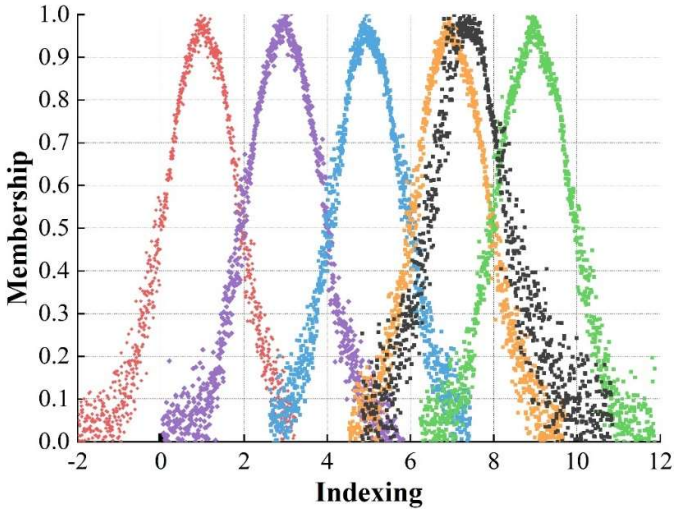

Fig. 6. Risk cloud of indicator B

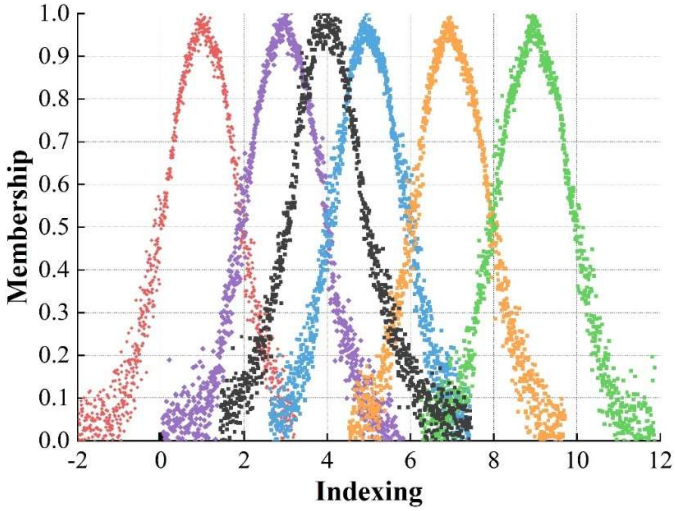

Fig. 7. Risk cloud of indicator C

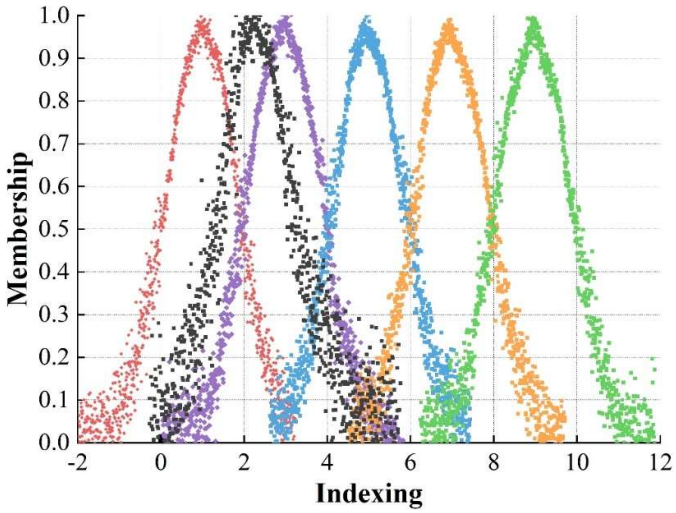

Fig. 8. Risk cloud of indicator D

Combine the weights of the influencing factor indicators and the evaluation cloud digital features to generate the comprehensive evaluation cloud digital features of the layer, and then find the parameters of the comprehensive evaluation cloud model in the blended teaching process as shown in Table 14. Using Matlab software to draw the comprehensive evaluation cloud superimposed with the standard evaluation cloud Figure 9, which can visualize the evaluation level.

Table 14. Parameters of the first-levelindicator cloud model

	A	B	C	D	Comprehensive risk A
Ex	5. 586	7. 293	3. 943	2. 548	5. 462
En	0. 885	1. 009	0. 747	1. 245	0. 953
He	0. 215	0. 411	0. 079	0. 404	0. 274

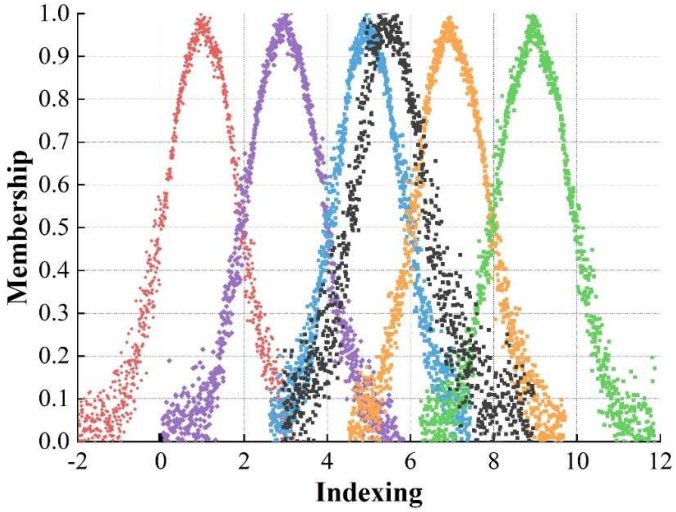

Fig. 9. Risk cloud of indicator D

The similarity of each cloud droplet to the standard cloud is calculated by the similarity formula and averaged, and the results are shown in Table 15 after sorting and organizing.

Table 15. Evaluation cloud and standard cloud similarity

	Low	Slightly lower	General	Slightly Higher	Height
A	0. 003	0. 078	0. 616	0. 345	0. 017
B	0. 002	0. 001	0. 139	0. 646	0. 264
C	0. 021	0. 536	0. 481	0. 026	0. 001
D	0. 317	0. 545	0. 133	0. 016	0. 001
Comprehensive risk A	0. 004	0. 107	0. 624	0. 311	0. 023

As can be seen from the chart, the hybrid teaching evaluation cloud model parameters are (5.462, 0.953, 0.274), that is, Ex = 5.462, which yields a comprehensive risk level in the medium, and the cloud chart shows that it is close to the medium-risk cloud, and the results of the comprehensive cloud similarity calculations (0.624) have the highest degree of similarity with the medium-risk evaluation cloud, thus determining that the comprehensive risk of the hybrid teaching evaluation is medium risk. By comparing the first-level indicators with the standard cloud, it can be concluded that A Rule of Law and Ethics Risk is closest to medium risk, B Learning Ability Risk is closest to higher risk, and C Professionalism and D Skills and Technology Risk are closest to lower risk.

8. Innovative Strategies for Optimizing Language Teaching in Higher Vocational Education

8.1. Improve the program of practical teaching activities

An adequate, reasonable, efficient and low-cost practical teaching program should be constructed. Currently, the teaching of higher vocational language pays more attention to increasing the proportion of practical teaching, in addition to the necessary theoretical teaching, schools generally take the allocation of hardware facilities and equipment for practical teaching as a priority. Teachers must rationalize the teaching plan and coordinate the distribution of practical teaching resources in order to better promote students' active participation in practical teaching activities.

8.2. Actively pursuing disciplinary internships

Academic internship activities are the most direct contact with the content of vocational work for higher vocational students, an important platform for the development of students' language skills, and an important means of improving the quality of student learning and building a sound work system.

8.3. Rational control of practical teaching modules

The key to mixed language teaching is to provide students with rich opportunities for interaction, to promote active participation in various forms of practical activities and tasks, to stimulate students' enthusiasm for their careers, to develop their professionalism and to convey to them a wealth of practical experience in real-life situations.

8.4. Actively cultivate students' craftsmanship

Cultivating students' craftsmanship should be regarded as an important teaching task, and in the process of language teaching, it is necessary to cultivate students' solid, rigorous and scientific writing attitudes, and to cultivate students' good professional ethics based on rich practical skills training.

9. Conclusion

In this paper, we design the blended teaching method of higher vocational language, and construct the teaching quality evaluation index system, and use the cloud model to realize the comprehensive evaluation of language teaching after empowerment. It is found that the parameters of the

comprehensive cloud model of blended teaching evaluation are (5.462, 0.953, 0.274), and the cloud diagram shows that it is close to the medium quality cloud, which determines that the comprehensive grade of this blended teaching evaluation is medium. By comparing the first-level indicators with the standard cloud, it can be concluded that A Rule of Law and Ethics is closest to the medium grade, B Learning Ability Risk is closest to the higher grade, and C Professionalism and D Skills and Technology Risk are closest to the lower grade. Finally, four innovative strategies for optimizing language teaching in higher vocational education, such as actively carrying out disciplinary internship activities, are proposed.

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