ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

Research on Educational Model of Deep Learning Promoted by Interactive Strategies in Intelligent Software Environment

Jin Wan[1,a,*]

[1]*School of Public Administration, Guizhou University of Finance and Economics, Guiyang, Guizhou, China*
[a]*2308987270@qq.com*
[*]*Corresponding author*

Abstract: *The new curriculum reform has been implemented in China for nearly ten years. In the classroom, students take a variety of learning methods; the most important is interactive strategic learning. Deep learning is a process of learning. It emphasizes that learners look at knowledge with critical attitude, actively understand new and old knowledge, and can use the knowledge obtained to solve practical problems. In the face of the development of knowledge explosion, only simple memory, and passive duck -type passive and simple learning methods can no longer meet the needs of modern knowledge. China's current education reform is imperative, but the situation in practice is not satisfactory. Deep learning has achieved many results in search technology, data mining, machine learning, machine translation, natural language processing, multimedia learning, speech, recommendation and personalization technology, education, and other related fields. Therefore, this article has proposed the research of educational models for interactive strategies to promote deep learning in a hybrid environment. In order to make the experimental results more scientific, this article has used deep learning algorithms to analyse it. The results showed that under the same conditions of other conditions, the P values of the three dimensions of Classes A and B were 0.093, 0.172, and 0.317. It was significantly greater than 0.05, and there was no significant difference. When post -testing, the P value of Classes A and B was 0.027, 0.001 and 0.001. It was far less than 0.05, which showed that there was a significant difference in Classes A and B. It indicated that interactive strategies in hybrid environment were conducive to the education model of promoting deep learning, which has proved the positive relationship between the educational model of hybrid interaction and deep learning.*

Keywords: *Educational Model, Deep Learning, Interactive Strategy, Hybrid Environment, Convolutional Neural Network Algorithm*

1. Introduction

China is currently undergoing various forms of education and teaching reform, but the effects implemented in practice are not satisfactory. In real life, teachers are still the main form of teaching. This teaching model cannot meet the needs of the information age. In terms of teaching methods, although the introduction of information technology has greatly facilitated teaching, the traditional classrooms led by teachers have not changed much. In terms of teaching purposes, the training of students' core abilities is ignored. Their learning still stays at the stage of "tasting" and cannot better understand what they have learned. In teaching evaluation, scores are the most important factor to measure students' quality. However, this single scoring method has ignored the development of students.

The new curriculum is a teaching model formulated by the teaching and research groups of primary and secondary schools in China to truly realize quality education. The new curriculum requires primary and secondary school teachers to accept new educational concepts and new teaching methods. The new curriculum focuses on the deep learning of students, emphasizing that students need a certain connection in learning, and the use of the knowledge they have learned to solve the problem. The interactive strategy in the hybrid environment is to put learners in practical problems. Through cooperation and inquiry with companions, students have cultivated their ability of independent learning, cooperation and exchanges, critical thinking, and problem -solving.

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

Based on this, this article studies the impact of interactive strategies on the education model of deep learning in the context of the hybrid environment, and analyzed through deep learning algorithms. The innovation of this paper is that the mutual strategy learning method is the most important learning method, and it is combined with the education model of deep learning. Not only the research perspective is very novel, but the research results are also of great significance, which is a good article for the development of students.

2. Related Work

Today, with the rapid development of the knowledge economy today, students urgently need an educational model that can improve learning ability, practical ability and creativity to meet the needs of future social development. For this educational model, a lot of research results have been available. Among them: In order to meet the development and needs of society, the improvement of students' actual application ability has become the focus of electronic information major. YAO X focused on the innovation and practice of electronic information professional education models and methods of higher vocational education [1]. Senashenko V S introduced the analysis results of the possible combination mechanism between higher education and labor markets in the context of various educational models [2]. Semeniv B formulated the education model of professional sports training for students, and determined the main component of the content of imitation sports training [3]. Peng M had a certain guiding significance for the comprehensive development model of college students by analyzing and constructing a comprehensive strength education evaluation model based on the comprehensive strength education evaluation model [4]. However, the above studies are some theoretical research, lacking scientific methods for support.

In response to the above problems, deep learning algorithms can be used to study the hybrid interactive teaching mode. For the research of this algorithm, a large number of research results have been available. Deep learning is a new hot spot in the current machine learning field. Its use in machine learning brings it closer to its original goal, artificial intelligence. Among them: in order to improve the efficiency of multimedia English teaching, in response to the lack of sentiment in multimedia English education, Hao K proposed an intelligent network teaching system model based on deep learning voice enhancement and facial expression recognition [5]. Cui J analyzed the application of deep learning and target visual testing in English vocabulary online teaching [6]. The smart teaching model overcomes the lack of traditional online and offline teaching, but there are certain shortcomings in the real -time characteristics of teachers and students. Long S used particle group image recognition and deep learning technology to process smart classroom video teaching images, extracted the characteristics of classroom tasks in real time and sent it to teachers [7]. These research results show the applicability of deep learning algorithms in the field of education, which lays the foundation for its use in hybrid interactive teaching models.

3. Education Mode under Deep Learning

3.1 Basic Theory of Deep Learning

Deep learning is derived from artificial neural network ANN, analyzing data such as images, sounds, texts and other data by the organisms [8-9]. By designing appropriate neuron computing nodes and multi-layer operation layers, appropriate input and output layers are selected, and learning and optimization are performed in the network, thereby establishing a functional relationship from input to output. Although the relationship between input and output cannot be 100% certain, it can at least be close to the true relationship. Through the successfully trained network model, the need for automatic processing of complex transactions can be met. The human brain's processing of information is hierarchical. Deep learning is extracted from the bottom layer to the upper layer [10]. With the development of technology, the continuous development of hardware devices such as graphics processors units (GPUs), the operation speed of deep learning has been greatly improved [11], as shown in Figure 1.

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

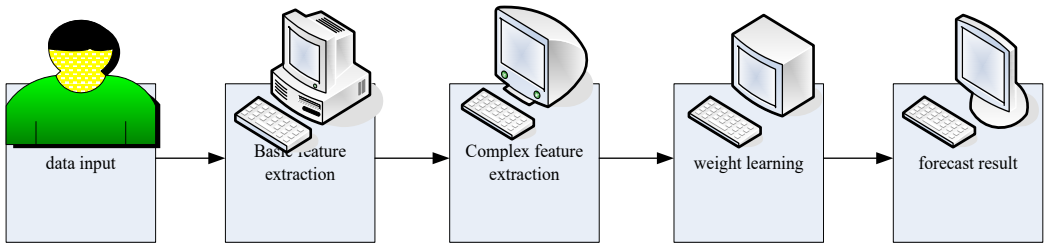


Figure 1: The process of deep learning

Deep neural network (DNN), convolutional neural networks, deep confidence network (DBN), and recursive neural network (RNN) and other network structures are currently widely used deep learning frameworks [12]. A neural network model has a wide range of applications in computer vision, voice recognition, natural language processing and education model learning. In the field of education, convolutional neural networks can effectively reduce the number of weighted parameters through convolutional and pooling methods. Moreover, under the input of multi-dimensional images, there is no need for a large amount of calculation [13-14]. In addition, convolutional neural networks have high invariance in many conversion, such as translation, angle, proportion conversion, etc. [15]. Convolutional neural network is a kind of feedforward neural network with deep structure including convolutional computation, which is one of the representative algorithms of deep learning.

3.2 Convolutional Neural Network Algorithm Based on Deep Learning

The convolutional neural network is a neural network composed of convolutional layers, which includes a variety of network layers of different levels [16-17]. The tight connections between neurons lead to a large number of parameters. Each parameter needs to be iteratively calculated to get the optimal solution. Therefore, the convolutional neural network adopts local connection, weight sharing, downsampling and other methods to solve.

(1) Convolutional layer

Convolution operations can be divided into continuous convolution and discrete convolution. The calculation formula is as follows:

$$b(u)=\int_{-\infty}^{\infty} a(q)j(u-q)fq=a(u)*j(u) \tag{1}$$

Discrete convolution operation formula:

$$b(m)=\sum_{-\infty}^{\infty} a(o)j(m-o)=a(m)*j(m) \tag{2}$$

The linear operational expression of convolutional neural networks is as follows:

$$g(a,b)\circ\xi(a,b)=\sum_{d=-mu=-y}^{n}\sum^{y}\xi(d,u)g(a-d,b-u) \tag{3}$$

Among them, $g(a,b)$ is the grayscale value of row A column B. $\xi(a,b)$ is a convolution nucleus or filter [18].

(2) Sample layer underneath

In order to reduce the size of the space, the lower sample layer is often added to the convolutional layer regularly. In the depth size, it is carried out separately, so that the depth of learning is not change [19]. The most commonly used is the maximum sampling, of course, there are other methods, such as the average sampling [20]. Sampling refers to the process of taking individuals or samples from a population, that is, the process of conducting experiments or observations on the population.

The algorithm on the average sampling is:

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

$$D_{ok} = \left(\sum_{o=1}^{v} \sum_{k=1}^{v} G_{ok} \right) \Big/ v^2 + y_2 \tag{4}$$

Maximum sample formula is:

$$D_{ok} = \max_{o=1,k=1} \left(G_{ok} \right) + y_2 \tag{5}$$

Among them, G-the matrix of the feature diagram; D-obtained sampling feature diagram.

(3) Logic regression and SoftMax layer

It is a classification algorithm with the following output values:

$$0 \le j_{\vartheta}(a) \le 1 \tag{6}$$

When the mark B is discrete, assuming:

$$j_{\vartheta}(a) = h\left(\vartheta^{U} a \right) \tag{7}$$

In the formula: A -feature vector; H -logic function.

The formula of commonly used S -type functions (Sigmoid Function) is:

$$h[l] = 1/\left(1 + r^{-l}\right) \tag{8}$$

Before 0 to 1, the function curve is displayed as S -shaped.

3.3 Construction of Hybrid Interaction

The high -quality digital teaching resources and personalized learning processes provided by MOOC have brought a new learning experience to learners. MOOC realizes a high-end knowledge exchange. It can be applied to the training of experts, the exchange of learning among various disciplines, and the learning mode of special education. Information of any type of learning can be disseminated over the web. Deep learning requires learners to learn and accept new views through a comprehensive understanding of learning content. They are incorporated into the existing knowledge system, and then these new knowledge are transformed into new environments, thereby solving the confusion and problems in learning. To make MOOC better for teaching, it must cross -integrate traditional classrooms and online learning. It is also necessary to make full use of the advantages of teachers and students to "mix" to achieve true deep learning.

4. Practical Application of Hybrid Interactive Teaching Mode of Deep Learning

4.1 Experimental Design

(1) Experimental object

The implementation of the practical activities is a famous middle school in a city. The school is a school that actively promotes education reform and courage to innovate. This study is subject to the fifth grade mathematics course. According to the preliminary survey, the five -year five classes are basically the same in terms of learning interests and basic abilities. The final exam scores and deep learning status questionnaires taught by a teacher are analyzed. There is no significant difference between the academic performance and deep learning level of the two classes. Therefore, the two classes are set as control classes and experimental classes (Class A represents the control class and Class B represents the experimental class). Class B adopts a hybrid interactive teaching mode, and Class A adopts the original teaching method.

(2) Experimental method

The following methods are used in the experimental teaching. The questionnaire is used to conduct pre -testing and analysis of two classes participating in the experiment. If the data shows that the depth learning level is not different, the next stage of teaching can be performed. Through experiments, students' learning is tested and the learning status of students is investigated. The post -test is also

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

undergoing it to understand the students' deep learning ability.

Questionnaire survey: In order to conduct an effective measurement of deep learning for learners, this article conducts a deep learning status survey form from the aspects of cognition, behavior and emotion based on the survey of deep learning problems. At the cognitive level, it contains the understanding and use of knowledge. Behavioral dimensions include critical thinking, collaborative communication, problem solving, and innovation capabilities. Emotional levels include students' learning attitude and motivation. A higher score represents a better deep learning state, as shown in Table 1.

Table 1: In -depth learning situation questionnaire dimension

First level dimension	Second level dimension
Cognitive dimension	Knowledge understanding
	Knowledge application
Behavioral dimension	Critical thinking ability
	Collaboration and communication ability
	Problem solving ability
	innovation ability
Emotional dimension	Learning attitude
	learning motivation

(3) Belief analysis

The credibility analysis of the questionnaire mainly examines the credibility of the questionnaire and inspects whether the questionnaire can be used to investigate the problem. This article uses the SPSS method to test the reliability of 150 subjects. The Clark Bach coefficient was tested. The results show that the credibility of this article is between 0.7 ~ 0.8, indicating that the survey is high. The degree of reliability exceeds 0.8 means that its trust is ideal. SPSS is a general term for software products and related services used for statistical analysis operations, data mining, predictive analysis and decision support tasks. The specific results are shown in Table 2.

Table 2: Letter analysis

Dimension	Cronbach' s Alpha
Knowledge understanding	0.844
Knowledge application	0.874
Critical thinking ability	0.851
Collaboration and communication ability	0.803
Problem solving ability	0.879
Innovation capacity	0.892
Learning attitude	0.857
Learning motivation	0.725

It can be seen from Table 2 that the maximum trust value is 0.892 of innovation capabilities. The minimum trust value is the 0.725 of the learning ability, indicating that each vector table is greater than 0.7. It shows that the survey has a high degree of credibility and can be used for actual teaching.

(4) Effect analysis

The validity analysis is mainly used to respond to the measurement method to the survey content and whether it can correctly express the results of the investigation. KMO is an indicator used to compare simple and partial correlation coefficients between variables. SPSS is analyzed by 150 questionnaires and obtained kmo (KAISER-MEYER-OLKIN) and Bartlett spherical tests. The specific results are shown in Table 3.

Table 3: Layer analysis

Kaiser Meyer 0kin measurement of sampling adequacy		0.931
Bartlett's Sphericity Test	Approximate chi square	2671.904
	df	254
	Sig.	0.001

It can be seen from Table 3 that the KMO value is 0.931, which is significantly greater than 0.7, indicating that the questionnaire has a high efficiency. This is an effective test method.

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

4.2 Blended Interactive Teaching Practice Results

Before the actual operation, SPSS is used to analyze statistical analysis of the final test results of the two semester of the previous semester. The separate T test is performed. The results are shown in Table 4.

Table 4: Analysis of differentiality of the final results

Class	Class A	Class B
Number of cases	47	49
Mean difference	74.54	75.91
standard deviation	15.343	12.884
P value	0.638	

It can be seen from Table 4 that the average differences and standard deviations of Class A are 74.54 and 15.343, respectively. The average differences and standard deviations of Class B are 75.91 and 12.884, respectively. The P value of the two classes is 0.638> 0.05, indicating that there is no significant difference. It also shows that there are no obvious differences in the two classes in the final test. Experiments in the next stage can be performed.

Two classes are conducted in deep learning questionnaires. Three different dimensions of deep learning results are compared. If the difference is not much different, follow -up research can be conducted. A total of 96 questionnaires are distributed in this article, including 47 in Class A and 49 in Class B. After recovering 96 copies, the recovery rate is 100%.

4.3 Result of Teaching Practice

(1) The final exam score

With the students 'teaching practice, the students' final scores are statistics, which are analyzed. The specific results are shown in Table 5.

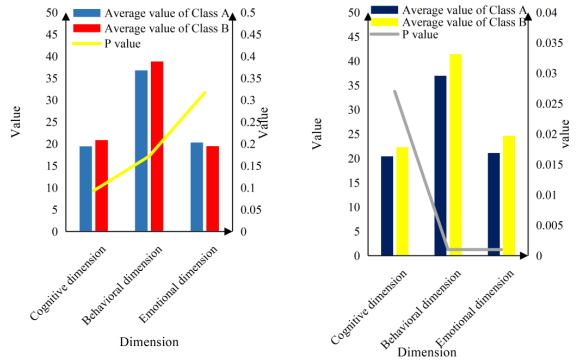
Table 5: Student performance independent sample T test

Class	Class A	Class B
Number of cases	47	49
Mean difference	74.99	80.40
standard deviation	12.334	11.783
P value	0.031	

From Table 5, the average score of Class B is 80.40, and Class A is 74.99. The average score of Class B is much higher than Class A, indicating that this teaching experiment has a certain role in promoting students' learning. The P value is 0.031, which is lower than 0.05. It shows a significant difference between the two classes. Based on deep learning, hybrid interactive teaching models can improve students' grades, thereby proving that this teaching method can effectively help students learn.

(2) The results of the quermination of the post -test

The post -test questionnaire corresponds to the problem of the previous test questionnaire, and the number of questionnaires remains unchanged. Independent sample T test is a test using three dimensions of the two Classes of A and B. The results are shown in Figure 2.



(A) Pre -test *(B) After testing*

Figure 2: Pre -test and post -test questionnaire survey results

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

It can be seen from Figure 2 (A) that the average scores of Classes A and B of the three dimensions are 19.4469 and 20.8367, 36.7661 and 38.7960, 20.3192 and 19.4695. Their P values are 0.093, 0.172 and 0.317. It can be seen from Figure 2 (B) that the average scores of Classed A and B of the three dimensions are 20.4044 and 22.2654, 36.9788 and 41.4287, 21.1065 and 24.6328. Their P values are 0.027, 0.001 and 0.001. It can be seen from Figure 2 that the scores of the question volumes of Classes A and B both of Class B have improved. However, the P values of the three dimensions in the post -test scores are lower than 0.05, indicating that there are significant differences. It indicates that the hybrid interactive teaching mode can improve students' deep learning from three aspects. Finally, the three dimensions are performed specific analysis.

1) Cognitive dimension

From the two perspectives of the understanding and application of knowledge, first of all, the test scores of Class B in these two aspects have been conducted to verify the impact on the class before and after the practice, as shown in Table 6.

Table 6: Cognitive dimension pairing results statistics

		mean value	P
Knowledge understanding	Pretest	10.1021	0.98
	Posttest	10.7960	
Knowledge application	Pretest	10.7348	0.95
	Posttest	11.1695	

It can be seen from Table 6 that Class B has not changed much in the field of knowledge. The T test P values in knowledge understanding and knowledge applications are 0.98 and 0.98, and both are greater than 0.05. It shows that there are no significant differences in these two aspects and post -testing.

In the two dimensions, the independent sample T test of Classes A and B, as shown in Figure 3.

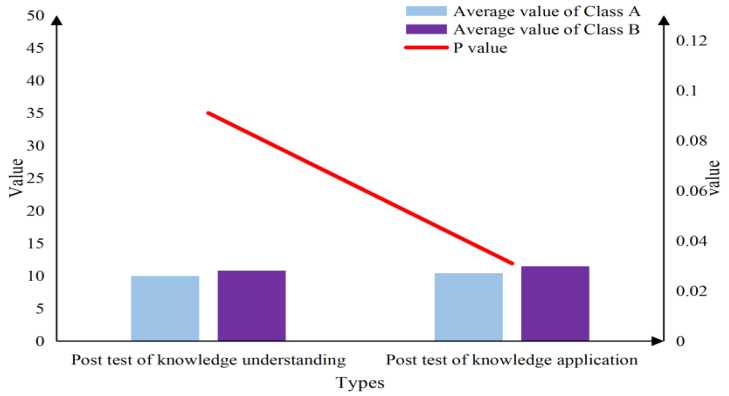


Figure 3: Cognitive dimension compare results statistics

It can be seen from Figure 3 that the average value of Classes A and B in both knowledge understanding and application has not changed significantly. The P value of the former is 0.091, which is greater than 0.05, indicating that there is no significant difference. The p value of the latter is 0.031, which is less than 0.05, showing significant differences. It explains that under this teaching method, Class B can better use the knowledge learned.

2) Behavior dimension

First of all, after testing the sample T test, the critical thinking ability, team cooperation ability, problem solving ability, and innovation ability of Class B are inspected. The results are shown in Table 7.

It can be seen from Table 7 that Class B students have greatly improved in critical thinking, problem solving and creative ability, indicating that hybrid interactions have a great promotion effect on all three capabilities. In critical thinking, the P value is 0.001 and is less than 0.05, which has obvious differences. In terms of problem solving, the P value is 0.001, which is less than 0.05, and there are significant differences. It shows that under the action of hybrid interaction, students' problems solutions have improved significantly. In terms of team collaboration, the P value is 0.069, which is higher than 0.05, and there is no significant difference. The test results of the two Classes of A and B

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

are then analyzed, as shown in Figure 4.

Table 7: Statistics of behavior dimensions pairing results

		mean value	P
Critical thinking ability	Pretest	9.5307	0.001
	Posttest	11.0409	
Teamwork ability	Pretest	11.3266	0.069
	Posttest	10.7348	
Problem solving ability	Pretest	10.6736	0.001
	Posttest	12.3674	
innovation ability	Pretest	7.2654	0.963
	Posttest	7.2858	

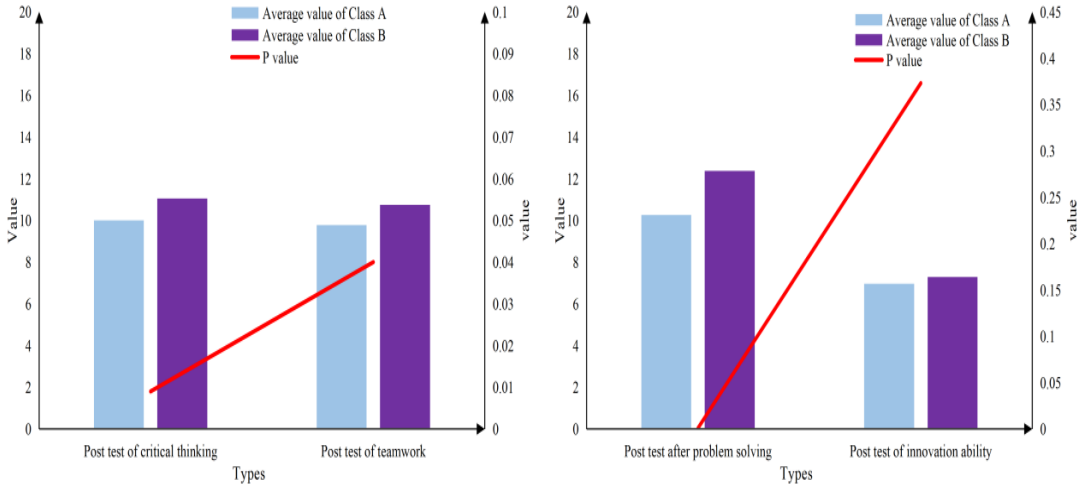


Figure 4: Statistics of behavioral dimensions compare results

It can be seen from Figure 4 that the average score of Class B is slightly higher than Class A, indicating that hybrid interaction has a significant role in criticizing students' critical thinking, team cooperation, problem solving and creativity. The P values in critical thinking, teamwork, and problem solving are 0.009, 0.040, and 0.001 less than 0.05, respectively. It explains that hybrid interactive teaching experiments have a significant role in promoting the three aspects of training learners. However, the P of innovation capabilities is 0.373, which is far greater than 0.05, indicating that hybrid interactive teaching experiments have not significantly promoted the learner's innovation ability.

In short, through experiments, students' problems, teamwork, and critical ability have been significantly improved. The improvement of students' creativity is not so significant.

3) Emotional dimension

This dimension mainly examines students' attitudes towards learning and the strength of learning motivation. First of all, the front and rear tests of Class B are analyzed, as shown in Table 8.

Table 8: Emotional dimension pairing results statistics

		mean value	P
Learning attitude	Pretest	9.7143	0.001
	Posttest	12.3266	
learning motivation	Pretest	10.8937	0.001
	Posttest	12.3062	

Next, the post -test scores of Class A and Class B are analyzed, as shown in Figure 5.

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

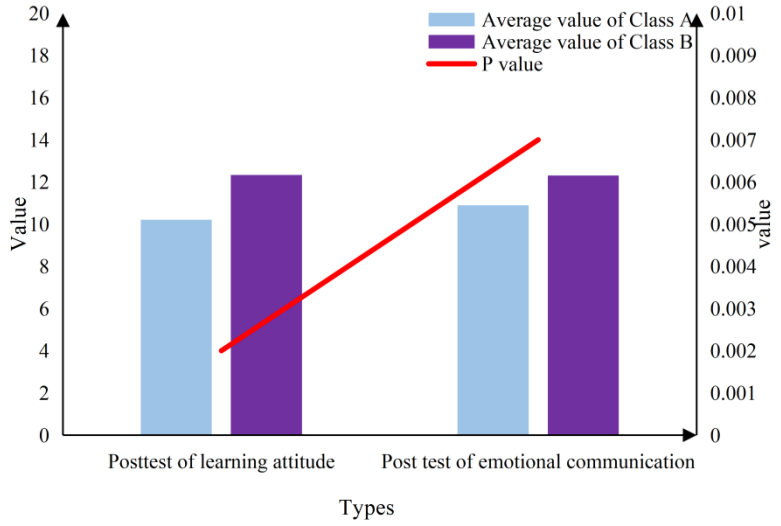


Figure 5: Emotional dimension compare results statistics

It can be seen from Figure 5 that the average score of Class B is higher than that of Class A. In terms of learning attitude and emotional communication, the P values are 0.002 and 0.007, respectively, both below 0.05. It shows that there are significant differences in Classes B and A in these two aspects.

In summary, this mixed interactive teaching model has made students 'attitude towards learning positively, which is conducive to students' emotional communication.

(4) Teacher's interview results

Through interviews with this teaching mode, how to use a hybrid interactive teaching mode to advance deep learning. The problems in the teaching design are reflected in order to provide reference for future applications. By communicating with the teacher, this article found that this teaching method has a great effect on students' learning. Teachers believe that the solution of learners can no longer be passively accepted through actual problem scenarios. This teaching method focuses on cooperative learning. In the inquiry of students, students can achieve new knowledge equilibrium through the connection of new knowledge, strengthening knowledge migration and cognitive structure adaptation. Although the teachers still have to be familiar with the classroom for a while, this method can be promoted for the performance of students. Through teaching practice, teachers have more understanding of hybrid interaction and deep learning. Teachers believe that hybrid interactions must not only be carried out in the form of problems, but also carefully set up a series of considerations such as problems and control activities. Deep learning is not difficult to learn knowledge. It refers to the ability of learners in learning content and knowledge transfer. Deep learning is also very helpful for future life, which is beneficial to life.

5. Conclusions

In this article based on a mixed environment, interactive strategies have been applied to teaching. The hybrid interactive teaching mode of promoting deep learning was designed and teaching practice was carried out. The results showed that the promotion of deep learning mixed interactive teaching model had a certain role in promoting the learning of learners. From the perspective of actual teaching, this article has verified the relationship between hybrid interaction and deep learning. Through the analysis of the surveys, testing and questionnaires of the students' final scores, it was found that this "method" could not only improve students' academic performance, but also cultivate students' ability to understand, use knowledge, criticize thinking, cooperate, and solve problems. At the same time, it has also promoted students' learning attitudes to actively changes. On the other hand, through interviews with experimental teachers, they found that they had a deeper understanding of deep learning and held a positive attitude towards the teaching model of deep learning. Due to the limitation of my research level, the article has some deficiencies. First, the scope of research is limited. Due to the limitations of conditions and time, this study only conducts experiments in two Classes. Whether it is applicable to other classes and other schools requires further research and evidence. The second is the limitations of the researchers themselves. In teaching design, although there is a certain understanding of hybrid interaction and deep learning, the design of teaching mode is inevitably insufficient. In the future, it is

ISSN 2522-6398 Vol. 7, Issue 11: 223-232, DOI: 10.25236/FER.2024.071134

hoped that more people can join this research and gradually improve the experimental results.

References

[1] Yao X, Sun J. Innovation and Practice of Educational Model and Method on Electronic Information Major in Polytechnic Colleges. International Journal of Social Science and Education Research, 2019, 2(10):16-19.
[2] Senashenko V S, Struchkova E P. Educational Model as an Important Factor Influencing on Conjugation Between Higher Education and Labor Sphere. Higher Education in Russia, 2019, 28(4):9-20.
[3] Semeniv B, Babych A, Bilenjkyj P, Prystavsjkyj T, Kovban O. Educational Model of Physical Training of Students of Bio-technological Profiles. Physical Education Sport and Health Culture in Modern Society, 2018, 1(1(41)):52-60.
[4] Peng M, Shen K, Zhao H, Mu L. Construction of evaluation system of educational model in the context of cloud computing. Revista de la Facultad de Ingenieria, 2017, 32(12):885-890.
[5] Wang S, Zhang D. Student-centred teaching, deep learning and self-reported ability improvement in higher education: Evidence from China. Innovations in Education and Teaching International, 2019, 56(5): 581-593.
[6] Kong C, Hao W. Research on the Teaching Reform of Preschool Education Specialty Based on the Deep Learning Theory from the Perspective of Educational Psychology. Psychiatria Danubina, 2022, 34(suppl 4): 608-609.
[7] Long S, Zhao X. Smart teaching mode based on particle swarm image recognition and human-computer interaction deep learning. Journal of Intelligent and Fuzzy Systems, 2020, 39(4): 5699-5711.
[8] Juhe W, Zhibin W. Research on college physical education teaching mode based on multimedia teaching system. Agro Food Industry Hi Tech, 2017, 28(1):353-356.
[9] Qin Z. Responsibility education mode in college education under the new situation. Agro Food Industry Hi Tech, 2017, 28(1):1820-1823.
[10] Xu S. The Application of Multimedia and Deep Learning in the Integration of Professional and Innovative Education in Colleges. International Journal of Information Technologies and Systems Approach, 2023, 16(2): 1-13.
[11] Lee S J, Lee M, Park Y S. A Study on an Educational Model for Computational Thinking Development with Excel Program. Journal of Digital Contents Society, 2019, 20(1):65-74.
[12] Tan C J, Lim T Y, Bong C W, Liew T K. A multi-objective evolutionary algorithm-based soft computing model for educational data mining: A distance learning experience. Asian Association of Open Universities Journal, 2017, 12(1):106-123.
[13] Isayeva E V, Chiginceva E G, Sunagatullina I I, Alexandra A, Beloussova T O. Model of educational system providing new educational results of children with disabilities through individualization of educational activity. Man in India, 2017, 97(21):219-240.
[14] Wondimagegn D, Pain C, Baheretibeb Y, Hodges B, Wakma M, Rose M, et al. Toronto Addis Ababa Academic Collaboration: A Relational, Partnership Model for Building Educational Capacity Between a High- and Low-Income University. Academic Medicine Journal of the Association of American Medical Colleges, 2018, 93(12):1795-1801.
[15] Krupa F, Nemcik J, Ozana S, Slanina Z. Educational case study on nonlinear model predictive control. IFAC-PapersOnLine, 2019, 52(27):459-464.
[16] Kensler L, Uline C L. Educational restoration: a foundational model inspired by ecological restoration. International Journal of Educational Management, 2019, 33(6):1198-1218.
[17] Ergin A. An Evaluation of Educational Information Network (Eba) Via Educational Criticism Model. Kesit Akademi, 2021, 7(27):37-51.
[18] Maslovets O A. Regulated intentionality as a Modern Educational Model: Philosophical and Cultural Analysis. Concept philosophy religion culture, 2020, 4(3):52-61.
[19] Toropova A V. Formation of a Scientific and Educational Model of Musical-Psychological Anthropology. Musical Art and Education, 2020, 8(3):65-81.
[20] Li S, & Yang B. Personalized Education Resource Recommendation Method Based on Deep Learning in Intelligent Educational Robot Environments. International Journal of Information Technologies and Systems Approach, 2023, 16(3): 1-15.