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Practical Research on the Application of an AI Algorithm-Based Global Competence Learning Effectiveness Assessment and Optimization Model in International Cooperation and Education at Universities in Inner Mongolia

Wenqiang Wang[1,*]

[1] Editorial Office of Journal of Chifeng University, Chifeng, Inner Mongolia Autonomous Region, 024000, China

SUMMARY: *Global competence is not only a key ability for individuals in cross-cultural communication and global employment, but also the cornerstone for promoting social innovation and facilitating international cooperation and development. This paper quantitatively assesses students' global competence through a combination of quantitative and qualitative research methods, based on the PCA and QPSO-BP models as algorithms. The assessment results show that the overall level of global competence of students in higher education institutions in Inner Mongolia is above average. Among all dimensions, except for attitude which is at a relatively high level, knowledge and skills all need to be improved. To make up for the above deficiencies, it is proposed to optimize the cultivation paths of global issues and topics from three aspects: interdisciplinarity, ideological and political education in courses, and practice. By training students' logical thinking, critical thinking and creative thinking, the global competence of students can be enhanced.*

KEYWORDS: *Global competence; International cooperation; QPSO-BP model; Culture path*

1 Introduction

With the development of Inner Mongolia's socio-economic landscape and the continuous advancement of higher education, Sino-foreign cooperative education programs have increasingly gained favor among universities in Inner Mongolia [1, 2]. International cooperative education refers to a model where domestic higher education institutions collaborate with foreign higher education institutions to jointly operate educational programs, share educational resources, knowledge, and technology, with the aim of enhancing the internationalization and international exchange levels of higher education in Inner Mongolia [3-6]. In terms of management, the collaborating parties each manage their respective operations according to their own methods [7]. In terms of admissions, all Sino-foreign cooperative education programs at the undergraduate level must be included in the national ordinary higher education institution admissions plan. Admitted students must participate in the national unified entrance examination for ordinary higher education institutions and meet the relevant admissions regulations and requirements [8-11].

As higher education institutions strengthen their international cooperative education programs, the cultivation of global competence has also gained increasing attention [12, 13].

*13947681530@163.com
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In today's increasingly globalized world, how Inner Mongolia university students can enhance their global competence has become a focal point of attention in the education sector [14, 15]. Global competence refers to the ability to possess multiple qualities such as an international perspective, cross-cultural communication skills, innovative thinking abilities, a spirit of cooperation, and a sense of social responsibility in a cross-cultural context [16-18]. As future builders and successors of society, the cultivation of global competence among university students holds significant importance [19, 20].

However, in the current context of international cooperation in higher education in Inner Mongolia, there are certain challenges in cultivating global competence among university students [21, 22]. First, due to geographical constraints, university students at local institutions have relatively narrow international perspectives and insufficient understanding of foreign cultures, economies, and politics [23, 24]. Second, local universities have relatively weak efforts in cultivating cross-cultural communication skills and innovative thinking abilities [25, 26]. Finally, the cooperative spirit and sense of social responsibility among college students at local universities need to be improved. This requires universities to strengthen international education, innovate talent cultivation models, and promote a spirit of cooperation, seizing the opportunity of international cooperative education to leverage international resources and enhance the learning outcomes of students' global competence [27, 28]. This study takes students from colleges and universities in Inner Mongolia as the research subjects and, based on the evaluation results of the PCA and QPSO-BP models, proposes the cultivation path of students' global competence to enhance their global competitiveness and promote international exchanges and cooperation

2 Theoretical concepts

2.1 Global Competence

The term "Global Competence" was first proposed by the American Institute for International Exchange (CIEE), and subsequently, foreign scholars began to discuss the connotation of global competence. Global competence consists of five key elements: knowledge, empathy, support, foreign language proficiency, and job performance. This definition laid the foundation for subsequent research, and discussions on global competence began in multiple fields as a result.

The OECD officially defines global competence as: the ability to analyze regional, global and cross-cultural issues, the ability to understand and appreciate the perspectives and worldviews of others, the ability to interact openly, appropriately and effectively with people from different cultural backgrounds, and the ability to take action for collective well-being and sustainable development. From the definition, the test aims to examine whether students understand the complex and ever-changing global environment, whether they have global knowledge, and whether they possess the ability to summarize and analyze cross-cultural issues. The ability to appreciate and respect cultural differences, to integrate into the world with an open and inclusive mindset, and to interact with the environment in accordance with the development needs of society. Although these four aspects seem to be independent of each other, they are highly interdependent in the process of implementation.

In conclusion, this article holds that global competence refers to the ability to critically analyze global and cross-cultural issues from multiple perspectives and to engage in open, appropriate, and effective interactions with people from different backgrounds on the basis of respecting the dignity of all parties, in order to promote world development and achieve collective well-being.

2.2 International Cooperation in Higher Education

The concept of international cooperation in higher education was only proposed in 1960, which is only a few decades ago [29]. Among them, the most authoritative definition is that of the UNESCO University Association. The UNESCO group believes that international cooperation in higher education is a process that involves both inside and outside schools, not only top-down but also bottom-up.

The ultimate direction of international cooperation in higher education is to enhance the quality of higher education in one's own country and cultivate relevant talents. This group of talents possess a global awareness, follow the world trend, have a sense of The Times, and have strong adaptability in the process of cooperation. They also need to have a sufficient knowledge base to meet the demands of innovation and higher education. International cooperation in higher education can facilitate the world's absorption of excellent cultures, sharing of high-quality achievements, realization of exchanges in higher education, promotion of human progress, advancement of human civilization, and realization of the vision of a community with a shared future for mankind. International cooperation in higher education emphasizes that while paying attention to domestic higher education, it will also promote domestic higher education to go global. The country should maintain its own characteristics in higher education while absorbing the excellent experiences of other countries. International cooperation in higher education is not just about bringing one's own higher education to the world; more importantly, it is about cultivating compound talents who can handle problems with an international perspective.

The exploration of international cooperation in higher education has established a systematic talent cultivation system and constructed a teaching model that has been internationally certified. In the process of international cooperation in higher education, the interests and demands of multiple subjects should be taken into account, and at the same time, there should be institutional and financial guarantees. International cooperation in higher education requires coordination in three aspects: strategy, demand and organization. Strategic synergy guides the internationalization of higher education from a macro perspective and plays a guiding role. Demand coordination takes into account the inevitable requirements of international cooperation in higher education, ensuring the internationalization of higher education. Organizational collaboration plays a role in coordinating the overall situation, and at the same time, it takes into account both strategy and demand.

3 Evaluation of the Global Competence Cultivation Effect of Higher Education Institutions in Inner Mongolia

3.1 Establishment of Indicator System and Data Collection

3.1.1 Establishment of Indicator System

Student global competence draws on the OECD's “PISA 2018 Global Competence Framework” and Tsinghua University's global competence project, dividing student global competence into four dimensions: knowledge, skills, attitudes, and actions [30]. International participation draws on the “Undergraduate International Competence Measurement Scale” compiled, which was revised and improved based on the results of preliminary research, resulting in a total of 36 questions. The scale questions use a 5-point Likert scale, with scores ranging from 1 to 5 representing “completely disagree” to “completely agree,” respectively. Additionally, three

reverse-scored questions are included. The specific dimensions and descriptions of student global competence are shown in Table 1.

Table 1: Students' global competence dimension table

Primary indicator	Secondary indicator	
Knowledge	Professional knowledge	X_1
	World culture	X_2
	Understand global issues	X_3
Skill	Team collaboration	X_4
	Cross-cultural communication	X_5
	Tool ability	X_6
Attitude	confidence	X_7
	nationalization	X_8
	Open attitude	X_9
	Global citizen	X_{10}
Act	Take action	X_{11}

3.1.2 Data Collection

The survey participants were selected from students of the class of 2024 studying medicine, management, and education at 4 universities in Inner Mongolia. Based on Table 1, multiple-choice questions were designed, and evaluations were conducted using numerical scores as results. Data collection was conducted using a self-administered questionnaire method. For the evaluation of teaching quality in the course of elasticity mechanics, a questionnaire was designed using the Likert scale. The questionnaire was distributed to the surveyed students via the Questionnaire Star platform using a stratified sampling method, and students were required to complete the questionnaire independently and undergo validity review. A total of 754 questionnaires were collected, and after screening, 750 valid questionnaires were obtained, resulting in 750 sets of valid data. A globally competent learning effectiveness assessment was conducted using an optimized reasonable algorithm to identify a reasonable and efficient evaluation method.

3.2 Establishment of an evaluation model

3.2.1 Principal component analysis

Principal component analysis (PCA) is a commonly used dimension reduction method that converts multiple indicators into a few comprehensive indicators (principal components). The new principal components extracted are a set of linear combinations of the original indicator variables. These principal components are arranged in descending order of variance, with the variable with the largest variance being called the first principal component, the variable with the second largest variance being the second principal component, and so on. n variables yield n principal components.

Let the observed m groups of n-dimensional data sample matrices be:

$$X_{m\times n}=\begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \cdots & \cdots & & \cdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix} \tag{1}$$

(1) Calculate the correlation coefficient matrix on the calculation dimension.

$$R=\begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1n} \\ r_{21} & r_{22} & \cdots & r_{2n} \\ \vdots & \vdots & & \vdots \\ r_{n1} & r_{n2} & \cdots & r_{nn} \end{bmatrix} \tag{2}$$

Among them, $r_i y=\dfrac{\sum_{k=1}^{n}(x_{ki}-\overline{x_i})(x_{ki}-\overline{x_j})}{\sqrt{\sum_{k=1}^{n}(x_{ki}-\overline{x_i})^2\sum_{k=1}^{n}(x_{ki}-\overline{x_j})^2}}$ is defined as follows.

(2) Solve the characteristic equation $|\lambda I-R|=0$ to find the eigenvalues λ_i and eigenvectors e_i.

(3) Calculate the cumulative contribution rate.

The eigenvalues describe the variance in the direction of the corresponding principal components. By calculating the cumulative contribution rate, the eigenvalues $\lambda_1,\lambda_2,\cdots,\lambda_p$ that reach 85% or more can be used to extract the first p principal components.

$$L=\frac{\sum_{k=1}^{i}\lambda_k}{\sum_{k=1}^{n}\lambda_k}(i=1,2,\cdots,n) \tag{3}$$

(4) Extract the principal component F_i.

$$F_i=e_1X_1+e_2X_2++e_nX_n \tag{4}$$

In the formula, F_i represents the i th principal component.

3.2.2 The establishment of the evaluation model

The Backpropagation (BP) neural network is a multi-layer feedforward network trained using backpropagation of errors. By simulating the human brain's neural system, it can infinitely approximate any nonlinear function. The BP neural network possesses powerful self-learning capabilities, continuously adjusting the weights and thresholds between layers to optimize and refine the network, thereby minimizing the error between the output values and the target values.

To reduce the error of the BP neural network and improve the effectiveness of mathematical subject quality evaluation, the QPSO algorithm is used to optimize the initial weights and thresholds of the BP neural network. Compared to the PSO algorithm particles moving along

trajectories in Newtonian space, QPSO algorithm particles move quantum-mechanically in quantum space, with particles probabilistically distributed at any point in space.

Based on the comprehensive objectives of the global competence learning effectiveness evaluation, the effectiveness of the evaluation is categorized into five levels: excellent, good, average, passing, and failing. The implementation process of the global competence learning effectiveness evaluation model constructed using the QPSO-BP neural network is shown in Figure 1. As shown in Figure 1, after determining the evaluation indicators using principal component analysis, they are input into the BP neural network model. The BP neural network model uses the improved QPSO algorithm to obtain the optimal initial weights and thresholds of the network, thereby avoiding the randomness of model iteration. The BP neural network model continuously adjusts the weights and thresholds based on errors to achieve the training objectives. When the termination conditions are met and the training objectives are achieved, the evaluation results for global competence learning outcomes are output.

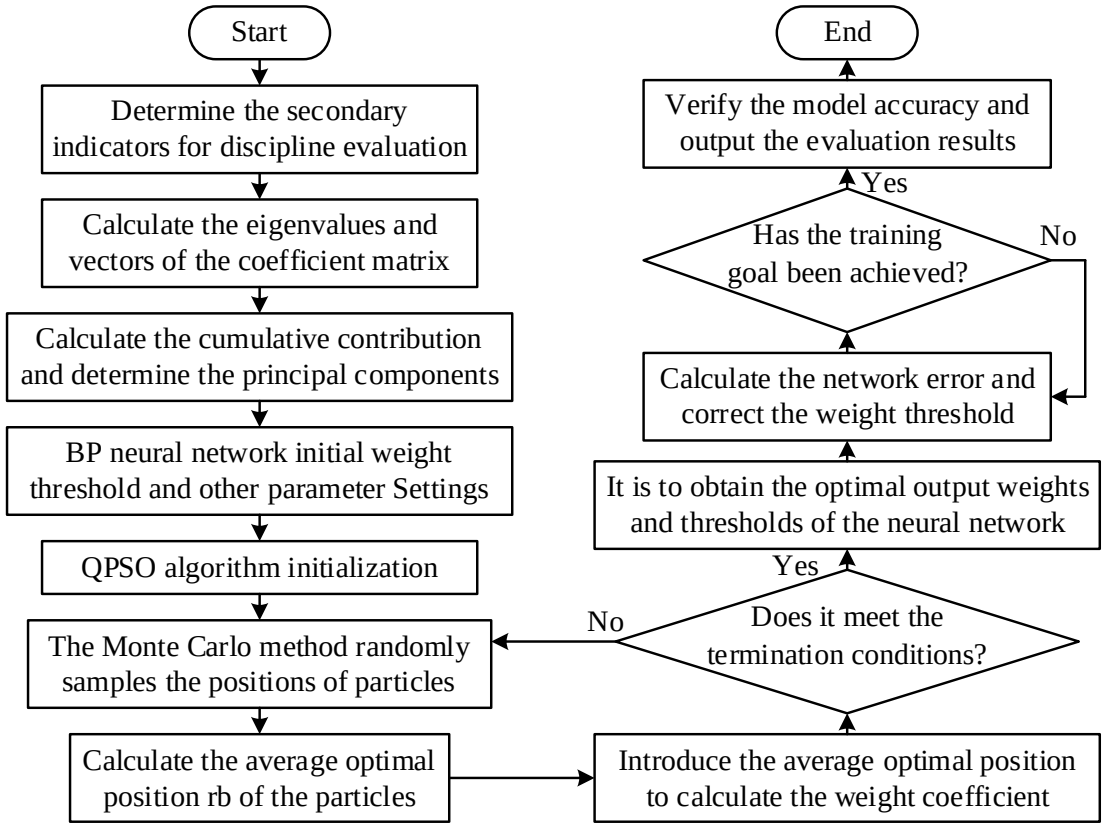

Figure 1: Implementation process of evaluation model based on QPSO-bp neural network

3.3 Analysis of Evaluation Results

3.3.1 PAC Analysis of Global Competence

This paper establishes a PCA-LVQ network model based on the MATLAB R2013a platform and conducts simulation experiments. The experimental samples are taken from the classroom teaching quality data of 40 teachers and the survey questionnaires of 20 students from 4 universities in Inner Mongolia, with each sample consisting of 11 evaluation indicators. Expert supervisors, peers, and students are asked to score the teachers. To ensure the scientific validity of the data, biased data were removed from the initially collected data, and the average scores for each teacher across all evaluation criteria were calculated. The evaluation results were

categorized into five levels: Excellent, Good, Average, Passing, and Failing, corresponding to grades 1, 2, 3, 4, and 5, respectively. The raw data used for teaching quality evaluation are shown in Table 2.

Table 2: Original data of teaching quality assessment

Sample number	X_1	X_2	X_3	…	X_{10}	X_{11}	Evaluation target
1	9.34	9.65	9.76	…	9.31	8.96	1
2	9.44	9.69	9.79	…	8.49	9.05	1
3	9.30	9.41	9.65	…	8.59	8.37	1
4	9.47	9.35	9.58	…	9.37	8.62	1
5	9.19	9.57	9.51	…	8.84	8.77	1
⋮	⋮	⋮	⋮	…	⋮	⋮	⋮
55	7.09	7.11	8.79	…	6.37	8.19	5
56	7.21	7.29	7.38	…	6.72	7.92	5
57	6.88	8.23	8.45	…	6.89	8.35	5
58	6.93	8.09	6.77	…	6.69	7.75	5
59	6.57	7.82	6.73	…	6.61	7.84	5
60	6.51	7.15	6.69	…	6.58	8.01	5

(1) Calculate the correlation coefficient matrix of the original sample matrix.

Since the original sample data varies greatly, the 60×11 samples in Table 2 are first standardized, and then the standardized samples are calculated to obtain the correlation coefficient matrix of the principal components, as shown in Table 3. As shown in Table 3, there are varying degrees of correlation among the 11 evaluation indicators. For example, X_2 is correlated with X_1, X_5, X_6, X_7, X_8, X_9, X_{11} and X_4 with X_1, X_2, X_3, X_5, X_6, X_7, X_8, X_9 are relatively high, indicating that these evaluation metrics are highly correlated, with significant information overlap among the input variables. This can lead to prolonged model training times and reduced classification accuracy. Therefore, principal component analysis should be performed on the initial influencing factors to improve classification accuracy.

Table 3: Correlation coefficient matrix of principal components

Index	X_1	X_2	X_3	X_4	…	X_{10}	X_{11}
X_1	1.0000	0.7024	0.7528	0.7513	…	0.7507	0.4238
X_2	0.7027	1.0000	0.5334	0.5157	…	0.8261	0.4408
X_3	0.753	0.5333	1.0000	0.6444	…	0.6884	0.581
X_4	0.7415	0.5056	0.6344	1.0000	…	0.5276	0.0451
X_5	0.7729	0.6329	0.6349	0.8753	…	0.6479	0.0441
X_6	0.7735	0.6859	0.5363	0.8412	…	0.6744	0.0247
X_7	0.7588	0.7627	0.5931	0.7414	…	0.7781	0.2661
X_8	0.8734	0.7525	0.7517	0.7893	…	0.8682	0.3863
X_9	0.8893	0.6652	0.7622	0.8344	…	0.8091	0.3591
X_{10}	0.7805	0.5991	0.7996	0.5214	…	1.0000	0.7388
X_{11}	0.7419	0.8172	0.6794	0.5286	…	0.6697	1.0000

(2) Solving the eigenvalues, contribution rates, and principal components of the correlation coefficient matrix

The correlation coefficient matrix is calculated to obtain the eigenvalues, contribution rates, and cumulative contribution rates of the first few principal components, as shown in Figure 2. As can be seen from the figure, the cumulative contribution rate of the first four principal components has reached 96.21%, indicating that these four principal components contain 96.21% of the information from the original 11 evaluation indicators. Therefore, according to the principle of principal component selection, the first four principal components can be selected to replace the initial 11 factors, resulting in an information loss rate of only 3.79%.

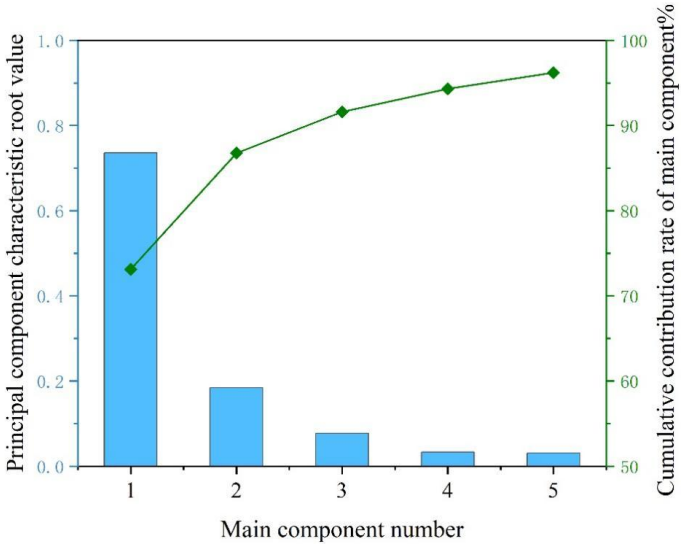

Figure 2: Eigenvalues, contribution rates and cumulative contribution rates of the first several principal components

(3) Calculate the standardized sample matrix (80×11 dimensions) from step (1) with the feature vectors (11×4 dimensions) of the first four principal components extracted in the previous step. This will yield a new sample matrix (60×4 dimensions) for training and testing the model, as shown in Table 4, thereby achieving dimensionality reduction of the original data.

Table 4: Coefficient matrix of the first four principal components' scores

Sample number	Z_1	Z_2	Z_3	Z_4	Evaluation target
1	4.0989	0.9044	0.6343	0.0255	4.0989
2	3.1953	1.1035	0.3612	0.5627	3.1953
3	3.0324	0.6703	0.1722	0.1943	3.0324
4	3.2953	0.9677	0.3146	0.0381	3.2953
5	3.3321	0.9338	0.6091	-0.0061	3.3321
⋮	⋮	⋮	⋮	⋮	⋮
56	-4.5271	1.5265	-0.0997	-0.5113	-4.5271
57	-4.0238	1.6501	-0.9724	0.2295	-4.0238
58	-4.0527	2.3986	0.331	0.7462	-4.0527
59	-4.4154	1.3972	0.9152	-0.2843	-4.4154
60	-4.7232	1.1498	0.2112	-0.8598	-4.7232

3.3.2 Network Model Parameter Settings

Since four principal components were extracted using principal component analysis, the number of neurons in the input layer of the backend QPSO-BP network is 4; the number of neurons in the output layer is 5, represented by the numbers 1, 2, 3, 4, and 5 for the five categories. Determining the number of neurons in the competitive layer of the LVQ network is a critical issue. According to relevant literature, the number of neurons in the competition layer is generally set as an integer multiple of the number of neurons in the output layer. Therefore, in this study, the competition layer neuron counts of 6, 11, 16, 21, and 26 were selected for network training. After repeated experiments, it was found that when the number of competitive layer neurons is 16, the network is most stable and converges the fastest. Therefore, the final structure of the QPSO-BP network model is determined as 5-16-6; the learning function is set to learnlv1; the target accuracy is set to 0.01; and the learning rate is set to 0.1.

3.3.3 Evaluation Results of QPSO-BP Model

(1) Evaluation of the global competence knowledge dimension

This dimension mainly assesses the subjects' world knowledge, understanding of globalization, and knowledge of global events. A total of 7 questions are set, among which the first question corresponds to the "Professional knowledge (X_1)" element. The second question corresponds to the element "World culture (X_2)". The remaining items correspond to the "Understand global issues (X_3)" element. The data description statistics of this dimension are shown in Table 5. From the evaluation results, it can be seen that in the global dimension of knowledge and understanding, students from Inner Mongolia's colleges and universities recognize the development trend of globalization and are willing to make efforts for it. Students have a basic understanding of world cultural knowledge and a relatively clear recognition of the differences between domestic and foreign educational fields. However, they have less knowledge about economic, social and medical topics, and have an average understanding of ecological issues. This also reflects from the side that students lack the exploration of interdisciplinary knowledge, but they will pay attention to the knowledge within their professional field and in familiar life scenarios.

Table 5: Evaluation Results of the Global Capability Knowledge Dimension

Indicator			QPSO-BP evaluation result
Professional knowledge (X_1)	Q1	I have a basic understanding of the geography, history, customs, languages and other knowledge of some countries.	3.89
World culture (X_2)	Q2	I understand the connotation and impact of globalization and agree with this development trend, and am willing to take action to adapt to it.	4.25
Understand global issues (X_3)	Q3	I can explain the impact of carbon dioxide emissions on global climate change.	2.87
	Q4	Can I explain how a country's economic crisis affects the global economy.	2.54
	Q5	I can explain the differences between Chinese education and foreign education and analyze the reasons.	2.67
	Q6	I understand the issue of population aging and can give examples to illustrate the impacts it brings.	2.53
	Q7	I understand global health and hygiene issues, and explain well.	2.45

(2) Evaluation and analysis of the skill dimensions of Global Competency requirements

This dimension mainly assesses the subjects' Team collaboration (X_4), Cross-cultural communication (X_5), and Tool ability (X_6), with a total of 9 questions set. Among them, the first three questions correspond to X_4 elements; Questions 4, 5 and 6 correspond to X_5 elements, while the rest of the questions correspond to X_6 elements. The data description statistics of this dimension are shown in Table 6. It can be seen that in the dimension of global competence skills, higher education institutions in Inner Mongolia have a relatively good grasp of cross-cultural communication skills, but their foreign language skills are relatively weak, their international academic skills are average, and there are significant differences among individuals.

Table 6: The assessment results of the global competency skills dimension

Indicator			QPSO-BP evaluation result
Team collaboration (X_4)	Q1	I'm interested in learning about the cultural traditions of other countries.	4.21
	Q2	I am willing to step out of my own culture and experience the cultures and lives of other countries	4.05
	Q3	I can adjust my behavior according to the needs of the new environment and adapt to the new cultural environment freely.	4.07
Cross-cultural communication (X_5)	Q4	I respect everyone, regardless of their cultural background.	4.51
	Q5	When communicating with foreigners, I respect the values of other countries and try to appreciate their cultures and values.	4.45
	Q6	To better understand foreign friends, sometimes I put myself in their shoes to think about problems.	4.40
Tool ability (X_6)	Q7	I consider myself a citizen of the world.	4.35
	Q8	When I see some people in other countries living in harsh conditions, I feel it is my responsibility to do something about it.	3.89
	Q9	I think my actions will affect people in other countries.	3.79

(3) Evaluation and analysis of the attitude and behavior dimensions in global Competence

This dimension mainly assesses the subjects' open attitude towards foreign cultures, the degree of respect for diversity, and whether they have a global mindset. A total of 9 questions are set. The first three questions correspond to "Confidence (X_7) ", and the fourth, fifth, and sixth questions correspond to "Nationalization (X_8)", "Open attitude (X_9)", and "Global citizen (X_{10})", the rest of the questions correspond to the "Take action (X_{11}) "element, and the data description statistics of this dimension are shown in Table 7. It can be seen that in terms of attitude and action, although students in Inner Mongolia's colleges and universities are willing to accept their responsibility to the world at the ideological level and face foreign cultures and international friends with a positive and open mindset, due to the lack of practice and personal participation, their confidence is often insufficient, which also affects the further improvement of their global competence.

Table 7: Analysis of Evaluation Results of Attitude and Action Dimensions

Indicator			QPSO-BP evaluation result
Confidence (X_7)	Q1	When communicating with foreigners, I can notice cultural differences and try to understand their cultural expressions.	4.35
	Q2	When communicating with foreigners, I constantly check whether both of us have correctly understood each other's meanings.	4.44
	Q3	When there are communication barriers, I will look for other ways to help with communication.	4.37
Nationalization (X_8)	Q4	I am willing to delve deeply into the foreign languages I have mastered and even have the intention to learn new ones.	3.81
Open attitude (X_9)	Q5	When communicating with foreigners, I can handle it freely in a foreign language for more than an hour.	2.57
Global citizen (X_{10})	Q6	I have the habit of reading foreign language books and foreign literature.	2.05
Take action (X_{11})	Q7	I will keep abreast of the latest research achievements and directions of domestic and foreign peers in this field in a timely manner.	3.73
	Q8	I am proficient in using information technology and tools to search for international data resources for academic research.	3.15
	Q9	I can actively participate in international academic exchange activities and have the confidence to have dialogues with foreign colleagues.	3.33

4 Optimization of Global Competence Development Pathways for College Students in Inner Mongolia

Through the global competence assessment of students in higher education institutions in Inner Mongolia, based on the assessment results, it is found that students' global competence mainly needs to be strengthened in the dimensions of knowledge and skills. Among them, in the skill dimension, the ones at a medium level are adaptive skills and participatory skills. Therefore, it is necessary to enhance students' global competence by taking global issues and topics as the carrier and optimizing the curriculum design and teaching content.

4.1 Interdisciplinary integration of global issues and topics

The disciplines involved in global issues mainly include sociology such as globalization, immigration and poverty, economics such as global trade and financial markets, political science such as the framework system of international organizations and international relations, and environmental science such as climate change and biodiversity. By integrating interdisciplinary knowledge of global issues with the humanistic and cultural aspects of professional courses, students can not only learn professional knowledge but also understand

the current global situation and enhance their knowledge of global issues.

According to the characteristics of the knowledge dimension of global competence, global issues, as an interdisciplinary integration, should focus on the understanding of knowledge concepts, connotations, features and phenomena. The research finds that the self-efficacy and understanding of global issues in Inner Mongolia's colleges and universities are both at a medium level. The biggest problem among them is that the understanding of global issues is not comprehensive and profound, and at the same time, there is a lack of logical thinking, which leads to the inability to explain the above-mentioned global issues well. Therefore, teachers should pay attention to the logic of knowledge presentation, focus on enhancing students' logical thinking, lay a solid foundation and provide crucial support for the improvement of their explanatory ability.

4.2 Integration of ideological and political education into the curriculum of global issues and topics

In China, the global competence of students should particularly emphasize the Chinese foundation. As an essential part of classroom teaching, ideological and political education in courses can be integrated into global issues and topics. By conducting critical thinking training on Chinese positions and viewpoints, Chinese culture and values, as well as Chinese wisdom and solutions in connection with global issues, the adaptability can be enhanced.

For instance, when integrating global environmental issues, teachers should logically present knowledge about the causes, phenomena, and consequences of global environmental problems from an interdisciplinary perspective. At the same time, expand on environmental issues with Chinese characteristics, as well as the efforts and achievements made by the state in addressing these issues. It not only ensures the Chinese foundation but also enhances critical thinking skills, thereby promoting the improvement of global competence and adaptability.

4.3 Practical integration of global issues and topics

In addition to the integration of disciplines and ideological and political education, the practical integration of global issues and topics is conducive to enhancing students' creative thinking and thereby improving their participatory ability in global competence. The integration of practice is mainly reflected in the richness of practice projects and the diversity of practice forms. Practice projects can include case studies of global issues, participation in international exchange programs, and simulation of activities to solve global problems, while practice forms can be reports, interviews, research, role-playing, etc.

Compared with the integration of ideological and political education into disciplines and courses, the practical integration of global issues places more emphasis on extracurricular activities. Practical activities on global issues often involve complex problems and challenges, which require students to use critical thinking to analyze and understand problems, while also having creative thinking to come up with novel solutions and creative ideas. Enhance the awareness of participation in global issues in the process of problem-solving and promote the improvement of participation capabilities in the process of problem-solving.

5 Conclusion

As an important node of the national “Belt and Road Initiative”, the cultivation of global competence among students in higher education institutions in Inner Mongolia not only concerns their personal career development and comprehensive quality improvement, but also serves as a key force in promoting regional and even national participation in global governance

and achieving high-quality development. This study explored the potential and limitations demonstrated by students in higher education institutions in Inner Mongolia in terms of global competence, and quantitatively evaluated the global competence of students through the QPSO-BP model. Research has found that although students perform well in their attitudes towards global competence, they need to improve in terms of knowledge and skills, with a focus on self-efficacy in global issues, understanding of global issues, adaptability and participation.

The training path proposed in this study emphasizes the integration of global issues and topics in curriculum design and teaching content. Integrate at the level of interdisciplinary knowledge, enhance the comprehensiveness and connotation of knowledge, and improve the ability to interpret through training logical understanding of knowledge. Integrate at the ideological and political level of the curriculum to enhance the adaptability of global competence through critical thinking about China and global issues. Integrate on a practical level and encourage students to enhance their creative thinking and thereby improve global competence through various forms of practical activities such as international exchanges and overseas internships.

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About the Author

Wenqiang Wang was born in Wulanhaote, Inner Mongolia Autonomous Region, P.R. China, in 1975. I obtained a doctoral degree from Nankai University in China. I am currently working at the Editorial Office of Journal of Chifeng University. My main research direction is the Cultural Development of Socialism with Chinese Characteristics.

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