

An empirical study on the design of intelligent auxiliary teaching system and teaching interaction effect of Ideological and Political classes in universities based on fuzzy comprehensive evaluation method

Huining Guo^{1,✉}, Fengfen Gao²

¹ Weinan Normal University, Weinan, Shaanxi, 714099, China

² Jiangnan University, Wuhan, Hubei, 430010, China

ABSTRACT

Network teaching has become an important way of teaching reform in current higher education and has been applied in the education of various courses. This paper proposes a kind of intelligent auxiliary teaching system based on P2P mode, and researches the realization of the system with the example of Civics course. The construction of "Civics Course Teaching Evaluation System" is systematically discussed by using the fuzzy comprehensive evaluation method, and the weights of the indicators are calculated by entropy weighting method and hierarchical analysis method. Taking the teaching of Civics and Political Science in a university in Guangdong Province as the research object, the intelligent teaching system proposed in this paper is applied to evaluate the interactive effect of teaching with the evaluation system constructed in this paper. The evaluation analysis shows that the school's evaluation results of all indicators are above 80 points, and the overall teaching rating of its Civics and Political Science course is 86.33, in which social merit, teaching equipment, teaching expression, and professional ethics have the highest scores of 94.37, 92.32, 89.02, and 88.52, respectively. It shows that the intelligent auxiliary teaching system for Civics proposed in the article is well applied in actual teaching.

Keywords: P2P model, intelligent auxiliary teaching system, civics teaching, fuzzy comprehensive evaluation method, entropy weight method

✉ Corresponding author.

E-mail address: hnguo82@163.com (H. Guo).

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1. Introduction

Civics class in colleges and universities shoulders the important mission of establishing morality and educating people, and is an important course for cultivating the successors of the new era, artificial intelligence as a modern and advanced technology, empowering it in the teaching of civics class in colleges and universities has a significant role, and profoundly digging into the value behind its meaning, based on which to explore a practicable path of practice, innovation and optimization of the teaching mode, to ensure the quality of civics class teaching at a high level, and to improve teaching Targeted and effective [1-2].

At the same time, the rapid development of artificial intelligence has become a new driving force to promote the reform of education and teaching in colleges and universities, and artificial intelligence empowers college and university courses in civics and politics, which is a new direction to comprehensively implement the fundamental task of establishing a moral character, realizing the “three wholesome” education, and improving the quality of talent cultivation [3-4]. Artificial intelligence empowers college curriculum ideology and politics with its powerful technological advantages, which has a fourfold value implication, promotes the efficient cooperation of all subjects, expands the pattern of education, creates diversified teaching elements, enriches the form of education, enhances the scenario-based effect experience, deepens the sense of education, strengthens the personalized intelligent recommendation, and optimizes the path of education [5-6]. However, artificial intelligence empowerment of college curriculum politics is still facing the real problem of the “degree” of empowerment is difficult to grasp, the “art” of empowerment is difficult to break through, and the “love” of empowerment is difficult to adhere to. Therefore, in order to seek the optimal effect of empowerment, it is necessary to clarify the limits of intervention, accurately grasp the direction of empowerment, strengthen risk prevention and control, safeguard the safety of intelligent applications, cultivate humanistic emotions, and adhere to the mainstream value leadership [7-8]. Actively promoting artificial intelligence to empower the ideology and politics of higher education courses is an effective way to promote the change and innovation of the ideology and politics of higher education courses, and it is also a necessary way to realize the high-quality development of the ideology and politics of higher education courses.

Literature [9] proposes a student ideology and mental health analysis system with big data analysis as the core logic of the technology to effectively improve the accuracy and efficiency of school ideology and mental health counseling. Literature [10], based on scientific assessment and theoretical analysis, points out that big data technology promotes the effectiveness and quality of ideological counseling and ideological education to a certain extent, and has great potential for application in ideological education. Literature [11] combed through the development and practice process of Civic Intelligence Education, mainly involving the medium of Civic Intelligence Education, the impact of information technology on Civic Education, etc., expanding the research theories and perspectives of Civic Intelligence Education. Literature [12] in the study of assessing the nature and effect of the Civic and Political Diversified Education Mode was informed that the diversified education mode has positive significance for the enhancement of the effect of Civic and Political Education. Literature [13] combined the artificial neural network-based algorithm and traditional multi-layer fuzzy evaluation model to assess the effect of Civic and Political education, and confirmed the feasibility of the proposed method with reference to practical feedback. The value of intelligent technology-enabled Civics education is mainly reflected in the optimization of Civics consultation, the improvement of teaching effect and the reform of teaching evaluation.

Literature [14] integrates the Civic and Political Education and Artificial Intelligence curriculum model to enhance students' sense of social responsibility, and this education model can be used as a model model for Civic and Political Moral Education. Literature [15] analyzes the path and characteristics of the combination of AI technology and Civic and Political Education, and argues that

AI technological literacy needs to be cultivated from the beginning of the individual, while the government needs to provide support and assistance from the financial and technical levels. Literature [16] talked about the necessity and importance of giving full play to information technology in the digital era in the ideological education, and continuously innovate and optimize from the content, teaching methods and teaching evaluation levels, so as to make intelligent information technology suitable for ideological education. Literature [17] dialectically discusses the benefits, potential risks and shortcomings of AI technology in educational practice, and proposes to combine human subjective initiative with intelligent educational technology to promote the integration of education and intelligent technology.

The article designs an intelligent teaching aid system based on mobile network, and elaborates on three aspects, namely, the display of teaching and related materials, the interactive discussion and Q&A of teaching, and the arrangement and submission of assignments. Aiming at the status quo of network teaching aid system for Civics and Politics courses in colleges and universities, it puts forward a new teaching aid system based on P2P technology, through which precise search and sharing of educational and teaching resources can be realized and learners of Civics and Politics courses can study at any time and at any place, realizing the innovation of combining the concept of modern education and information technology. On the basis of the basic principles and core factors of the fuzzy comprehensive evaluation method, the hierarchical analysis method (AHP) and entropy weight method (EWM) are utilized to reconstruct and determine the comprehensive weights, which are finally combined with the degree of affiliation to establish the Civics teaching evaluation system based on the improved fuzzy comprehensive evaluation method.

2. Design of Intelligent Assisted Teaching System for Civics and Political Science Courses in Colleges and Universities

2.1. Intelligent assisted teaching system based on mobile network

2.1.1 Display of teaching and related materials. A complete curriculum system should have complete materials, requiring each course to construct complete supporting materials, reasonable course design, proper teaching plan, and lecture videos of key contents, microclasses and so on. We provide these materials to students, which can better serve students and facilitate their learning. In this module, we upload the lecture videos, syllabus, teaching plan, teaching courseware, and question bank, so that students can review by themselves after class, and for those who want to study in depth, they can also complete the expansion of the content they have learned. According to a rough survey, one-third of the students often use this part of the function.

2.1.2. Teaching and learning interactive discussions and question and answer sessions. Send voice messages to each other through your smartphone. Text. Picture or video messages to interact with each other to assist teaching. After the class, students can also encounter problems directly to the teacher to leave a message to ask, waiting for the answer. This function is used more by students, in the past, students seldom have questions in the classroom, in fact, not no questions, but often embarrassed to ask. Through this platform, students asked a variety of questions, and even some of the problems I have not encountered in many years of teaching, some valuable questions, and the same course teachers to discuss, access to information, the teacher also has to promote the improvement.

2.1.3. Assignment and submission. The submission of assignments is an indispensable part of our teaching process, which allows students to consolidate what they have learned in class. In our computer-related courses, the way of submitting assignments has long changed from the original cardboard to electronic submission, such as uploading by using "Red Spider" software, or submitting by ftp. The homework assignment and submission module of the mobile teaching aid system provides

more convenience for teachers and students. With the continuous upgrading and modification in the course of use, its functions will be continuously developed and improved.

2.2. Requirements and Framework of Civics Network Teaching Aid System Based on P2P Technology

This paper takes the Civics course as an example, after constructing the teaching system, learners of the Civics course can realize the smooth viewing of video resources by means of video-on-demand and download the resources with the help of the function of file sharing. If students encounter problems in learning Civics courses, they can communicate with teachers through the communication function of the system. Meanwhile, with the help of modern P2P network development mode, this paper adopts P2P hybrid network, which is an improved version of the traditional P2P mode, expressed by the formula. The mode works as follows: first step, the user downloads and installs the client, and sends a request to the software server to download; second step, the user searches for the relevant resources on the Internet, and when the server finds the matching resources, it records the information into the database; third step, the user optimizes the resources, and if the server hears that the resources are limited, or in the user's local area network (LAN), the user can use P2P technology; fourth step, if there are no such resources, the user can use P2P technology. Step 4: If there is no third step mentioned above, P2S mode is used to return the resource information to the user; Step 5: All the resources in the P2P network can be downloaded at the same time, including the mirror server and the users on the Internet. This mode is represented by the popular Xunlei software, and its advantages are that the client PC can issue resource search commands; the central server combined with the PC commands can realize borderless search; and the P2S or P2P mode can be selected according to the actual situation. In this regard, the system structure is shown in Figure 1.

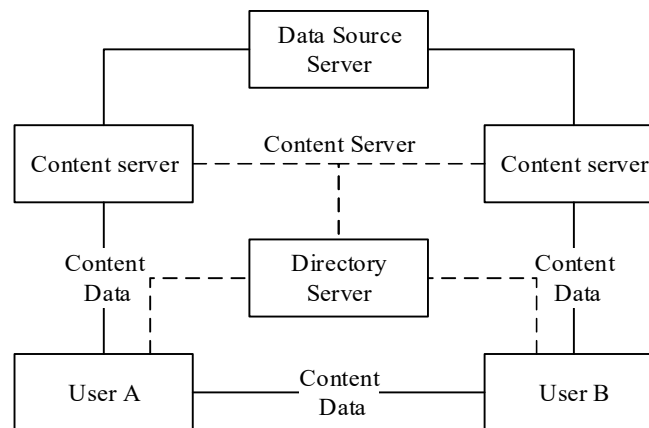


Fig. 1. System architecture diagram

As can be seen in Figure 1, the unified management of nodes in the system by the directory server effectively shortens the discovery and location time of node resources. Each node automatically adjusts its requests according to the node information obtained from the directory server based on historical records. The directory server, as the core of the system control, provides services to clients by organizing different content servers, and at the same time, organizes the interactive node information between several different clients, so that the clients in the system can obtain the situation of the content servers and other clients. The content servers, on the other hand, obtain the corresponding Civics course data from the video source in response to the client's request to obtain the content data from the file/video source. When the internal client server starts, it passes all the video resources it searches to the catalog server. The catalog server records the information of each resource searched by the content server to provide catalog indexing service. The client then obtains the url address of the Civics resources or Civics course file that it needs to watch through the front-end

of the system. After the client gets the file address, it establishes a relevant connection with the catalog server and obtains the relevant file content data from the content server through P2P protocol.

3. Fuzzy comprehensive evaluation method to determine the evaluation system

3.1. Fuzzy integrated evaluation method

3.1.1. The concept of fuzzy sets. In view of the uncertainty, incompleteness or inconsistency of the concepts in reality, they can be summarized as fuzzy characteristics, and different fuzzy characteristics can be dealt with by adopting different fuzzy theories and methods, and the main theories include fuzzy sets and fuzzy logic, etc., in which the specific mathematical definitions of fuzzy sets are as follows:

DEFINITION: Assuming U as an argument, then a mapping $\mu:U \rightarrow [0,1]$ of U to an interval $[0,1]$ determines a fuzzy subset A of the argument U . A fuzzy set A on the argument U is generally expressed using the following formula.

$$A = \{ \mu_A(\mu_1) / \mu_1, \mu_2(\mu_2) / \mu_2, \mu_A(\mu_3) / \mu_3, \dots \} \quad (1)$$

or

$$A = \{ \mu_A(\mu_1) / \mu_1 + \mu_2(\mu_2) / \mu_2 + \mu_A(\mu_3) / \mu_3, \dots \} \quad (2)$$

Instead, for many finite theses, the fuzzy set A can be represented in the following way:

$$A = (\mu_A(\mu_1), \mu_A(\mu_2), \mu_A(\mu_3), \dots, \mu_A(\mu_n)) \quad (3)$$

The so-called fuzzy set, its main role is for the attributes and classification of the element can not be clearly differentiated from the definition of the case, it can be expressed by the degree of belonging to a certain set of elements, to the value of 0 to 1 as a criterion, the closer the value of the element's $\mu_A(\mu)$ value, that is, the higher the degree of belonging to the set of the element, or else the closer the element of the element's $\mu_A(\mu)$ value, that is, the closer the value of 0, that is, the lower the degree of belonging to the set of the element. From this, some of the following concepts of fuzzy sets can be further derived:

First is the definition of fuzzy set equality: if there exist two different fuzzy sets A and B , then for the domains U , $\mu \in U$, there exist two functions $\mu_A(\mu) = \mu_B(\mu)$ at the same time, then it can be said that the two fuzzy sets A and B are equal, which can be expressed as $A = B$.

The second is the inclusion relationship between fuzzy sets, assuming that two different fuzzy sets A and B both belong to $F(U)$, then if for any $x \in U$, there is $\mu_A(x) \leq \mu_B(x)$, it can be concluded that fuzzy set A is included in fuzzy set B , which can be expressed as $A \subseteq B$, and if there exists a special case, i.e., when $A \subseteq B$ is present, it can be concluded that $A = B$ is present when $B \subseteq A$ also holds exactly.

In addition, fuzzy sets have some of the following basic properties, if A, B, C is assumed to be a different three fuzzy sets, and $A \cap B$ is used to denote the intersection of A and B , while $A \cup B$ is used to denote the union of A and B . Then the following conclusions can be obtained: $A \subseteq A$; if $A \subseteq B$, $B \subseteq C$, then $A \subseteq C$; It can be seen that the basic operations and properties of fuzzy sets are exactly the same as those of ordinary sets.

In addition, the concept of fuzzy sets and its theory have been developed over the years, which are no longer limited to the essential properties and definitions, but many extended fuzzy sets have appeared, mainly including intuitionistic fuzzy sets, L – intuitionistic fuzzy sets, interval-valued fuzzy sets, etc., and these extended fuzzy sets are related to each other to a certain extent.

Fuzzy sets are used in information technology and have been integrated with information technology in many aspects, and typical fuzzy information processing utilizes the properties of fuzzy sets. In most of the information systems, the application and representation of fuzzy sets need corresponding programs to be executed and processed, and the most commonly used at present is the use of modal set theory to realize the data structure system of the computer. When fuzzy sets are used for the construction of relevant algorithms, it involves the treatment of the algorithmic process and procedural fuzzification in addition to the rules.

3.1.2. Fuzzy integrated evaluation method. Fuzzy comprehensive evaluation method is a comprehensive evaluation method based on fuzzy mathematics. The method transforms qualitative evaluation into quantitative evaluation according to the theory of fuzzy mathematical affiliation, i.e., using fuzzy mathematics to make an overall evaluation of things or objects subject to multiple factors. This method is suitable for solving various non-deterministic problems that are vague and difficult to quantify.

Characteristics of the fuzzy comprehensive evaluation method:

- 1) Intercomparison. Take the optimal evaluation factor value as the benchmark, its evaluation value is 1; the remaining under-optimal evaluation factors based on the degree of under-optimization to get the evaluation value of the response.
- 2) Can be based on the characteristics of the various types of evaluation factors, to determine the evaluation value and evaluation of the functional relationship between the values of the factors (i.e.: affiliation function).

Steps of fuzzy comprehensive evaluation:

- (1) Determine the factor domain of the evaluation object. P evaluation indicators, $u = \{u_1, u_2, LL, u_p\}$.
- (2) Determine the evaluation rating thesis domain. $v = \{v_1, v_2, LL, v_p\}$, i.e., the set of grades. Each grade can correspond to a fuzzy subset.
- (3) Establish the fuzzy relationship matrix R . After constructing the hierarchical fuzzy subset, we should quantify the evaluated objects from each factor $u_i (i = 1, 2, LL, p)$ one by one, i.e., determine the affiliation degree of the evaluated objects to the hierarchical fuzzy subset from a single factor point of view $(R|u_i)$, and then get the fuzzy relationship matrix:

$$R = \begin{bmatrix} R|u_1 \\ R|u_2 \\ \Lambda \\ R|u_p \end{bmatrix} = \begin{bmatrix} r_{11} & r_{12} & \Lambda & r_{1m} \\ r_{21} & r_{22} & \Lambda & r_{2m} \\ \Lambda & \Lambda & \Lambda & \Lambda \\ r_{p1} & r_{p2} & \Lambda & r_{pmm} \end{bmatrix}_{p \times m} \quad (4)$$

As shown in Equation (4), element r_{ij} in row i and column j of Matrix R , represents the degree of affiliation of a certain evaluated object to a fuzzy subset of rank v_j from factor u_i . The performance of an evaluated object in terms of a factor u_i is portrayed by a fuzzy vector $(R|u_i) = (r_{i1}, r_{i2}, LL, r_{im})$, while other evaluation methods are only portrayed by an index value, so in this respect, fuzzy comprehensive evaluation requires more information to be provided and can be evaluated from various aspects.

(4) Determine the weight vector of evaluation factors. In fuzzy comprehensive evaluation, the weight vectors of the evaluation factors are determined: $A = (a_1, a_2, \dots, a_p)$. The element a_i in the weight vector A is essentially the degree of affiliation of the factor u_i to the fuzzy sub {factors that are important for the object under evaluation}. Hierarchical analysis is used to determine the order of relative importance between the evaluation indicators, determine the weight coefficients and normalize them before synthesis. Namely:

$$\sum_{i=1}^p a_i = 1, a_i \geq 0, i = 1, 2, \dots, p \quad (5)$$

(5) Synthesize the fuzzy comprehensive evaluation result vector. Synthesize A with R for each evaluated object using suitable operator to obtain the fuzzy comprehensive evaluation result vector B for each evaluated object. i.e:

$$A \cdot R = (a_1, a_2, \dots, a_p) \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1m} \\ r_{21} & r_{22} & \dots & r_{2m} \\ \vdots & \vdots & \ddots & \vdots \\ r_{p1} & r_{p2} & \dots & r_{pm} \end{bmatrix} = (b_1, b_2, \dots, b_m) = B \quad (6)$$

where b_j is obtained by the operation of the j th column of A and R , which indicates the degree of affiliation of the evaluated object to the fuzzy subset of v_j levels from the overall view.

In the actual evaluation process, each evaluation object contains a variety of attributes, and from different sides reflect the different characteristics of the evaluation object, and these characteristics have a certain degree of fuzzy, that is, has a non-linear characteristics, so the use of fuzzy comprehensive evaluation method for evaluation is more scientific and reasonable, and the evaluation results are close to the actual situation, and basically to achieve the fairness of the evaluation, justice.

3.2. Improvement of evaluation indicator weights

3.2.1. Determination of objective weights based on entropy weight method (EWM). Hierarchical analysis method, expert scoring method and other evaluation methods consider the evaluation criteria weights are generally determined based on subjectivity, resulting in subjective evaluation results, the entropy weight method is introduced into the fuzzy comprehensive evaluation, the entropy weight method is used to determine the objective weights of the indicator factors of the composite disaster of the impact pressure gas protruding, and then the evaluation is carried out, which can make the evaluation results accurate.

Entropy weight method is a kind of objective assignment method, according to the information theory, it is known that if the entropy value of a certain evaluation index is smaller, then the comprehensive role of the index in the evaluation process will be larger, and its weight will be larger.

The specific process of entropy weight method (EWM) is shown in Figure 2:

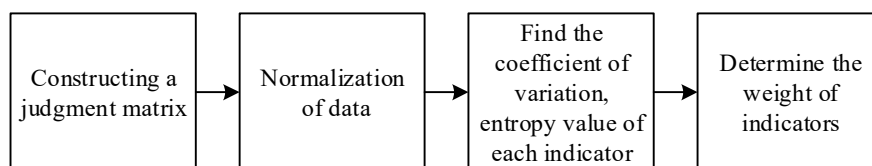


Fig. 2. Entropy weight flow chart

The method of calculating the weight of each evaluation index using entropy weight method is described below:

1) Determine the standardized evaluation matrix. Comparison between different indicator units is not possible, so all indicators need to be dimensionless before the evaluation, to eliminate the impact of different quantitative outlines, so that the data are comparable. Indicator dimensionless processing adopts the extreme value method. Indicators include forward and reverse indicators.

(1) For positive indicators, the treatment formula is:

$$e_{ij} = \frac{x_{ij} - m_{ij}}{M_{ij} - m_{ij}}, i = (1, 2, 3, 4, \dots, n; j = 1, 2, 3, \dots, m) \quad (7)$$

(2) For the reverse indicator, the treatment formula is:

$$e_{ij} = \frac{M_{ij} - x_{ij}}{M_{ij} - m_{ij}}, i = (1, 2, 3, 4, \dots, n; j = 1, 2, 3, \dots, m) \quad (8)$$

After the data quantization process, the matrix $E = (e_{ij})_{n \times m}$ is obtained.

Where: x_{ij} is the specific value of the evaluation index of the indicator layer; e_{ij} is the value obtained after the quantization processing; M_{ij} is the maximum value of x_{ij} ; m_{ij} is the minimum value of x_{ij} ; E is the matrix after the quantization processing.

Ensure the use of entropy weight method, according to the formula (9) for standardization processing to obtain the standardization matrix $A_{ij} = (a_{ij})_{n \times n}$.

$$a_{ij} = \frac{x_{ij}}{\sum_{i=1}^n x_{ij}} (i = 1, 2, 3, \dots, n; j = 1, 2, 3, \dots, m) \quad (9)$$

where: a_{ij} is the value after the normalization process; A_{ij} is the standard matrix after the normalization process.

2) Calculation of entropy value and coefficient of variation. The entropy value h_j and the coefficient of variation k_j of the indicators are calculated using equations (10) (11).

$$h_j = -\frac{1}{\ln n} \sum_{i=1}^n a_{ij} * \ln a_{ij}, 0 \leq h_j \leq 1 \quad (10)$$

$$k_j = 1 - h_j (j = 1, 2, 3, \dots, m) \quad (11)$$

The final set of entropy weights and variability coefficients is obtained:

$$H = h_1, h_2, h_3, \dots, h_m, K = k_1, k_2, k_3, \dots, k_m$$

where: h_j is the entropy value of the indicator; k_j is the difference coefficient of the indicator; H is the entropy value set of the indicator; K is the difference coefficient set of the indicator.

3) Determine the evaluation index weights

$$q_j = \frac{k_j}{\sum_{i=1}^m k_j}, Q = q_1, q_2, q_3, \dots, q_m \quad (12)$$

where: q_i is the weight of each indicator, and Q is the set of indicator weights.

4) Calculate the comprehensive score. Based on the second-level indicator weights as well as the data, the comprehensive score is determined, and the above steps are repeated to calculate the first-level indicator weights.

$$W_n = \sum_{j=1}^m x_{ij} * q_j \quad (13)$$

where: W_n is the composite score of the secondary indicators.

The final objective weight of the evaluation indicators was determined to be $E = e_1, e_2, \dots, e_m$.

3.2.2. Calculating the composite score. The above hierarchical analysis and entropy weighting method two methods of calculating weights for fitting calculations perfectly avoid that determining the weights subjective, simple formula calculating weights out of reality, to prevent the impact of singularity on the final results of fuzzy comprehensive evaluation. The traditional methods of establishing the combination of weights include: weighted average, arithmetic average method, etc. This paper adopts the geometric mean method to accurately determine the evaluation matrix without fuzzy, so as to reconstruct the subjective and objective weights, highlighting the importance of the value of weights in the comprehensive evaluation, and the weight discretization after the reconstruction has also been enlarged, so that the final results of the comprehensive evaluation are more reasonable and close to the science.

4. Construction and application of evaluation system

4.1. Construction of Teaching Evaluation System for Civics Courses

4.1.1. Preliminary formulation of indicators for the evaluation system. For the construction of the teaching evaluation system of Civics and Political Science courses, the first step is to clarify the indicators of each element of the system. A scientific and reasonable evaluation system of Civics teaching is multilevel, so for the construction of Civics teaching evaluation system, it is necessary to clarify the first-level indicators, and only after clarifying the first-level indicators can it be decomposed so as to form a complete teaching evaluation system. After sorting out, ideological and political education, moral education, classroom background, teaching resources, teaching practice, reflection and development are formulated as the first-level indicators.

Based on the reference to the students' cultivation program and the nurturing resources of the ideological and political courses, this study has thought about and analyzed the second-level indicators and formulated 17 second-level indicators.

When formulating the second-level indicators of ideological and political education, the content of the course's ideological and political construction should be firm in students' ideals and beliefs, with the main line of love for the Party, patriotism, love for the collective and so on, and so on. Therefore, ideological leadership, patriotism education, rule of law education, collectivism education are selected as the second-level indicators; in formulating the second-level indicators of moral education, moral education includes cultivating students' moral literacy in the society, in the profession, and in the life, so as to develop the behavioral habits of these moral norms. Therefore, social morality, professional ethics, and personal integrity were selected to be formulated as secondary indicators; in formulating the secondary indicators of teaching context, classroom scope and classroom routines were selected as secondary indicators; and teaching materials and teaching venues were selected as secondary indicators of teaching resources; professional ethics, information literacy, nurturing methods, and pedagogical expression were selected as secondary indicators of teaching practice; and reflective awareness and reflective practice were selected as reflective developmental secondary indicators.

In the formulation of tertiary indicators, the 17 secondary indicators formulated above are mainly refined and decomposed again, and the decomposed tertiary indicators should be based on the characteristics of the teaching of professional thinking and politics of the course, and should be fully excavated from the resources of the course's thinking and nurturing to reflect the value of thinking and politics in the course. However, the number of three-level indicators is relatively large, and it is easy to produce omissions or duplications in the initial drafting process, and it is necessary to delete or modify the three-level indicators through the distribution of expert questionnaires. After this study decomposed the 17 secondary indicators formulated above, 58 tertiary indicators were initially formed, as shown in Table 1.

Table 1. Preliminary table of ideological and political teaching evaluation system

Primary indicator (A)	Secondary indicator (B)	Tertiary indicator (C)
A1 Ideological and political education	B1 Thought Guidance	C1 Core socialist values
		C2 The Thought on Socialism with Chinese Characteristics for a New Era.
		C3 Chinese Dream
	B2 Patriotism education	C4 National history education
		C5 Excellent traditional culture education
		C6 Modern national conditions education
	B3 Rule of Law education	C7 Comply with national laws and regulations
		C8 Abide by the school rules
		C9 Collective cooperation
	B4 Collectivist education	C10 A sense of collective belonging
		C11 Collective sense of honor
A2 Moral Education	B5 Social morality	C12 Ready to help others
		C13 Abide by the law
		C14 Civility
	B6 Professional ethics	C15 Protect public property
		C16 Loves his job and works hard
		C17 Bear hardships and stand hard work
		C18 Strive for excellence
		C19 Role model
		C20 Care for students
	B7 Personal virtues	C21 Be strict with oneself
		C22 Self-confident and self-reliant
		C23 Hardworking
		C24 Honest and friendly
A3 Class background	B8 Classroom Atmosphere	C25 Educational infiltration of potential values
		C26 Class discussion principles to follow
		C27 The formation of learning and practicing atmosphere in technical courses
		C28 Learning and Development Community emphasis
	B9 Classroom Routine	C29 Class agreement between teachers and students
		C30 Rule awareness enhancement
A4 Teaching resources	B10 Teaching materials	C31 Clarify the rights and obligations of teaching
		C32 Related research on ideological and political teaching
		C33 Teaching books that keep pace with The Times
	B11 Teaching equipment	C34 The ideological and political resources contained in the technical course
A5 Teaching expression	B12 Professional Ethics	C35 Create teaching AIDS according to local conditions
		C36 Effective integration of resources inside and outside the school
		C37 Strengthening of teachers' professional moral consciousness
		C38 Correctly deal with teacher moral misconduct
	B13 Information Literacy	C39 Students are influenced by being a teacher
		C40 Enhancement of moral identity and professional identity
		C41 Accelerate the development of modern information-based teaching
	B14 Parenting methods	C42 Appreciate and evaluate current events correctly
		C43 Update modern education and teaching concepts in a timely manner
		C44 Choose the ideological and political curriculum education method
		C45 Ideological and political elements are connected with the reality of student life
A6 Reflective development	B15 teaching expression	C46 Combine operation with professional training objectives
		C47 Use teaching wisdom to design and implement teaching
		C48 Creates teaching activities with enthusiasm
		C49 Respect and develop students' individual expression
	B16 Reflective awareness	C50 Grasp the law of students' physical and mental development and give specific responses
		C51 Students take the initiative to engage in meaningful teaching practices
		C52 Students form a reflective consciousness of lifelong learning
		C53 Make a clear personal development plan
		C54 Students' self-reflection habit
A6 Reflective development	B17 Reflective Practice	C55 Mastering specific skills, knowledge and key points
		C56 The development of technical project quality
		C57 Special skill level improvement
		C58 Application of extra-curricular physical exercise

4.1.2. Results of the first round of expert surveys and analyses. The Delphi method was used to conduct two rounds of expert questionnaire surveys on the preliminary evaluation system of ideological and political course teaching. The questionnaire was designed using a Likert scale, with a score of 5 for "very important", 4 for "relatively important", 3 for "generally important", 2 for "not very important", and 1 for "very unimportant".

Through the statistics of the results of the recovered questionnaires and the organization of the experts' opinions, the indicators are modified respectively, and the evaluation system of the teaching of the ideology course is finally constructed.

1) Mean value X and standard deviation SD : the mean value is defined as $X \geq 4.000$, and the standard deviation is defined as $S.D \leq 1.500$. Indicators conforming to $X \geq 4.000$ and $S.D \leq 1.500$ are retained, and those that don't are deleted.

2) Coefficient of variation CV : The higher the degree of expert coordination, the smaller the value of coefficient of variation. In this study, the coefficient of variation is set at 0.200, and indicators with statistical results lower than 0.200 are retained.

3) Consistency of expert evaluation results: the consistency of expert evaluation results of the Delphi method is determined by the size of Kendall's harmony coefficient. Kendall's harmony coefficient is generally between 0 and 1, and the closer it is to 1, the higher the consistency.

The statistical analysis table of the indicators in the first round is shown in Table 2.

Table 2. The first round of statistical analysis of indicators

Primary indicator (A)	Mean value	Standard deviation	Coefficient of variation
A1	4.742	0.526	0.170
A2	4.612	0.400	0.094
A3	4.373	0.485	0.083
A4	4.647	0.524	0.145
A5	4.710	0.572	0.131
A6	4.294	0.470	0.096
Secondary indicator (B)	Mean value	Standard deviation	Coefficient of variation
B1	4.376	0.448	0.099
B2	4.877	0.513	0.164
B3	4.596	0.568	0.102
B4	4.787	0.497	0.085
B5	4.495	0.437	0.138
B6	4.865	0.487	0.099
B7	4.792	0.549	0.086
B8	4.454	0.503	0.141
B9	4.383	0.565	0.125
B10	4.892	0.471	0.070
B11	4.394	0.497	0.083
B12	4.741	0.543	0.150
B13	4.595	0.414	0.129
B14	4.412	0.539	0.104
B15	4.820	0.562	0.107
B16	4.524	0.431	0.080
B17	4.373	0.422	0.119
Tertiary indicator (C)	Mean value	Standard deviation	Coefficient of variation
C1	4.771	0.473	0.171
C2	4.604	0.485	0.092
C3	4.470	0.943	0.250
C4	4.641	0.468	0.086
C5	4.556	0.557	0.159
C6	4.412	0.408	0.140
C7	3.899	0.446	0.084
C8	4.713	0.433	0.102
C9	4.442	0.555	0.084
C10	4.381	0.409	0.097
C11	4.344	0.431	0.164
C12	4.717	0.474	0.093
C13	3.813	0.509	0.272
C14	4.499	0.476	0.149
C15	4.524	0.445	0.160
C16	3.864	0.411	0.139
C17	4.555	0.498	0.151
C18	4.343	0.408	0.164
C19	3.579	0.696	0.279
C20	3.763	0.458	0.138

C21	4.500	0.562	0.128
C22	4.379	0.512	0.158
C23	3.887	0.417	0.126
C24	4.477	0.530	0.099
C25	4.427	0.415	0.171
C26	3.802	0.520	0.133
C27	4.511	0.457	0.155
C28	3.807	0.429	0.153
C29	3.755	0.431	0.153
C30	4.606	0.444	0.179
C31	3.805	0.437	0.121
C32	4.659	0.527	0.159
C33	4.535	0.491	0.158
C34	4.538	0.499	0.148
C35	4.236	0.422	0.178
C36	4.408	0.460	0.103
C37	4.478	0.413	0.147
C38	4.790	0.646	0.212
C39	4.703	0.514	0.104
C40	4.533	0.560	0.139
C41	4.238	0.407	0.169
C42	4.285	0.423	0.085
C43	4.660	0.421	0.150
C44	3.805	0.645	0.221
C45	4.315	0.439	0.177
C46	4.471	0.565	0.136
C47	4.591	0.415	0.128
C48	4.420	0.607	0.135
C49	4.452	0.573	0.133
C50	4.221	0.564	0.135
C51	4.208	0.481	0.099
C52	4.680	0.539	0.125
C53	4.516	0.463	0.092
C54	3.881	0.669	0.226
C55	4.565	0.530	0.114
C56	4.301	0.420	0.100
C57	4.397	0.467	0.093
C58	4.456	0.557	0.115

According to the statistical results of the expert ratings of the first round of level 1 indicators, by analyzing the ratings of the experts, the average value of the level 1 indicators is higher than 4.000 points, the standard deviation is lower than 1.500, and the coefficient of variation is lower than 0.200, which indicates that the expert ratings of the level 1 indicators are converging, and that the level 1 indicators are all retained.

The mean value of the 18 secondary indicators was higher than 4.000 points, the standard deviation was lower than 1.500, and the coefficient of variation was lower than 0.200. Among them, the scores of "patriotism education", "collectivism education", "professional ethics", "personal morality", "teaching materials", "professional ethics" and "teaching expression" are relatively high, which shows

that these seven indicators are important contents of the construction of the teaching evaluation system of ideological and political courses.

Through the scoring and analysis of the third-level indicators by experts, it is found that the average value of the indicators is less than 4.000 and the coefficient of variation is greater than 0.200, and the experts have great differences, and "C13 compliance with the law" is duplicated with the rule of law education in the second-level indicators, and "C19 is a model of teachers It is difficult to get specific implementation in the course teaching, so it is recommended to delete it directly. The average values of "C16 love and dedication", "C20 caring for students", "following the principles of C26 classroom discussion" and "attaching importance to the C28 learning and development community" were less than 4.000, and the expressions of "C19 love and dedication" and "C23 caring for students" were relatively macroscopic, which was difficult for students to experience and comprehend in the ideological and political courses, so it is recommended to delete them. Experts believe that "C26 Classroom Discussion Principles Followed" and "C28 Learning and Development Community Attention" are not very important for the formation of classroom atmosphere, and it is recommended to delete them. In addition, the average value of the other three indexes was greater than 4.000 and the standard deviation was less than 1.500, and the coefficient of variation was less than 0.200, which met the standard and was retained.

4.1.3. Results of the second round of expert surveys and analyses. After conducting the second round of expert questionnaires, the scoring results of individual experts stabilized. The statistical analysis of the indicators at all levels in the second round is shown in table 3 below.

Table 3. The second round of statistical analysis of indicators

Primary indicator (A)	Mean value	Standard deviation	Coefficient of variation
A1 Ideological and political education	4.335	0.565	0.158
A2 Moral Education	4.414	0.502	0.066
A3 Class background	4.534	0.460	0.098
A4 Teaching resources	4.776	0.544	0.104
A5 Teaching expression	4.865	0.414	0.102
A6 Reflective development	4.710	0.470	0.089
Secondary indicator (B)	Mean value	Standard deviation	Coefficient of variation
B1 Thought Guidance	4.293	0.548	0.088
B2 Patriotism education	4.802	0.417	0.162
B3 Rule of Law education	4.529	0.489	0.147
B4 Collectivist education	4.749	0.474	0.093
B5 Social morality	4.394	0.490	0.130
B6 Professional ethics	4.793	0.573	0.156
B7 Personal virtues	4.802	0.487	0.155
B8 Classroom Atmosphere	4.429	0.464	0.147
B9 Classroom Routine	4.293	0.569	0.083
B10 Teaching materials	4.847	0.419	0.092
B11 Teaching equipment	4.316	0.470	0.165
B12 Professional Ethics	4.722	0.417	0.111
B13 Information Literacy	4.531	0.503	0.114
B14 Parenting methods	4.502	0.430	0.124
B15 teaching expression	4.806	0.419	0.153
B16 Reflective awareness	4.482	0.519	0.131
B17 Reflective Practice	4.287	0.521	0.131
Tertiary indicator (C)	Mean value	Standard deviation	Coefficient of variation
C1 Core socialist values	4.403	0.407	0.157

C2 The Thought on Socialism with Chinese Characteristics for a New Era.	4.446	0.483	0.164
C3 Sports power dream	4.578	0.499	0.084
C4 National history education	4.379	0.474	0.113
C5 Excellent traditional culture education	4.104	0.493	0.154
C6 Modern national conditions education	4.473	0.524	0.087
C7 Comply with national laws and regulations	4.489	0.513	0.174
C8 Abide by the school rules	4.633	0.433	0.173
C9 Collective cooperation	4.334	0.477	0.144
C10 A sense of collective belonging	4.210	0.468	0.168
C11 Collective sense of honor	4.258	0.474	0.094
C12 Collective sense of honor	4.401	0.495	0.111
C12 Ready to help others	4.370	0.504	0.115
C13 Civility	4.283	0.507	0.145
C14 Protect public property	4.664	0.510	0.115
C15 Bear hardships and stand hard work	4.486	0.487	0.144
C16 Strive for excellence	4.313	0.540	0.167
C17 Be strict with oneself	4.486	0.487	0.144
C18 Self-confident and self-reliant	4.603	0.568	0.142
C19 Hardworking	4.717	0.551	0.154
C20 Honest and friendly	4.585	0.417	0.178
C21 Educational infiltration of potential values	4.553	0.425	0.125
C22 The formation of learning and practicing atmosphere in technical courses	4.420	0.434	0.133
C23 Class agreement between teachers and students	4.440	0.481	0.178
C24 Rule awareness enhancement	4.501	0.507	0.122
C25 Clarify the rights and obligations of teaching	4.192	0.450	0.109
C26 Related research on ideological and political teaching	4.491	0.408	0.094
C27 Teaching books that keep pace with The Times	4.352	0.528	0.144
C28 The ideological and political resources contained in the technical course	4.127	0.463	0.174
C29 Create teaching AIDS according to local conditions	4.700	0.457	0.102
C30 Effective integration of resources inside and outside the school	4.241	0.431	0.091
C31 Strengthening of teachers' professional moral consciousness	4.457	0.412	0.085
C32 Students are influenced by being a teacher	4.192	0.413	0.147
C33 Enhancement of moral identity and professional identity	4.802	0.505	0.101
C34 Accelerate the development of modern information-based teaching	4.308	0.449	0.158
C35 Appreciate and evaluate current events correctly	4.459	0.404	0.130
C36 Update modern education and teaching concepts in a timely manner	4.210	0.492	0.148
C37 Ideological and political elements are connected with the reality of student life	4.346	0.488	0.141
C38 Combine operation with professional training objectives	4.485	0.517	0.074
C39 Use teaching wisdom to design and implement teaching	4.589	0.418	0.178
C40 Creates sports teaching activities with enthusiasm	4.221	0.416	0.142
C41 Respect and develop students' individual expression	4.244	0.473	0.097
C42 Grasp the law of students' physical and mental development and give specific responses	4.309	0.482	0.083
C43 Students take the initiative to engage in meaningful teaching practices	4.232	0.404	0.072
C44 Students form a reflective consciousness of lifelong learning	4.295	0.444	0.129
C45 Make a clear personal development plan	4.587	0.511	0.156
C46 Mastering specific skills, knowledge and key points	4.295	0.531	0.101
C47 The development of technical project quality	4.647	0.409	0.137
C48 Special skill level improvement	4.662	0.563	0.113
C49 Rethinking and summarizing the problems and experiences in the teaching of technical courses	4.184	0.405	0.094
C50 Application of extra-curricular physical exercise	4.676	0.504	0.101

It can be seen from Table 3 that in the proposed index system of ideological and political course teaching evaluation, the average score of the first-level index is 4.335~4.865, and the average score of the second-level index and the third-level index are both 4.120~4.847, that is, the degree of agreement is greater than 4 points, indicating that the experts' recognition of the determined indicators and

connotations is high, and no index in the collected questionnaire is selected as "(2 points) is not very important" and "(1 point) is very unimportant", indicating that the degree of difference between expert opinions is small. The CV interval of the first-level index is 0.066~0.104, the CV interval of the second-level index is 0.070~0.164, and the CV interval of the third-level index is 0.072~0.178, that is, the coefficient of variation is less than 0.200, indicating that the dispersion degree of expert opinion is low.

4.1.4. Indicator weighting analysis. The study is based on the experts' judgment, and the software yaahp10.1 is used to calculate the weights of the evaluation index system of the teaching of Civics course.

Through the hierarchical analysis and entropy weighting method two kinds of calculation weights, collate and analyze the weight of each expert's assignment, and arrive at the weight of each index in the evaluation index system of Civics course teaching, see table 4 below.

Table 4. Curriculum ideological and political teaching evaluation index weight table

Primary indicator	Secondary indicator	Tertiary indicator	Weight
A1 (0.0978)	B1 (0.0338)	C1	0.0113
		C2	0.0173
		C3	0.0052
	B2 (0.0670)	C4	0.0284
		C5	0.0156
		C6	0.0230
	B3 (0.0355)	C7	0.0172
		C8	0.0183
	B4 (0.0639)	C9	0.0178
		C10	0.0271
		C11	0.0190
A2 (0.0926)	B5 (0.0363)	C12	0.0104
		C13	0.0142
		C14	0.0117
	B6 (0.0624)	C15	0.0312
		C16	0.0176
		C17	0.0127
	B7 (0.0588)	C18	0.0114
		C19	0.0273
		C20	0.0201
A3 (0.1137)	B8 (0.0395)	C21	0.0164
		C22	0.0231
	B9 (0.0580)	C23	0.0228
		C24	0.0173
A4 (0.2068)	B10 (0.0958)	C25	0.0179
		C26	0.0428
		C27	0.0314
	B11 (0.0464)	C28	0.0216
		C29	0.0277
		C30	0.0187
A5 (0.3214)	B12 (0.0718)	C31	0.0273
		C32	0.0265
		C33	0.0240
	B13 (0.0424)	C34	0.0108
		C35	0.0096
		C36	0.0220
	B14 (0.0424)	C37	0.0196
		C38	0.0228
	B15 (0.0932)	C39	0.0296
		C40	0.0187
		C41	0.0105
		C42	0.0173
		C43	0.0171
		C44	0.0272
A6 (0.1617)	B16 (0.0406)	C45	0.0134
		C46	0.0172
	B17 (0.0694)	C47	0.0113
		C48	0.0095
		C49	0.0154
		C50	0.0160

It can be seen that "teaching practice" is at the core of the first-level index, and it is the focus of the teaching evaluation of physical education under the concept of curriculum ideology and politics. At the

same time, it can also directly reflect the specific and effective evaluation of "teaching expression", "education methods" and "reflective practice", which is the main path to achieve the evaluation goal of teaching promotion and measurable curriculum education, and the main path to promote the development of teachers' professional ability and pay attention to the all-round development of students, and "patriotism education", "collectivism education", "professional ethics", "personal morality", "teaching materials", "professional ethics" and "teaching expression" are indispensable measures. On the whole, it echoes the process evaluation decision-making in the evaluation model, and gives full play to the process orientation and improvement function of teaching evaluation.

4.2. Evaluating the teaching of Civics courses based on the fuzzy comprehensive evaluation method

4.2.1. Evaluation analysis. A university in Guangdong Province, a 2023 grade of a major of the Civics course as the object of study, the application of this paper's proposed Civics network based on P2P technology teaching aid system in the Civics teaching, invite 10 experts on the school Civics course random single section of the teaching of a single factor evaluation of Civics teaching of the university of the number of scores of the indicators of Civics teaching of colleges and universities are shown in Table 5, scoring results are shown in Table 6, the use of the fuzzy comprehensive evaluation model for the operation of the calculation.

Table 5. Number of experts rating each file

Evaluation index	Very good	Good	Normal	Bad	Very bad
C1	6	3	1	0	0
C2	7	3	0	0	0
C3	5	4	1	0	0
C4	4	4	2	0	0
C5	5	4	1	0	0
C6	5	5	0	0	0
C7	4	4	2	0	0
C8	7	3	0	0	0
C9	6	4	0	0	0
C10	5	4	1	0	0
C11	7	2	1	0	0
C12	6	4	0	0	0
C13	6	3	1	0	0
C14	8	2	0	0	0
C15	6	4	0	0	0
C16	5	4	1	0	0
C17	4	4	1	1	0
C18	4	4	2	0	0
C19	5	4	1	0	0
C20	4	4	2	0	0
C21	5	4	1	0	0
C22	7	3	0	0	0
C23	8	2	0	0	0
C24	5	4	1	0	0
C25	4	5	1	0	0
C26	5	4	1	0	0
C27	7	3	0	0	0
C28	4	3	3	0	0
C29	6	3	0	1	0
C30	6	4	0	0	0
C31	6	3	1	0	0
C32	3	5	2	1	0
C33	4	5	1	0	0
C34	6	3	1	0	0
C35	6	4	0	0	0
C36	7	2	1	0	0
C37	6	2	1	1	0
C38	7	3	0	0	0
C39	5	3	2	0	0
C40	6	3	1	0	0
C41	5	4	1	0	0
C42	5	3	2	0	0
C43	6	3	0	1	0
C44	6	3	1	0	0
C45	5	4	1	0	0
C46	7	3	0	0	0
C47	7	3	0	0	0
C48	4	4	1	1	0
C49	5	4	1	0	0
C50	5	3	2	0	0

Table 6. Expert ratings at all levels

Tertiary indicator	Score result statistics				
	v1 Very good	V2 Good	V3 Normal	V4 Bad	V5 Very bad
C1	0.6	0.3	0.1	0	0
C2	0.7	0.3	0	0	0
C3	0.5	0.4	0.1	0	0
C4	0.4	0.4	0.2	0	0
C5	0.5	0.4	0.1	0	0
C6	0.5	0.5	0	0	0
C7	0.4	0.4	0.2	0	0
C8	0.7	0.3	0	0	0
C9	0.6	0.4	0	0	0
C10	0.5	0.4	0.1	0	0
C11	0.7	0.2	0.1	0	0
C12	0.6	0.4	0	0	0
C13	0.6	0.3	0.1	0	0
C14	0.8	0.2	0	0	0
C15	0.6	0.4	0	0	0
C16	0.5	0.4	0.1	0	0
C17	0.4	0.4	0.1	0.1	0
C18	0.4	0.4	0.2	0	0
C19	0.5	0.4	0.1	0	0
C20	0.4	0.4	0.2	0	0
C21	0.5	0.4	0.1	0	0
C22	0.7	0.3	0	0	0
C23	0.8	0.2	0	0	0
C24	0.5	0.4	0.1	0	0
C25	0.4	0.5	0.1	0	0
C26	0.5	0.4	0.1	0	0
C27	0.7	0.3	0	0	0
C28	0.4	0.3	0.3	0	0
C29	0.6	0.3	0	0.1	0
C30	0.6	0.4	0	0	0
C31	0.6	0.3	0.1	0	0
C32	0.3	0.5	0.2	0.1	0
C33	0.4	0.5	0.1	0	0
C34	0.6	0.3	0.1	0	0
C35	0.6	0.4	0	0	0
C36	0.7	0.2	0.1	0	0
C37	0.6	0.2	0.1	0.1	0
C38	0.7	0.3	0	0	0
C39	0.5	0.3	0.2	0	0
C40	0.6	0.3	0.1	0	0
C41	0.5	0.4	0.1	0	0
C42	0.5	0.3	0.2	0	0
C43	0.6	0.3	0	0.1	0
C44	0.6	0.3	0.1	0	0
C45	0.5	0.4	0.1	0	0
C46	0.7	0.3	0	0	0
C47	0.7	0.3	0	0	0
C48	0.4	0.4	0.1	0.1	0
C49	0.5	0.4	0.1	0	0
C50	0.5	0.3	0.2	0	0

4.2.2. Analysis of evaluation results. The final teaching quality evaluation vector is assigned to facilitate clearer evaluation. The study assigned scores according to the set comments, and the

corresponding scores were: very good (100 points), good (80 points), fair (60 points), poor (40 points), and very poor (20 points), and the evaluation interval between the scoring results of each dimension and the total score was set as: the score > 90 was "excellent"; $75 \leq \text{score} \leq 90$ is "good"; $60 \leq \text{score} \leq 74$ is "pass"; A score of <60 is considered "unqualified". Taking the calculation process of "B1 Thought Leadership" as an example, the remaining scores are shown in Table 7.

Substitute the weight vector W_1^A calculated by hierarchical analysis and entropy weighting method into the formula to find out the comprehensive evaluation value of " B_1^A thought leadership".

$$B_1^A = W_1^A \circ R_1^A = (0.0113, 0.0173, 0.052) \circ \begin{bmatrix} 0.6 & 0.3 & 0.1 & 0 & 0 \\ 0.7 & 0.3 & 0 & 0 & 0 \\ 0.5 & 0.4 & 0.1 & 0 & 0 \end{bmatrix} = [0.643, 0.261, 0.076, 0, 0]$$

According to the fuzzy comprehensive evaluation method, the evaluation should be carried out according to the principle of maximum affiliation degree, and it can be seen that the affiliation value of "thought leadership" in the teaching of Civics program of this school is 0.5168, and the evaluation result is "very good". The fuzzy comprehensive evaluation set is assigned a value (100 points, 80 points, 60 points, 40 points, 20 points), resulting in a score of 87.32, reaching the level of "good".

Table 7. Fuzzy comprehensive evaluation of each index score results

Index	Very good	Good	Normal	Bad	Very bad	Score	Grade
B1 Thought Guidance	0.643	0.261	0.076	0	0	87.32	Good
B2 Patriotism education	0.445	0.437	0.118	0	0	83.28	Good
B3 Rule of Law education	0.573	0.321	0.106	0	0	85.74	Good
B4 Collectivist education	0.582	0.337	0.081	0	0	85.95	Good
B5 Social morality	0.712	0.233	0.055	0	0	94.37	Excellent
B6 Professional ethics	0.447	0.431	0.083	0.039	0	82.85	Good
B7 Personal virtues	0.429	0.402	0.173	0	0	81.97	Good
B8 Classroom Atmosphere	0.476	0.468	0.056	0	0	83.86	Good
B9 Classroom Routine	0.614	0.319	0.048	0.019	0	86.54	Good
B10 Teaching materials	0.546	0.322	0.111	0.021	0	85.31	Good
B11 Teaching equipment	0.703	0.258	0.039	0	0	92.32	Excellent
B12 Professional Ethics	0.675	0.287	0.026	0.012	0	88.52	Good
B13 Information Literacy	0.563	0.285	0.152	0	0	85.31	Good
B14 Parenting methods	0.547	0.305	0.097	0.051	0	84.96	Good
B15 teaching expression	0.677	0.291	0.023	0.009	0	89.02	Good
B16 Reflective awareness	0.530	0.362	0.108	0	0	84.99	Good
B17 Reflective Practice	0.608	0.307	0.085	0	0	85.37	Good
Overall Score	0.575	0.331	0.085	0.009	0	86.33	Good

As can be seen from Table 7, the evaluation results of all the indicators of the teaching of Civic and Political Science Program in this school are good or above, of which the scores of B5 Social Merit and B11 Teaching Equipment are 94.37 and 92.32, reaching 90 or above, which is in the category of "excellent". Overall, the total score of Civics course teaching in this school is 86.33, which is under the category of "good", and the trend is getting better. It shows that the P2P technology-based Civics Network Teaching Aid System proposed in this paper has strong practicality in actual Civics teaching and effectively improves the quality of Civics teaching in colleges and universities.

5. Conclusion

This paper proposes a Civics network teaching intelligent auxiliary system based on P2P mode, and constructs a Civics course teaching evaluation system using the fuzzy comprehensive evaluation method. The proposed intelligent auxiliary teaching system is applied to actual Civics teaching and evaluated with the constructed evaluation system.

Preliminarily construct the teaching evaluation index system of Civics and Political Science courses, use the Delphi method to correct and delete the teaching evaluation index system, and finalize the evaluation index system after 2 rounds of expert correspondence. A total of 6 first-level indicators (ideological and political education, moral education, classroom background, teaching resources, teaching practice, and reflective development); 17 second-level indicators (ideological leadership, patriotic education, education of the rule of law, collectivist education, social morality, professional morality, personal integrity, classroom atmosphere, classroom routines, teaching materials, teaching equipment, professional ethics, information literacy, nurturing methods, teaching expression, reflective awareness and reflective practice); and 50 tertiary indicators.

Using the entropy weight method and hierarchical analysis method, 10 experts were invited to assign values to the teaching evaluation index system of the Civics courses in colleges and universities, which can clearly reflect the relative importance of the indicators in the teaching evaluation index system, and derive the weight values of the indicators. The weights of the first-level indicators are 0.0978 for ideological and political education, 0.0926 for moral education, 0.1137 for classroom background, 0.2068 for teaching resources, 0.3214 for teaching practice, and 0.1617 for reflection and development, which provide the basis for the subsequent fuzzy comprehensive evaluation.

Using the fuzzy comprehensive evaluation method to evaluate the teaching of a university in Guangdong Province, a 2023-level ideology and politics course as the evaluation object, through the calculation of the expert rating results, the total score of the university was 86.33 points, and the evaluation results were “good” level. It fully demonstrates that the fuzzy comprehensive evaluation method is suitable for the evaluation index system of course Civics teaching, and also proves that the evaluation index system of Civics teaching constructed by this research has high practicability and operability, and at the same time, it has high reliability and validity, and can be used as the evaluation index of Civics teaching of college courses.

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