

NATIONAL EDUCATION LEVEL EVALUATION

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Abstract: as we all know, the strength of a country's national strength and the progress of the material civilization and spiritual civilization of the entire society depend to a large extent on the health and sustainable development of the higher education system. How to evaluate the health of the higher education system? How to predict the sustainability of higher education in the future? What is the impact of the policies on higher education? We understand that these issues have important theoretical significance and practical value for promoting the sustainable and healthy development of higher education. **Keywords:** National higher education; Time series analysis; GA-BP neural network evaluation mode.

Select 12 higher education measurement indicators through query data, pass the *KMO* test and successfully divide the indicators into three categories (basic ability of higher education, current level, and future prospects), and apply the principal component analysis method to the United States, The data of South Africa, Japan, Germany, India and other six countries in recent years are analyzed, the data is reduced and normalized, and the evaluation model of the health status of higher education in various countries is constructed to obtain the PCA score, and the BP neural network is used to test the model's performance rationality. Based on PCA scores, the model is used to evaluate the health status of higher education in the country to be tested with the help of genetic methods, and then the United States has the highest health status in higher education at this stage, with a star rating of 5, Germany 3, and Japan 3. Australia is level 2, India is level 1, South Africa is level 1.

Through the analysis of the characteristics of the data, the country with larger development space is selected-Japan. Immediately after changing the index impact of the number of students, using the gray forecast forecasting model, it is increased by an annual increase of 10%. After 5 years, the future of Japanese higher education will increase from 0.8 to 1.55, and then it will be included in the evaluation. Model, around 2043, the health and sustainability of Japanese higher education can reach level 5. Therefore, we believe that Japan should increase the number of students, implement an international talent strategy, and continue to increase the country's active intervention in higher education. To promote the development of national higher education. At the same time, with the aid of the radar chart, the comparison of the PCA scores of Japanese higher education before and after the implementation of the policy is clearly shown, which also shows the validity and applicability of the model.

Finally, we read the literature, combined model data and the ways and methods of education development in various countries to summarize the difficulty of improving education under the current global situation, and give suggestions and relevant policies to promote the development of higher education.

$$\begin{aligned}\text{Score} - \text{Base} &= 0.092 \times Z_1 + 0.438 \times Z_2 + 0.374 \times Z_3 - 0.065 \times Z_4 - 0.187 \times Z_5 \\ \text{Score} - \text{Actuality} &= 0.469 \times Z_6 - 0.322 \times Z_7 + 0.434 \times Z_8 + 0.017 \times Z_9 \\ \text{Score} - \text{Future} &= 0.092 \times Z_{10} + 0.438 \times Z_{11} + 0.374 \times Z_{12}\end{aligned}$$

Among them, Z_i ($i=1,2,\dots,m$) is the score of each component, and is the contribution rate of each component. We can get the model's evaluation grade of the health status of higher education in all countries based on the collected data, and use the BP neural network to test the rationality of the model. And then get the evaluation results of higher education health status (up to 5 levels).