Hindawi
Scientific Programming
Volume 2022, Article ID 5031639, 9 pages
https://doi.org/10.1155/2022/5031639

Research Article

Dialectical Analysis of Comparative Pedagogy Based on Multiple Intelligences Evaluation

Ningning Liu,[1] **Ruige Jiang**,[2] **and Xiaoxia Tai**[1]

[1]*School of Primary Education, Xingtai University, Xingtai, Hebei 054000, China*
[2]*Department of Educational Sciences, XingTai University, Xingtai, Hebei 054000, China*

Correspondence should be addressed to Ruige Jiang; 201920479@xttc.edu.cn

Received 18 October 2021; Revised 11 November 2021; Accepted 25 November 2021; Published 20 January 2022

Academic Editor: Le Sun

As a common and mature algorithm, the neural network algorithm has been widely used in many industries throughout the country. The traditional dialectical analysis method for multiple intelligences evaluation in comparative education cannot meet the dialectical needs with different characteristics, the information big data model of multiple intelligences evaluation based on neural network algorithm has been gradually applied to several evaluation systems of comparative education. This paper studies the application of neural network algorithms in the dialectical analysis of comparative education in China and puts forward multiple intelligences evaluation model based on neural network algorithm, which can realize the intelligent evaluation of comparative education according to the characteristics of teaching behavior. At the same time, the idea of random big data acquisition is combined with digital feature analysis based on neural network algorithm and particle swarm optimization algorithm. Finally, the experimental results show that the dialectical analysis model of comparative education based on multiple intelligences evaluation of neural network algorithm can efficiently process the education data with tracking intelligence, which achieves a new breakthrough in the multiple intelligences evaluation of comparative education in China and saves a lot of time for the dialectical analysis process.

1. Introduction

It is a new branch in the field of educational science. There are different opinions on what is comparative education. Most comparative education scholars believe that we should study the major international education problems in the development of world education from the reality of various countries, rather than conceive a formal theoretical system of little practical significance from the abstract definition. From the viewpoint and method of Marxism, the comparative pedagogy uses the viewpoint and method of dialectical materialism and historical materialism to make comprehensive use of relevant new science and technology to study the current education in different countries, nationalities, and regions in the world. On the basis of discussing their respective economic, political, philosophical, and national traditional characteristics, this paper studies some common characteristics, development laws, and general trends of education and makes a scientific prediction, so as to learn from each other's strong points and make up for their weaknesses according to their national characteristics and other specific conditions, give full play to the best role of education, and serve to improve the quality of education and the people's cultural and scientific level. The basic characteristics of comparative pedagogy are international, which require comparative education. At least comparative research should be carried out on the education of more than two countries. It is cross-national, international, and comparable. In international education, only by comparison can we identify and only by identification can we explore scientific conclusions in line with the objective law as a reference for our country. Comprehensive or interdisciplinary, the task of comparative pedagogy research is to concentrate the achievements of several social disciplines on the research of education in various countries. It spans the scope of several disciplines.

The research on multiple intelligences evaluation in the dialectic analysis of comparative pedagogy in China has gradually become a hot topic in the field of comparative education. With the development of the mobile internet industry in China, the dialectic analysis methods of comparative pedagogy are increasing, which makes the intelligent evaluation scheme also put forward new challenges in terms of rapidity and universality [1]. Therefore, how to solve the dialectical analysis model of comparative education of multiple intelligences assessment has become an important challenge in comparative education industry research in China. As of May 2021, many scholars have studied different aspects of the dialectical analysis of comparative pedagogy and have made many achievements. Scholars found that in the process of dialectical analysis of comparative education, most scholars still adopt the traditional questionnaire analysis method but ignore the authenticity of the intelligent algorithm for data acquisition and processing. Therefore, an intelligent data evaluation model based on the genetic algorithm is proposed [2].

2. Related Work

The scholars have proposed that the development of the three-dimensional comparative pedagogy dialectical analysis method should be emphasized [3]. Through the intelligent multielement evaluation system based on micro-nano flexible sensor, the evaluation and construction based on intelligent algorithm and evaluation method should be strengthened, the multi-design and attention of intelligent evaluation scheme should be improved, and the evaluation quality of comparative education should also be paid attention [4]. According to the multi-factor relationship theory in comparative education, researchers propose a new intelligent evaluation solution and analyze the relationship between the traditional dialectic analysis field and the integrated solution of intelligent evaluation [5]. The scholars improved the evaluation method by combining the principal component analysis and other relevant theories, constructing the intelligent evaluation system based on the traditional particle swarm optimization, and explaining the practical significance of the dialectical evaluation system with the theory of modern analytical science [6]. Scholars found that most of the existing researches have not involved the dialectical analysis mode of comparative pedagogy based on multiple intelligences evaluation and also did not carry out modular processing of comparative pedagogy. Research hotspot has not built relevant models for this aspect [7]. The scholars analyze from the convenience of comparative education. Because of the strong specific problems, they do not have the rapidity, unity, and universality of the dialectic analysis scheme in comparative education; therefore, it is difficult to achieve the modular processing of dialectical intelligence based on the characteristics of comparative education data and comparative education [8]. Scholars found that the mainstream dialectic analysis system of comparative education has not developed to a very mature stage of technology, and more is based on specific problems or specific views of solution design [9]. Researchers found that there are still many shortcomings in the error rate of the comparative education model and the stability of relevant algorithms in the market. Therefore, the comparative education model based on a neural network algorithm is adopted. The results show that the model is in line with the development trend of mobile internet [10]. In view of the above research status, this study establishes a comparative pedagogical dialectic analysis model of multi-agent evaluation from the aspect of neural network algorithm.

This research is divided into three parts. The first part introduces the basic idea and the application of neural network algorithm and analyzes the application of neural network algorithm in the establishment of a dialectical analysis model of comparative education based on multi-agent evaluation [11]. The second part realizes the automatic analysis of the dialectic analysis and quantitative evaluation of comparative pedagogy and the intelligent processing of the data of the automatic two-way comparative pedagogy dialectic analysis. Then, the multiple intelligences evaluation is realized through the data processing in the process of the dialectical analysis of the relevant comparative education [12]. The third part studies the feasibility and practical application effect of the dialectical analysis model of comparative pedagogy based on multiple agent intelligences evaluation through design experiments.

3. Establishment of Multiple Intelligences Evaluation Model Based on Neural Network Algorithm

In order to study the factors that affect the establishment of a multi-agent evaluation model, this paper proposes a multi-agent evaluation model based on a neural network algorithm. In the process of scientific research, it is necessary to compare the complex factors and interference factors in the dialectical analysis of pedagogy. The neural network algorithm (one of the local optimal algorithms) refers to the best choice to solve the problem. The typical neural network structure is a forward network with three or more layers without feedback and no interconnection structure in the layer [13]. That is, it does not consider the overall optimal, what it does is the local optimal solution to some extent [14]. In the process of solving, the neural network algorithm cannot get the overall optimal solution for all problems but depends on the selection of neurons and neural nodes. The selected optimization strategy must have no effect; that is, the process before a state will not affect the later state, only related to the current state [15]. The common types and frameworks of the system in cloud computing and data analysis are shown in Figure 1.

At present, the mainstream local intelligence analysis algorithm is based on the basic principle of local optimization. After the dialectical analysis of quantitative evaluation and comparative education, it selects the two-way neural regulation and group processing of the local optimal approach to form a locally optimal solution method with the "best two-way interaction characteristics" [16]. Based on the above analysis of the neural network algorithm, in the study

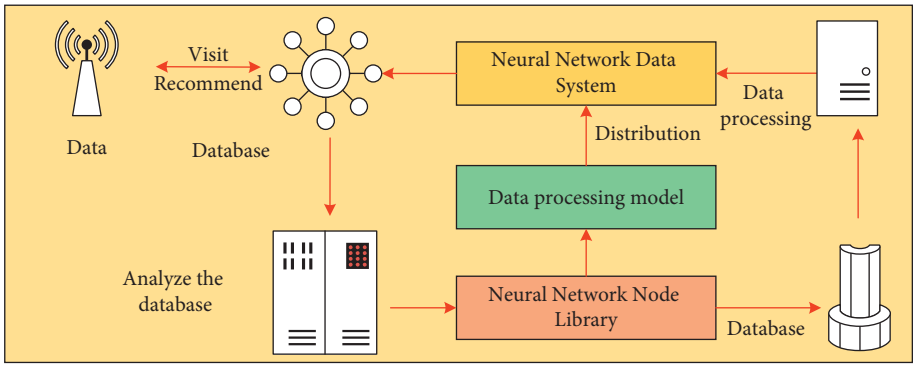

Figure 1: Common types and frameworks of the algorithm.

of the coupling relationship between the comparative education and other factors, this model uses the neural network algorithm based on the optimal ganglion point structure and selects three characteristic parameters related to the dialectical analysis and influence the index of comparative education. In this paper, a model of dialectic analysis coupling relationship and analytic recognition of comparative education based on neural network algorithm is proposed [17]. Through the research on the educational value, educational level, integrity of teaching mode, and teaching effect of comparative pedagogy, this paper clearly defines the whole coupling relationship and the hierarchical framework and index relationship of the analytical system. This paper evaluates the scientificity and objectivity of the model from multiple perspectives, explores the establishment of an intelligent multiple evaluation model from multiple perspectives, and then classifies and analyzes the characteristics of the analysis results after coupling analysis combined with local neural network algorithm, to realize intelligent evaluation.

4. Dialectical Analysis Model of Comparative Pedagogy Based on Multiple Intelligences Assessment

4.1. The Construction Process of Dialectical Analysis Model of Comparative Education Based on Neural Network Algorithm. In the process of studying the dialectical analysis model of comparative pedagogy, the neural network algorithm will be modified with the error reverse propagation, thus improving the accuracy of target input pattern recognition. In this mode, the algorithm can be used to improve the accuracy of target input pattern recognition, and the comparative pedagogy model of multi-agent evaluation based on neural network algorithm is to self-study and realize the construction of multi-agent evaluation on the basis of constantly revised methods. Therefore, the neural network learning method used in this neural network algorithm is called the error reverse propagation algorithm, which is a learning method of error function falling according to the gradient. The self-learning process based on neural network nodes is shown in Figure 2.

The process characteristics of the construction and implementation of the multi-agent evaluation are based on

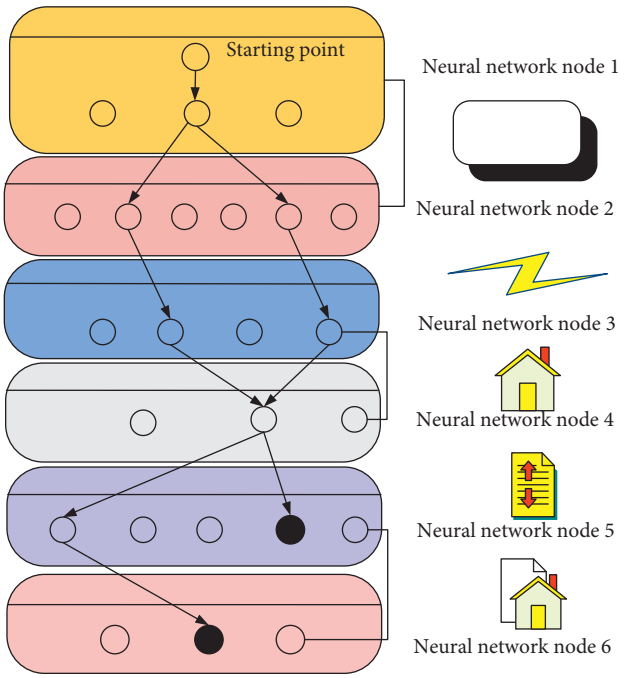

Figure 2: Self-learning process based on neural network nodes.

the random selection of the integrated comparative pedagogy in one aspect. The neural network model we know is not to distinguish the whole software to be evaluated but to identify and judge the local evaluation module of the overall comparative education needs, and the optimal comparative pedagogy module is obtained, which meets the minimum value of multiple intelligences evaluation of demand. Therefore, for the comparative pedagogy model of multi-agent evaluation, first, the specific numerical range of the general requirements of comparative education required by the neural network algorithm will be obtained by using the big data information and intelligent processing of the historical-comparative pedagogy process. Then, the neural network algorithm is used to search for the optimal solution, then, the multi-agent evaluation model with universal data analysis is selected [18].

The model of comparative pedagogy dialectic analysis based on multi-agent evaluation based on neural network algorithm mentioned in this paper can combine the

traditional comparative pedagogy dialectic analysis with the existing artificial intelligence comparative pedagogy dialectic analysis link and carry out weight analysis and treatment to different degrees. In this way, the relevant bugs in the dialectical analysis process will be greatly reduced. This also shows that the higher the practical adaptability of the dialectical analysis mode of this comparative pedagogy is, that is, the process of data analysis can be evaluated quickly and modularized through the multi-agent evaluation process, then the evaluation degree will become better with the multiple self-learning of neural network algorithm. In the process of dialectical analysis of comparative pedagogy, the discriminant process of multiple intelligences assessment can be used (the principle of discrimination is shown in Figure 3).

Other neural network algorithms continue to gradually enlarge the search range that meets the minimum demand value of modular processing in the target group of the collective process to be evaluated, so as to achieve accurate search in a certain type of data processing, and then realize the batch processing and modular rapid evaluation of this type of data analysis process [19]. In addition, data multiple discrimination is to randomly select two data from all the data to be evaluated and then judge the information characteristics of the evaluation demand degree [20]. The process of "forward calculation output-backpropagation error" is repeated many times according to a certain probability until the error is reduced to an acceptable range, and the learning, training, and judgment process of the multiple intelligences evaluation models of neural network ends with it; finally, we can achieve the accurate dialectical analysis and quantitative processing of comparative education.

The comparative education demand model of multiple intelligences assessment based on neural network algorithm uses neural network algorithm for self-learning. The threshold value θ_j of each processing unit is set to simulate the action potential of biological neurons, and the first derivative $f'(x)$ of its related function is as follows:

$$\begin{aligned} f'(x) &= \frac{-1}{\left(1+e^{-x}\right)^2} e^{-x}(-1) = \frac{-1}{1+e^{-x}} \frac{e^{-x}}{1+e^{-x}} \\ &= f(x)[1-f(x)] \end{aligned} \tag{1}$$

where x is the data to be measured and $f(x)$ is the correlation function.

The first batch of target data to be evaluated is normalized, and the normalization equation $y_{n+k}(x)$ is as follows:

$$y_{n+k}(x) = \sum_{i=0}^{k-1} \alpha_i y_{n+i}(x) + h \sum_{i=0}^{k} \beta_i f_{n+i}(x), \tag{2}$$

where α_i is the value before processing, α_i is the value after processing, and $y_{n+k}(x)$ is the sample function. The input layer data is imported into the first neural node of the hidden layer for operation as follows:

$$\begin{cases} y' = \lambda y, \\ y(x) = y_0 \end{cases}, \tag{3}$$

where λ is a complex number, which is also called the verification equation of the model, and its true solution is as follows：

$$y(x) = y_0 e^{\lambda(x-a)} \tag{4}$$

The random probability model and neural network algorithm are used to solve the problem; for different practical problems, the results can be expressed as follows:

$$(1 - h\lambda\beta_k) y_{n+k} = \sum_{i=0}^{k-1} (\alpha_i + h\lambda\beta_i) y_{n+i}, \tag{5}$$

where α_i is the value before processing, β_k is the value after processing, and y_{n+i} is the extremum function. The input layer data λ is imported into the first neural node of the hidden layer h for operation:

$$y_n = r^n. \tag{6}$$

There are

$$(1 - h\lambda\beta_k) r^{n+k} = \sum_{i=0}^{k-1} (\alpha_i + h\lambda\beta_i) r^{n+i}. \tag{7}$$

Its equivalent form is

$$(1 - h\lambda\beta_k) r^k = \sum_{i=0}^{k-1} (\alpha_i + h\lambda\beta_i) r^i. \tag{8}$$

We call the above formula the characteristic confidence solving formula based on probabilistic random variables and their numerical characteristics. Remember

$$\pi(r; h\lambda) = (1 - h\lambda\beta_k) r^k - \sum_{i=0}^{k-1} (\alpha_i + h\lambda\beta_i) r^i. \tag{9}$$

The above formula is regarded as the limit characteristic error degree in solving the probability distribution model.

Definition 1. Note $\overline{h} = h\lambda$, for a given $\overline{h}$, the root of a stable polynomial needs to satisfy

$$|r_s| < 1, \quad s = 1, 2, \ldots k. \tag{10}$$

In the process of dialectical analysis of related data in different arrays, the different differentiation analysis process is shown in Figure 4.

4.2. The Multi Intelligences Evaluation Process of Comparative Pedagogy Data Based on Neural Network Algorithm. The process of error backpropagation is the process of error transfer from the output layer to the hidden layer [21]. Moreover, the correction error of each hidden layer processing unit is generated by the combined effect of the correction errors transmitted by different output layer processing units [22]. Based on this, we need to carry on the

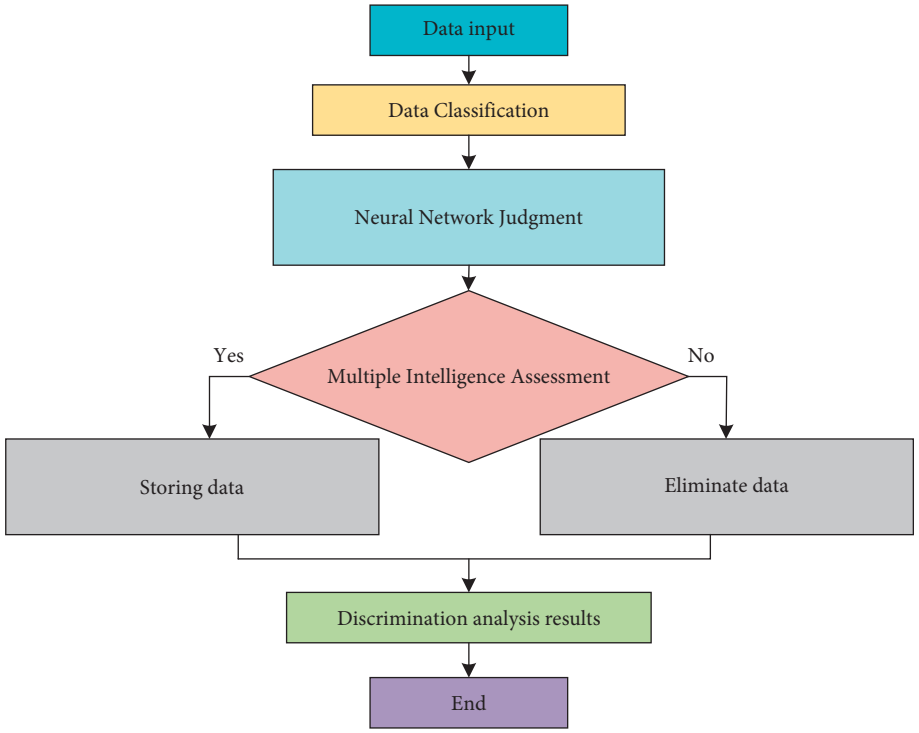

Figure 3: Discrimination process of multiple intelligences evaluation of data.

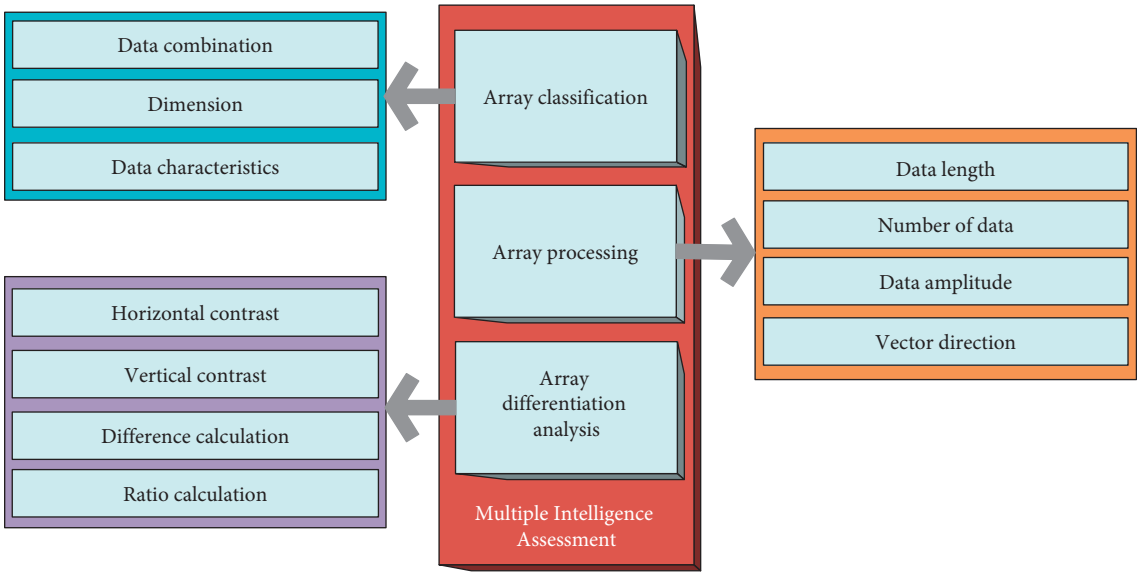

Figure 4: Differential analysis process of data.

initial processing to the computer program under the neural network algorithm.

First, we need to consider the initial value problem in comparative education, which can be solved by the following formula:

$$\begin{cases} \dfrac{dy}{dx} = f(x, y), \\ \\ y(x_o) = y_o. \end{cases} \tag{11}$$

In order to obtain its numerical solution on an equidistant scattered point $x_1 < x_2 < \cdots < x_n < \cdots$, it is first discretized. Let $h = x_i - x_{i-1} (i = 1, 2 \cdots)$ simplify the above formula and solve it by distribution, and the following formula can be obtained:

$$y(x_{n+1}) = y(x_n) + hy'(x_n) + \frac{h^2}{2!} y''(\xi_n), \xi_n \in (x_n, x_{n+1}). \tag{12}$$

Then, when h is sufficiently small, the error term $h^2/2y''(\xi_n)$ is omitted, the approximation of y_n is used to replace $y(x_n)$, the approximation of y_{n+1} is used to replace $y(x_{n+1})$, and $y'(x_n) = f(x_n, y(x_n))$ is noticed:

$$\begin{cases} y_0 = y(x_o), \\ y_{n+1} = y_n + hf(x_n, y_n), \quad n = 0, 1, \ldots, \end{cases} \tag{13}$$

Among them, $x_n = x_0 + nh, h = b - a/N$. The method of using (13) to solve the formula is called the multiple intelligences evaluation method based on neural network. And in the neural network algorithm, the simulation results of three groups of data are shown in Figure 5.

This study combines the idea of big data random collection and digital feature analysis based on neural network algorithm and particle swarm optimization algorithm and constructs the multiple intelligences evaluation bases in random data collection and digital feature analysis rules by simulating the "multiple neural node calculation rules" in the process of "neural network" modeling and rendering. The effectiveness of the method is tested by random simulation of three groups of data, and the simulation results are shown in Figure 6.

The simulation results show that the formulation of the strategy can effectively improve the collaborative work efficiency of probabilistic random variables in the process of collecting and storing massive random data and can effectively solve the problem of the computational complexity of probabilistic random variables and their digital characteristics in the process of dialectical analysis of comparative education [23]. Therefore, if we use difference instead of differentiation, we can get

$$\frac{y(x_{n+1}) - y(x_n)}{h} \approx y'(x_n) = f((x_n), y(x_n)). \tag{14}$$

If we integrate $y' = f(x, y(x))$ over $[x_n, x_{n+1}]$, we get

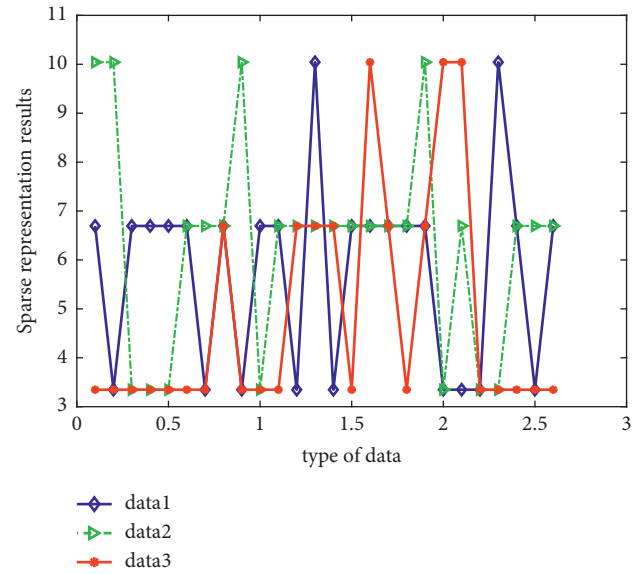

Figure 5: Simulation results in the process of multiple cycles of three sets of data.

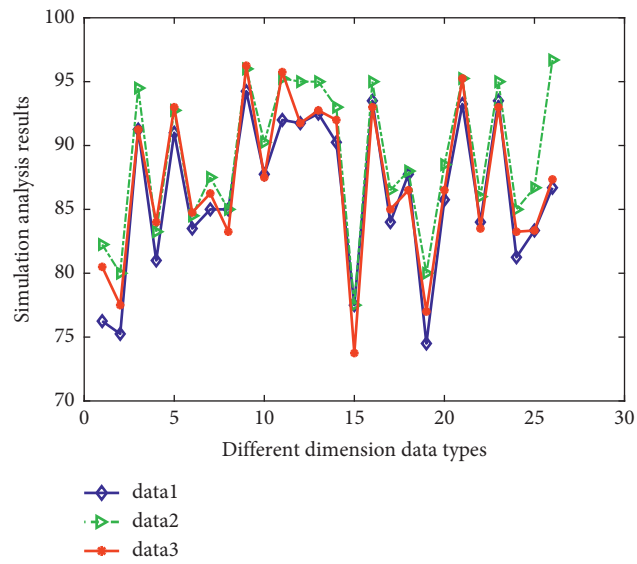

Figure 6: Random test simulation on three sets of data.

$$y(x_{n+1}) - y(x_n) = \int f(x, y(x))dx, \tag{15}$$

where h is the disturbance factor and $f(x_n, y(x_n))$ is the assignment function, the approximation of y_n is used to replace $y(x_n)$, and the approximation of y_{n+1} is used to replace $y(x_{n+1})$. The tangent equation is $y = y_0 + f(x_0, y_0)(x - x_0)$. When $x = x_1$, the approximate value of $y(x_1)$ is $y_0 + f(x_0, y_0)(x_1 - x_0)$, and it is recorded as y_1. This is the approximate common solution of calculating $y(x_1)$ when $x = x_1$ is obtained.

In this process, different data types of comparative education are dialectically analyzed, and the data of three groups are simulated. The results are shown in Figure 7.

5. Result Analysis and Discussion

5.1. Experimental Verification Process of Dialectical Analysis in Comparative Education Based on Multiple Intelligences Assessment. The neural network trains it through the training set, in which the training set data includes input value and output value. Each time a datum is entered, the weight of hidden layer nodes will be adjusted to make the output value as close as possible to the expected value. After a large amount of data training, the weights in the neural network are continuously adjusted to achieve the best weight. The weight obtains sample knowledge in the form of data and reflects the characteristics and the correlation of sample data.

According to the neural network algorithm and the intelligent analysis model of big data information based on a variety of dialectical analysis needs of comparative pedagogy, the experimental data are analyzed by pairwise comparison. Through the data processing of the optimized neural network algorithm based on multiple comparisons, the evaluation sample data of different modules required by comparative pedagogy are obtained. Unified orthogonal processing is implemented for the unique vector data of each comparative education process to realize the matching of initialization weight and a minimum threshold of evaluation demand required by the relevant neural network. Three groups of experimental data are tested, and the results are shown in Figure 8.

The experimental results are shown in Table 1. The data results in Table 1 show that the characteristic of this multiple intelligences evaluation scheme based on big data analysis and neural network algorithm is that it does not need to track and judge the individual characteristics that need to be dialectically analyzed in advance, but realizes the modular processing of multiple intelligences evaluation in the process of dialectical analysis of comparative education based on neural network algorithm, it is a new attempt in the process of dialectical analysis of comparative education.

6. Analysis of Experimental Results

In this paper, the data to be evaluated and the evaluated data are taken as the test objects, and the output image of the relevant experimental results is shown in Figure 9.

Through the analysis of the big data system of education information, we can know that the necessity of the two groups of data analysis is very different, and the experimental data results of the dialectical analysis are shown in Table 2.

The data in Table 2 are optimized and updated based on the neural network algorithm, and the results are shown in Table 3.

The experimental results show that the proposed dialectical analysis model of comparative education based on neural network algorithm and multiple intelligences evaluation can achieve quantitative analysis with high accuracy, and its analysis results have good reliability.

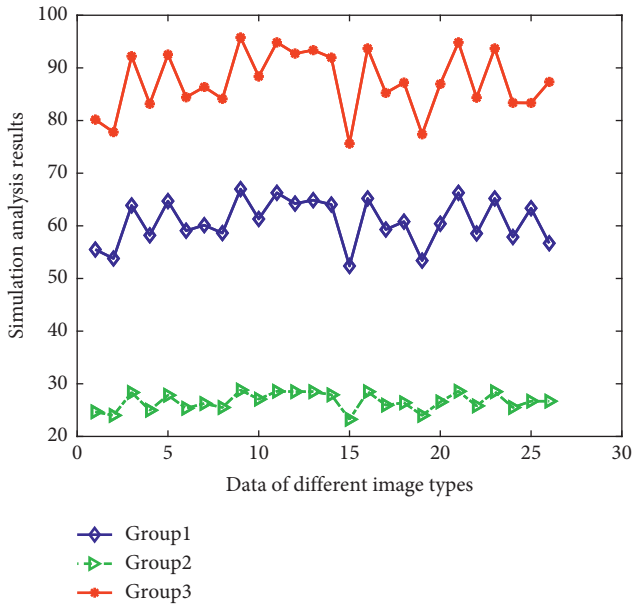

Figure 7: Dialectical analysis of the three groups of data simulation results.

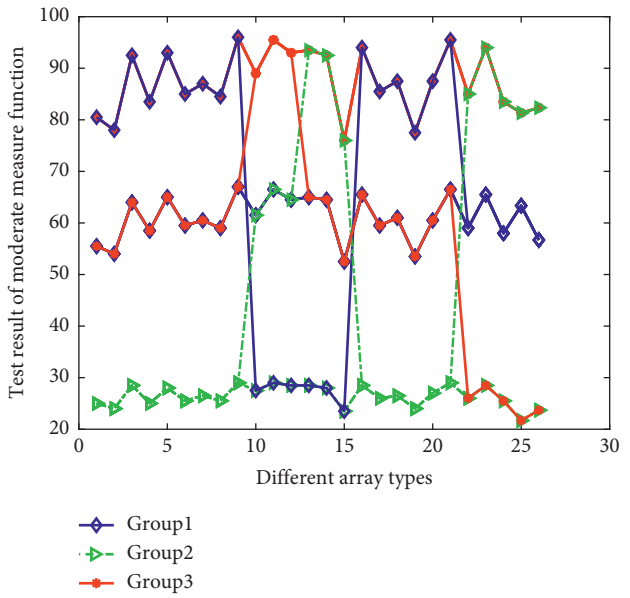

Figure 8: Experimental test results on three sets of experimental data.

Table 1: The numerical results of example 1.

Method	h	Results	Absolute error	Relative error
3rd order	1/50	$2.5671E-033$	$2.6526E-034$	$9.8230E-002$
3rd order	1/100	$2.7236E-033$	$2.9954E-035$	$1.8750E-002$
4th order	1/50	$2.6868E-033$	$8.1123E-036$	$3.2130E-003$
4th order	1/100	$2.6791E-033$	$5.0526E-037$	$1.9541E-004$
5th order	1/50	$2.6456E-033$	$1.3350E-036$	$4.8759E-004$
5th order	1/100	$2.6754E-033$	$3.8683E-038$	$1.4352E-005$
6th order	1/50	$1.4096E-047$	$2.6776E-033$	$1.4730E-000$
6th order	1/100	$1.4754E-047$	$2.7896E-033$	$1.0457E-000$
7th order	1/50	$6.7542E-030$	$6.4435E-030$	$2.9236E+003$

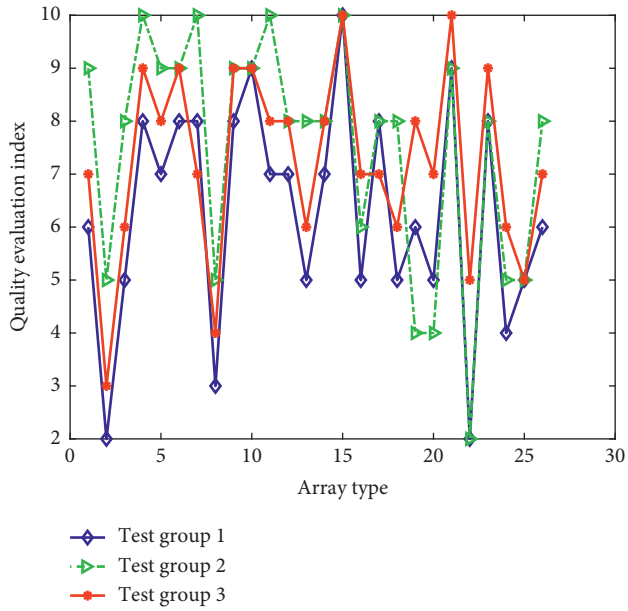

Figure 9: Analysis image of experimental results.

Table 2: Unoptimized experimental error analysis.

h	Err
0.1	$5.5E-008$
0.01	$4.8877E-004$
0.001	$4.7875E-004$

Table 3: Analysis of experimental error after optimization.

h	Err
0.1	$5.3E-004$
0.01	$4.6896E-004$
0.001	$4.3470E-006$

7. Conclusion

This paper first reviews the current research status and existing problems of the comparative education model of multiple intelligences evaluation in the dialectical analysis of comparative education in China, then puts forward the dialectical analysis model of comparative education model based on multiple intelligences evaluation, and finally tests the effect of this model in the process of comparative education through experiments. The experimental results show that in the comparative education model based on neural network algorithm, the model can quickly judge the dialectical analysis needs of the data to be evaluated. The results show that the dialectical analysis model has a great improvement in the reliability of multiple intelligences evaluation, and the error between the modular processing degree of comparative education and the normal known comparative education degree is within the stable standard reference range, the accuracy of the error has met the requirements of the current process of comparative education. It can be applied to the multiple intelligences assessment of comparative education and can realize the modular processing in the process of comparative education. However, the dialectical analysis model does not consider other factors of different types, so it can be further studied from the aspect of accuracy error.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

References

[1] J. Zhang, X. Hu, Z. Ning et al., "Energy-latency tradeoff for energy-aware offloading in mobile edge computing networks," *IEEE Internet of Things Journal*, vol. 5, no. 4, pp. 2633–2645, 2018.

[2] K. Li, S. Qi, H. Yang, L. Zhou, and D. Song, "Extensible image object co-segmentation with sparse cooperative relations - sciencedirect," *Information Sciences*, vol. 521, no. 14, pp. 422–434, 2020.

[3] D. Baldwin, J. Gustafson, L. Pickup et al., "Development and external validation of a new convolutional neural networks algorithm derived artificial intelligence tool to predict malignancy in pulmonary nodules," *Lung Cancer*, vol. 139, no. 1, pp. S7–S8, 2020.

[4] L. Bramslw, G. Naithani, and A. Hafez, "Improving competing voices segregation for hearing impaired listeners using a low-latency deep neural network algorithm," *Journal of the Acoustical Society of America*, vol. 144, no. 1, pp. 172–185, 2018.

[5] G. Chen, F. Wang, and S. Qu, "Pseudo-image and sparse points: vehicle detection with 2D LIDAR revisited by deep learning-based methods," *IEEE Transactions on Intelligent Transportation Systems*, vol. 21, no. 12, pp. 1–13, 2020.

[6] I. Y. Ha, M. Wilms, and H. Handels, "Model-based sparse-to-dense image registration for realtime respiratory motion estimation in image-guided interventions," *IEEE Transactions on Biomedical Engineering*, vol. 66, no. 2, pp. 302–310, 2019.

[7] J. Hrisko, P. Ramamurthy, and Y. Yu, "Urban air temperature model using GOES-16 LST and a diurnal regressive neural network algorithm," *Remote Sensing of Environment*, vol. 237, no. 6, Article ID 111495, 2019.

[8] J. Ishioka, Y. Matsuoka, S. Uehara et al., "Computer-aided diagnosis of prostate cancer on magnetic resonance imaging using a convolutional neural network algorithm," *BJU International*, vol. 122, no. 3, pp. 411–417, 2018.

[9] J. Ji, F. Ren, H. F. Ji, Y. F. Yao, and G. F. Hou, "Generalised non-locally centralised image de-noising using sparse dictionary," *IET Image Processing*, vol. 12, no. 7, pp. 1072–1078, 2018.

[10] T. Kim, *Affect Theory and Comparative Education Discourse. Essays on Fear and Loathing in Response to Global Educational Policy and Practice : By Irving Epstein*, 90 pages, Bloomsbury Academic, London and New York, 2019.

[11] E. L. Kolsbjerg, A. A. Peterson, and B. Hammer, "Neural-network-enhanced evolutionary algorithm applied to supported metal nanoparticles," *Physical Review B*, vol. 97, no. 19, Article ID 195424, 2018.

[12] J. H. Lee and S. N. Jeong, "Efficacy of deep convolutional neural network algorithm for the identification and classification of dental implant systems, using panoramic and periapical radiographs," *A pilot study. Medicine*, vol. 99, 2020.
[13] Y. Li, W. Dong, X. Xie, G. Shi, J. Wu, and X. Li, "Image super-resolution with parametric sparse model learning," *IEEE Transactions on Image Processing*, vol. 27, no. 9, pp. 4638–4650, 2018.
[14] Z. Ning, X. Hu, Z. Chen et al., "A cooperative quality-aware service access system for social internet of vehicles," *IEEE Internet of Things Journal*, vol. 5, no. 4, pp. 2506–2517, 2018.
[15] M. Luo, S. Zhong, L. Yao, W Tu, W Nsengiyumva, and W Chen, "Thin thermally grown oxide thickness detection in thermal barrier coatings based on SWT-BP neural network algorithm and terahertz technology," *Applied Optics*, vol. 59, no. 13, pp. 4097–4104, 2020.
[16] F. Menashy, "Reimagining comparative education through the lens of science fiction: an introduction to the special section of book and media essay reviews," *Comparative Education Review*, vol. 64, no. 1, pp. 137-138, 2020.
[17] A. Naveed and M. Arnot, "Exploring Educational and Social Inequality through the Polyphonic Voices of the Poor: A Habitus Listening Guide for the Analysis of Family-Schooling Relations," *Comparative Education*, vol. 55, no. 2, pp. 1–22, 2018.
[18] L. Sheng, F. Yuan, S. Zhang, H. Song, and S. Chen, "L_0 sparse regularization-based image blind deblurring approach for solid waste image restoration," *IEEE Transactions on Industrial Electronics*, vol. 66, no. 12, pp. 9837–9845, 2019.
[19] V. Khezri, E. Yasari, M. Panahi, and A. Khosravi, "Hybrid artificial neural network-genetic algorithm-based technique to optimize a steady-state gas-to-liquids plant," *Industrial & Engineering Chemistry Research*, vol. 59, no. 18, pp. 8674–8687, 2020.
[20] S. Xiang, Z. Ren, and Y. Zhang, "Training a multi-layer photonic spiking neural network with modified supervised learning algorithm based on photonic STDP," *IEEE Journal of Selected Topics in Quantum Electronics*, vol. 99, p. 1, 2020.
[21] Y. Li, J. Chen, and Z. Li, "A case study of debris flow risk assessment and hazard range prediction based on a neural network algorithm and finite volume shallow water flow model," *Environmental Earth Sciences*, vol. 80, no. 7, 2021.
[22] Z. Zhang, H. Liu, J. Shu, H. Nie, and N. Xiong, "On automatic recommender algorithm with regularized convolutional neural network and IR technology in the self-regulated learning process," *Infrared Physics & Technology*, vol. 105, Article ID 103211, 2020.
[23] X. Hu, J. Cheng, M. Zhou et al., "Emotion-Aware cognitive system in multi-channel cognitive radio ad hoc networks," *IEEE Communications Magazine*, vol. 56, no. 4, pp. 180–187, 2018.