

# *International Education and Innovative Talent Training Mode Based on Ecologically Sustainable Environment*

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**Abstract:** With the growth of the economy, the competition for talents has become the competition of international resources. Moreover, the core of competition is innovative talents, and the main factor of talent competition is the education model. It is well known that higher education is a key stage of talent growth, and its internationalization would become an inevitable trend. The basic theme of current education is to promote the internationalization of education and cultivate innovative talents, so as to realize ecological sustainability. However, the current traditional training model has many shortcomings, especially the talent training system and training objectives, which hinder the internationalization of education. In addition, in the training mode of innovative talents, to a certain extent, the development of the overall quality of talents is limited. Therefore, this paper has studied the importance of sustainable talent cultivation in an ecologically sustainable environment through the establishment of international education and innovative talent cultivation models. The results have shown that under the development of international education, the overall quality of innovative talent training has increased by 3.6% compared with traditional talent training, and the training effect has increased by 5.4%.

## 1. Introduction

In the era of scientific and technological innovation, international education has become the mainstream trend, and international academic exchanges and cooperation have been increased. The traditional mode of cultivating innovative talents is no longer suitable for the environment of ecological sustainable development. Therefore, this paper has promoted the cultivation of innovative talents through international education, in addition to exploring the development path of talents, cultivating international talents in various regions, so as to achieve sustainable development of the environment. International education is the mainstream trend of today's education and has an important impact on talent training. Yan B has introduced the mechanism of internationalization and the management mode of international students through online questionnaire collection. Then, the current situation of international students is analyzed. It has finally been obtained that while student

satisfaction is low, there has been some progress in transitioning and adapting to online courses [1]. Singh J surveyed international students who have made meaningful contributions to society after completing their studies [2]. International graduates hope to contribute to their own society and the development of third countries through research and training in educational institutions. Almalkawi M has identified the extent to which international education principles are incorporated in Jordanian social studies books from the perspective of social education teachers through a descriptive survey to raise awareness of international education principles among community members, schools and social studies teachers [3]. Pan G has established a transition structure development and project-based learning development analysis. The aim is to provide students with actionable methodological insights to design useful knowledge frameworks [4]. Zhang J H has put forward the "foreign language +" model for talent cultivation, which can better adapt to the new social needs and the sustainable development of foreign language majors, so as to effectively meet the needs of social development [5]. Yan X P has cultivated applied innovative talents through practical teaching. This type of teaching not only improves students' practical skills, but also plays an important role in improving students' innovative ability and professional adaptability [6]. Gang L I has believed that the cultivation of innovative talents would become the direction of educational reform and development. Through the innovation of talent training and the deepening of education reform, advanced education concepts should be established, and talent training models should be improved, as well as a curriculum system that is conducive to cultivating innovative ability should be formulated, so as to ensure the smooth progress of innovative talent training [7]. The above researches on international education are relatively rich, but they do not involve sustainable development.

Sustainable development under the ecological environment is the fundamental way to solve the environmental crisis. Cai W has used the energy theory to calculate the energy loss of different treatment safety velocimetry systems to quantitatively measure the ecological environment loss. Sustainability-based eco-compensation standards for safe tachometer systems have been established to compensate for losses. In addition to this, government fines for disused safety speed measurement systems have been described [8]. Jha A K has analyzed the balance between social and environmental policies in the epidemic era. The first is to formulate the overall policy framework for achieving the sustainable development goals, and the last is to formulate the strategic balance and the impact of technological innovation on conflict [9]. Faysal G M has proposed the lack of sustainable ecological flame retardant materials. Through the development of composites with spinach leaf juice, banana pseudostem liquid and eggshell powder with cotton fibers, it can finally be obtained that the composites are more effective in terms of flame retardancy [10]. Yang R has analyzed the complex of traditional ecosystems, the mechanism of regulating ecological balance and the sustainable development of ecosystems. The results have shown that the ecological balance adjustment mechanism should be used fairly in the construction of traditional ecosystems and ecosystems [11]. Seifi F has analyzed the relationship between ecotourism potential and ecological, economic, social and cultural development, and investigated the role of ecotourism in the ecological development of Gaoqiao nature reserve and the factors affecting the sustainable development of regional tourism [12]. Liu f has analyzed the problems related to the urban environment and put forward the environmental and economic development policies with clear objectives, feasibility and balance [13]. Miao Y has selected the key factors and indicators that affect the environmental sustainability of chemical enterprises, and determined the weight of the comprehensive index as well as evaluated the environmental sustainability of chemical enterprises using the fuzzy evaluation method [14]. All of the above studies have described the importance of sustainable development of the ecological environment, but they have not been applied to personnel training.

The era of knowledge economy is the era of innovative talents. Without innovative talents, there

would be no innovation and application of knowledge. In order to speed up the cultivation of innovative talents, by building an international education model for the cultivation of innovative talents, an atmosphere and conditions are created for the growth of innovative talents. The talent development evaluation, incentive and competition mechanisms have been established to promote the internationalization of innovative talents and ensure the sustainable development of the environment.

## 2. Development Process of Internationalization of Higher Education

### (1) The development stage of internationalization of higher education

The internationalization of higher education includes three main stages of development, as shown in Figure 1. The internationalization of primary education is the combination of education and scientific research based on scientific theory, transforming educational practice into practice guided by scientific theory, and improving the quality of education. The internationalization of modern higher education is the product of the Renaissance movement, which has taken comparative education as its main purpose and compared solutions to various problems. The internationalization of modern education has increased the demand for talents, and all countries are striving to develop international exchanges and cooperation to cultivate high-quality talents.

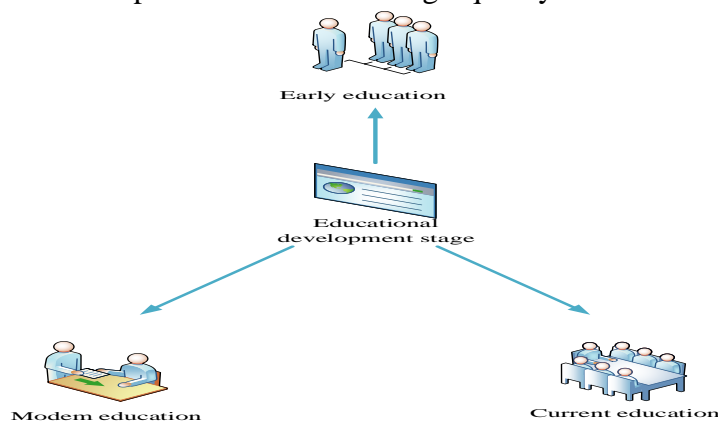


Figure 1: Development stage of internationalization of Higher Education

### (2) The development characteristics of internationalization of higher education

The internationalization of early higher education has three main characteristics. First, the transnational mobility of teachers and students is a completely spontaneous individual behavior, based on individual preferences for knowledge and scholarship, focusing on the development and dissemination of knowledge. Second, the content is relatively limited and the scope of educational communication is limited. The internationalization of modern higher education has two characteristics: First, the source of students is more diverse. Second, the reform of the educational system makes us attach importance to and actively promote educational research. Teaching practice has become a practice based on scientific theory, which has significantly improved the quality of teaching.

### (3) Basic elements of internationalization of higher education

The internationalization of higher education consists of five elements, as shown in Figure 2. Only when a country has established an open international concept, the process of internationalization of higher education in this country can progress. The purpose of education is to formulate laws and policies for the international development of higher education and to promote cooperation and exchanges in the field of higher education. According to this plan, many universities tend to cooperate with foreign universities and make full use of their academic and

professional advantages to highlight their own professional characteristics and enrich the school's professional structure. The diversity of school disciplines and majors provides opportunities for their interpenetration and the development of interdisciplinary programs. International exchanges are conducted by students, teachers and specialists with different knowledge, skills and inclinations, who interact with each other for educational purposes. The international exchange of educational resources includes personnel, information and materials. The rapid development of modern transportation and communication technology has greatly shortened the distance in time and space, and greatly promoted the exchanges and cooperation between students and researchers around the world.

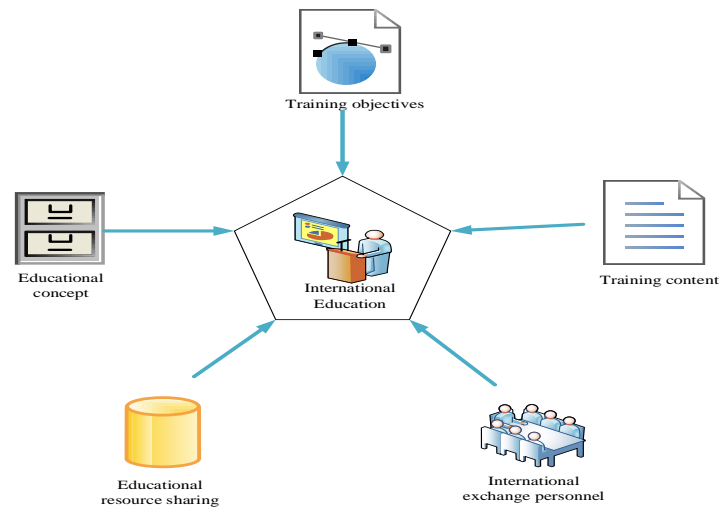


Figure 2: Elements of internationalization of Higher Education

(4) Motivation for the internationalization of higher education

The internationalization of higher education is produced and developed under the profound social, economic and political background. Therefore, the internationalization of higher education is an objective and inevitable trend to some extent. It is true that the development of things after dialectical materialism always depends on the interaction of internal and external factors, and the internationalization of higher education is no exception, as shown in Figure 3.

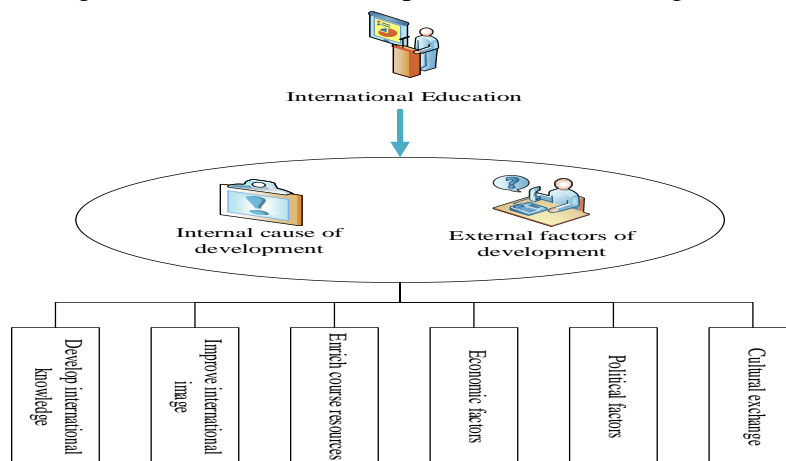


Figure 3: Motivation of internationalization development of Higher Education

1) Internal reasons for the internationalization of higher education

There are seven main internal reasons for the internationalization of higher education. The international knowledge of teachers and students is cultivated to promote mutual understanding

between different cultures; the level of research and knowledge is improved; the international image and reputation are improved; the academic level is improved; the educational resources of teachers and students are enriched; innovation and curriculum development are accelerated and revenue streams are diversified, thereby enriching and updating the body of knowledge.

#### 2) External reasons for the internationalization of higher education

The external reasons mainly include three aspects. The main factor of the political factor is the interaction and understanding between the state and the citizens. This is a prerequisite for peace and development, and education is the best way to achieve peace and development. The special status of higher education is the link between world peace. Economic factors promote economic globalization and accelerate industrial restructuring. Higher education should aim at cultivating talents. Cultural exchange is an important basis for mutual understanding between countries. Cultural dissemination requires education, especially the continuation, innovation and development of higher education. Higher education is the link that promotes national cultural exchanges and the achievements of advanced civilizations in the world.

### 3. Innovative Talent Training Model under International Education

#### (1) Current situation of innovative talent training under sustainable development

The talent training mode refers to the mode in which the talent development goal system, the talent training tool system, the talent training constraint system, and the talent development incentive system are interconnected, restricted and interacted with each other. The talent training mode is very important for cultivating a large number of innovative talents. For many years, Chinese higher education has been focusing on cultivating innovative talents, but the actual effect is not ideal. This is mainly because the existing talent training model in Chinese universities is not conducive to the cultivation of innovative talents. The specific problems are shown in Figure 4.

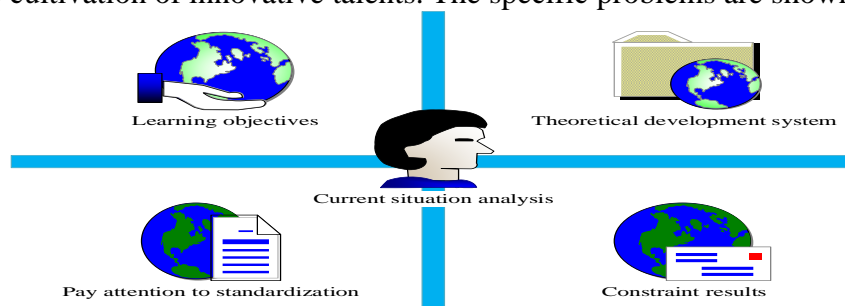


Figure 4: Current situation analysis of innovative talent training under Sustainable Development

#### 1) Learning target system based on machine knowledge dissemination

The evaluation standard of intellectual talents is mainly education and teaching standards. It is generally believed that the higher the level of education and the more knowledge, the easier it is to find a job and the better the chance of realizing the value of life. In order to cultivate knowledge-based talents, universities have successively made knowledge the focus of their courses. In the process of knowledge dissemination, students are in a permanent passive state, and their subjective spirit and initiative are weakened. On the other hand, knowledge-based learning significantly improves students' decision-making ability, but the thinking and common sense required for innovation are inhibited, which has a very negative impact on the cultivation of innovative talents.

#### 2) Theoretical development and logic education system

Higher education focuses on theoretical knowledge in the classroom. Teachers pay attention to theoretical reserves and have rigorous logic and thinking skills. However, the teaching content is

mainly through lessons, textbook notes and exam notes. On the contrary, due to the limitations of equipment investment and teacher energy investment, the preparation for practical teaching is insufficient. By reducing opportunities for hands-on learning and innovation, there is less room to motivate students.

3) Emphasis on commonality and less on individuality and coexistence of emphasis on coercion and less flexibility

The mechanism that restricts the development of results-based human resources is important, but the education management system is too cumbersome and rigorous, and not flexible enough, which is not conducive to the cultivation of innovative talents. Colleges and universities generally lack originality and characteristics, which is not conducive to the implementation of the initiative of colleges and universities. At the same time, student management is too rigid. It regulates not only the admission and employment of students, but also the entire learning process of students; in this management environment, students almost lose their autonomy and autonomy, as well as the freedom to think and learn.

4) Pay attention to standardization, conformity and non-economicalization

The demand for talents in traditional society is not economical. Special emphasis is placed on bridging the gaps between culture and science, skills, politics and economics, innovation and substitution, education and business, and education and productive work. Traditional talent training and innovative talent training mechanisms have different goals and effects. The training of innovative talents must first face the needs of the innovative economy and form a talent training model that meets the needs of the social economy. The traditional talent training mechanism is people who can promote economic development. This normative and non-economic structure has obvious limitations and is not conducive to the cultivation of a large number of creative talents.

(2) Innovative talent training model from the perspective of sustainable development

Under the international education, the mode of training innovative talents mainly consists of five aspects, as shown in Figure 5. The first is to form an international education concept and deepen the international level of talent education, thereby improving students' international awareness, international communication skills and international competitiveness; the second is to improve international education and training procedures. Talent training includes factors such as teachers, students, teaching materials, and teaching methods. The internationalization of teachers, students, textbooks and teaching methods is a necessary prerequisite for the development of international education. The successful experience of education reform in developed countries is learned. The third is the standardization of the international education system. The teaching management system has been innovated, and an international management system suitable for foreign universities has been established. In addition, the incentive mechanism for teachers to participate in international exchanges has been improved, and corresponding guarantee and evaluation mechanisms have been established. The fourth is to establish a new international quality assessment system. International education is open. International educational performance assessment is not limited to traditional educational evaluation models. In order to achieve relatively fair results, various factors of international education need to be comprehensively assessed from both qualitative and quantitative aspects. The fifth is to attach importance to special education and the cultivation of scientific and technological innovation talents. To explore innovative talent training models in different directions with practical actions, the innovative talent development plan should regularly organize learning and discussions among leaders at all levels to narrow the gap and improve the clarity of learning tasks and educational innovation.

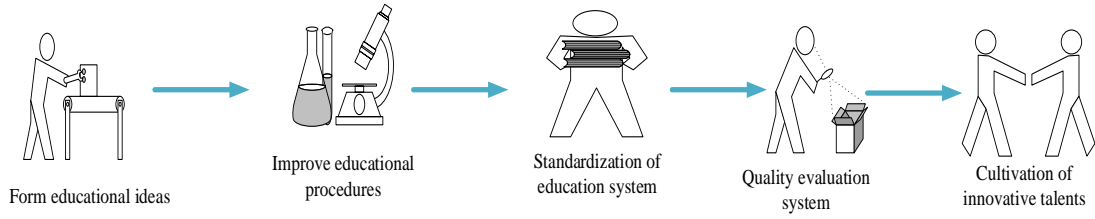


Figure 5: Innovative talent training mode from the perspective of sustainable development

#### 4. Application Analysis of Analytic Hierarchy Process and Grey Relational Analysis in the Training Mode of Innovative Talents

In order to further understand the international education and the cultivation of innovative talents in an ecologically sustainable environment, this paper has analyzed the mode of talent cultivation through AHP and grey relational analysis. Analytic Hierarchy Process (AHP) is to perform correlation analysis on multiple levels in the problem, and determine the influence relationship between each level, so as to analyze the influencing factors of the final solution to the problem. Single-criteria sorting is the process of calculating the relative proportions of each element and the consistency check according to the matrix.

It is assumed that under a certain criterion, the weight of each element is:

$$A = (A_1, A_2, A_3, \dots, A_n) \quad (1)$$

$A$  can be obtained by solving.

$$xA = \eta_{\max} A \quad (2)$$

In Formula (2),  $\eta_{\max}$  is the maximum value of the matrix.

By computing the product of the elements of each row of the matrix, it can be obtained:

$$U_x = \prod_{y=1}^n m_{xy} (x, y = 1, 2, 3, \dots, n) \quad (3)$$

To calculate the  $n$ th root of  $A_x$ , it can be obtained:

$$\bar{A}_x = \sqrt[n]{U_x} \quad (4)$$

Normalize the vector.

$$A_x = \frac{\bar{A}_x}{\sum_{y=1}^n \bar{A}_y} (x, y = 1, 2, 3, \dots, n) \quad (5)$$

By calculating the largest eigenvalue  $\eta_{\max}$  of the judgment matrix, it can be obtained:

$$\eta_{\max} = \frac{1}{n} \sum_{x=1}^n (XA) / A_x \quad (6)$$

By checking the consistency of the judgment matrix, the consistency index  $R_1$  and relative

consistency index  $R_2$  can be obtained.

$$R_1 = \frac{\eta_{\max} - n}{n - 1} \quad (7)$$

$$R_2 = \frac{R_1}{\bar{X}} \quad (8)$$

Among them,  $\bar{X}$  is the average consistency index, and then a comprehensive weight index is carried out for each factor of each layer. Its combined weight is:

$$A = (A_1 \cdot A_2 \cdots A_{n-1} \cdot A_n) \quad (9)$$

By setting the consistency index of the Nth layer as  $R_1^m, R_2^m, \dots, R_n^m$ , the randomness index is  $S_1^m, S_2^m, \dots, S_n^m$ .

$$R^m = [R_1^m, \dots, R_n^m] A^{n-1} \quad (10)$$

$$S^m = [S_1^m, \dots, S_n^m] A^{n-1} \quad (11)$$

$$R_2^n = R^{n-1} + \frac{R^m}{S^m} \quad (12)$$

When the combinatorial consistency of the solution layer is less than 1, the entire problem layer passes the consistency check. According to the ranking results, the scheme is empowered, and decisions and choices are made.

By establishing the original matrix through grey relational analysis, it can be obtained:

$$Y = \begin{bmatrix} Y_{11} & Y_{12} & Q & Y_{1m} \\ Y_{21} & Y_{22} & Q & Y_{2m} \\ P & P & P & P \\ Y_{n1} & Y_{n2} & Q & Y_{nm} \end{bmatrix} \quad (13)$$

Referring to the sequence of evaluation criteria, it can be obtained:

$$Y_0 = (y_{01}, y_{02}, y_{03}, Q, y_{0k}) \quad (14)$$

By calculating the value of each weight, the difference sequence can be obtained as:

$$\lambda_{0n} = (\lambda_{0n}(1), \lambda_{0n}(2), Q, \lambda_{0n}(m)) \quad (15)$$

The maximum and minimum differences are:

$$\max_x \max_y |Y_0(y) - Y_0(x)| = Y_{\max} \quad (16)$$

$$\min_x \min_y |Y_0(y) - Y_0(x)| = Y_{\min} \quad (17)$$

According to the maximum difference and the minimum difference, the correlation coefficient between international education and personnel training is calculated.



$$\delta(y) = \frac{\min_x \min_y |Y_0(y) - Y_x(y)| + \delta \max_x \max_y |Y_0(y) - Y_x(y)|}{|Y_0(y) - Y_x(y)|} \quad (18)$$

By simplification, it can be obtained:

$$\delta(y) = \frac{Y_{\min} + \delta Y_{\max}}{Y_{0x}(y) + \delta Y_{\max}} \quad (19)$$

Finally, the correlation between international education and talent training is as follows:

$$\varepsilon_0 = \sum_{y=1}^n A_r \delta(y) \quad (20)$$

## 5. Experiment on Nationalized Education for Talent Cultivation under Ecologically Sustainable Development

In order to explore the effect of nationalized education on the cultivation of innovative talents, the evaluation of the training effect of this model is carried out in an ecologically sustainable environment. In this paper, 100 students in two different models of an international educational institution have been investigated by random sampling, and statistical analysis is carried out according to their satisfaction with their talent training model. The specific statistics are shown in Table 1.

Table 1: Satisfaction of talent training mode

	Satisfied	Commonly	Dissatisfied
Class A	51	21	28
Class B	60	32	8
Total	111	53	36

Among them, the statistical summary of students' satisfaction can be obtained in Figure 6.

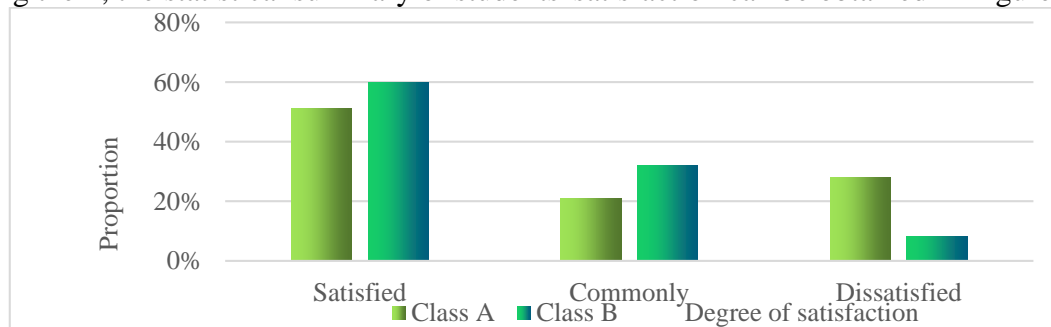


Figure 6: Satisfaction of talent training mode

As can be seen from the figure, the training mode of Class B is better than that of Class A. Among them, there are only 51 students who are satisfied with the training mode of Class A, which is equivalent to half of the students who are not very satisfied with the training mode. That's because they feel that the model would limit their freedom, being watched all the time, and having no privacy of their own. In contrast, only 8 people are dissatisfied with the training model of Class B, accounting for 8% of the total. Most of them are satisfied people, who feel that the model is very beneficial to develop their innovative thinking.

(1) Analysis of the comprehensive quality of innovative talents training under international

education

In order to understand the effect of international education on the cultivation of innovative talents, this paper has conducted a one-week survey of talents in this training mode. It mainly investigates the changes in their comprehensive quality, so as to better improve and innovate the talent training model. The specific data analysis is shown in Figure 7.

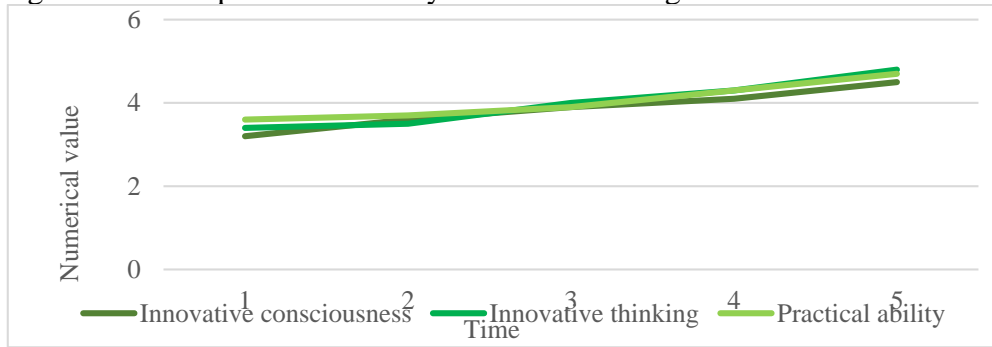


Figure 7: Comprehensive quality analysis of innovative talent training under International Education

It can be seen from the figure that under the international education model, the innovative consciousness, innovative thinking and practical ability of talents are constantly rising over time, which shows that the comprehensive quality and ability of talents under this model are constantly improving. In addition, the five-day innovation awareness in this mode increased by 1.3, and the innovative thinking increased by 1.4. Practical ability has been increased by 1.1. Of the three, innovative thinking has increased the most. Therefore, this model is very conducive to cultivating innovative talents, and it can also achieve ecological sustainability.

(2) Evaluation and analysis of talent training mode under AHP and grey relational analysis

In order to further verify the relationship between international education and talent training mode, this paper has carried out a systematic evaluation and analysis of the two by introducing AHP and grey relational analysis, as shown in Figure 8.

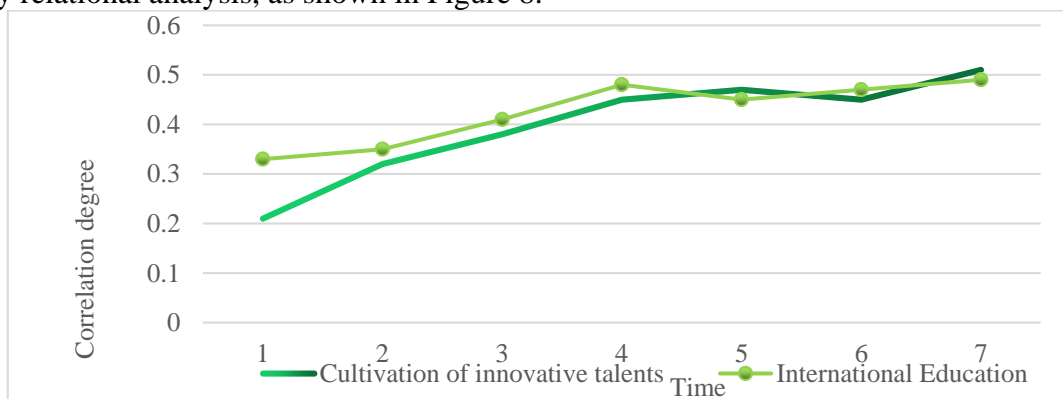


Figure 8: Evaluation and analysis of talent training mode under analytic hierarchy process and grey correlation analysis

As can be seen from Figure 8, the degree of correlation between international education and the cultivation of innovative talents is basically the same. The average correlation degree of international education is 0.426, and the average correlation degree of innovative talent training mode is 0.399. The correlation between the two is almost the same. It is scientific and effective to obtain this training model through AHP and grey relational analysis, and international education can allow talents to contact the knowledge and culture of different regions, thereby promoting the

overall development of talents.

(3) Comparative analysis of international education and talent training in a sustainable environment

In order to further understand the effect of international education and talent training in this context, this paper also analyzes the comprehensive quality of talents and the training effect of innovative talents under international education, as shown in Figure 9.

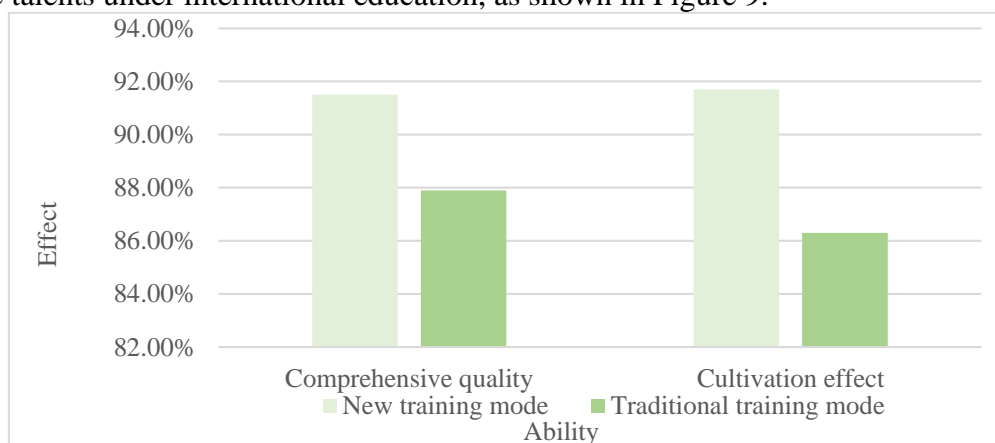


Figure 9: Analysis of the comprehensive quality of talents and the training effect of innovative talents under International Education

It can be seen from the figure that the overall quality and training effect of the talent training model under international education are better than those of the traditional talent training model, and the overall quality has increased by 3.6% and the training effect has increased by 5.4%. This also shows that international education can help improve the overall quality of talents, and can also improve the training effect. The main reason is that the traditional training model is too rigid and does not pay attention to the comprehensive ability training of talents. The new training model focuses on cultural exchanges and the innovative and practical ability of talents, so the effect of talent training under ecological sustainability is better than the traditional talent training model.

## 6. Conclusion

The internationalization of higher education has brought a profound impact on China's social needs and the talent training environment in colleges and universities, and it has also brought great challenges and opportunities to the development of China's higher education. The traditional training model is no longer suitable for the current comprehensive talent training, and its training model needs to be reformed and combined with international education. In addition, it should also keep up with the development of the times. In the environment of sustainable development, the education model is developed, and the world's advanced talent training model is absorbed. In addition, sustainable innovative talent training is realized to promote international education.

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