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Teaching Mode of Psychology and Pedagogy in Colleges and Universities Based on Artificial Intelligence Technology

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Abstract. At present, artificial intelligence(AI) technology has penetrated into all aspects of the education field, and the teaching system has been reformed. In the background of AI, deep learning, personalized learning and human-computer collaborative learning have gradually become the mainstream learning methods. The change of learning style directly promotes the transformation of curriculum and teaching paradigm. This paper analyzes the current situation of the use of AI technology in the teaching mode of psychology and Pedagogy in Colleges and universities, and puts forward the research on the teaching mode of psychology and Pedagogy in Colleges and Universities Based on AI technology. In this paper, 290 teachers and students were investigated and analyzed, and their recognition of AI technology reached more than 90%. This paper makes a comparative analysis on the satisfactory learning environment, learning methods and learning effect after the use of AI in psychology teaching, and discusses and analyzes the results. It also puts forward the use suggestions of AI in psychology teaching, which provides guarantee for the development of intelligent teaching system. The research in this paper is of great significance for the further integration and development of the two.

Keywords: Artificial Intelligence, College Psychology, Pedagogy Teaching, Weighted Evaluation Algorithm

1. Introduction

Education is the foundation of human development. In recent decades, with the rise of network and computer technology, the education mode has been unprecedentedly developed, the level of education informatization has been improved unprecedentedly, and the educational concept, teaching mode and method have also changed accordingly, which all promote the development of learning activities in the direction of autonomy, individuality and intelligence^[1-3].

"AI + education" is more and more mentioned by the academic community. The wave of "AI + education" has set off a learning revolution about education^[4-6]. In the new era of information technology, big data and AI, the field of education also brings the close connection between AI technology and the development of modern education. AI has a profound impact on Education^[7-8]. The close integration of education and professional AI has always been highly valued by the international



education community, including the continuous training of China's AI education related technology innovation research team and the continuous training of education related technical and skilled personnel, and the successful establishment of China's AI education related technology research and Innovation Center^[9-10].

In this paper, the use of AI in the teaching mode of psychology and Pedagogy in Colleges and universities is studied, and the actual situation of the influence of AI on the teaching system is analyzed. The analysis shows that the use of AI in the teaching mode of psychology and Pedagogy in Colleges and universities is still deficient. In this paper, the teaching model of psychology and Pedagogy in Colleges and Universities Based on AI technology is established. In the research, in view of the actual situation in the research of college psychology and pedagogy teaching mode based on AI technology, optimizing the use of AI, effective combination can improve the teaching effect. Through the investigation and analysis of various data of AI, this paper believes that the use of AI is conducive to the development of teaching system and provides technical support for the teaching system.

2. Use of Quantitative Evaluation Weighted Evaluation Algorithm for Cognitive Ability of Students in AI Technology and Intelligent System

2.1. Artificial Intelligence Technology

AI, referred to as AI. AI is an interdisciplinary subject. Although it sounds like a course, it is actually a comprehensive subject. Although it contains the word intelligence, it has no flesh and blood. It is mainly an artificial agent simulating a series of complex activities of human intelligence, such as perception, learning, reasoning, communication and so on. It is different from human natural intelligence in that it can largely eliminate metabolism and reproduction and other organic activities. It's like the realization of human intelligence on machines. Because the development and use of intelligent machines can simulate and expand the functions of human organs, rather than many simple, repetitive or even complex work that is difficult to complete at ordinary times, great changes have taken place in the social demand for workers. Therefore, the AI in this study is not a discipline, but a variety of intelligent devices and intelligent software that integrate the meaning of technology and general meaning behind it.

2.2. Use of Quantitative Evaluation Weighted Evaluation Algorithm for Cognitive Ability of Middle School Students in Intelligent System

(1) Generation of teaching rules based on decision tree

Student learning model structure is a data structure widely used to record a student's learning situation. Its project establishment is mainly to enable the majority of students to better understand the object of classroom teaching and make it more targeted. Most of the traditional Chinese non college students' education mode is based on the accumulation of professional knowledge. With the continuous development of students' cognitive technology learning education theory, the current Chinese students' cognitive learning education model is gradually changing to students' cognitive learning, that is, schools pay attention to establishing a complete cognitive knowledge structure recording each student's knowledge concept and improving their cognitive analysis ability. One of the key tasks in the construction of cognitive quantification student structure model in China is to correctly solve the problems about the representation of various formal characteristics of cognitive student structure, the formal representation of cognitive quantitative ability and the measurement of cognitive quantitative ability.

(2) Quantitative evaluation weighted evaluation algorithm for students' cognitive ability

In the actual teaching system, we can consider three main aspects in the comprehensive evaluation of junior high school students' comprehensive cognitive thinking ability: memory, understanding and practical use. In order to objectively and accurately evaluate each student's three different aspects of learning ability, the comprehensive English learning test method is used to conduct a comprehensive evaluation. In each test question, three weighted knowledge levels with corresponding comprehensive

investigation, memory, understanding and practical use are set for each test question, are given by the teachers according to the knowledge points of the examination, and constitute the ability repeated matrix r_{ij} (i represents the number of questions, j represents the ability component, and here j is 3). At the same time, the test result vector T is composed of students' answers. If the answer is correct, the corresponding vector is 1, otherwise it is 0.

$$R = (r_{11} \ r_{12} \ r_{13} \cdots r_{i1} \ r_{i2} \ r_{i3}) = T \quad (1)$$

$$T = (t_1, t_2, \cdots t_i) \quad (2)$$

Scores of each cognitive ability are calculated by the following formula:

$$A_j = \frac{\sum_{i=1}^m t_i \cdot r_{ij}}{\sum_{i=1}^m r_{ij}} \quad (3)$$

Teacher's evaluation of students is fuzzy, so the evaluation results are fuzzy. The numerical value of students' cognitive ability is fuzzified into three levels, namely $P = \{\text{Low, medium, high}\}$. It is stipulated that $A_j \in [0, 0.6)$ is low, $A_j \in [0.6, 0.8)$ is medium and $A_j \in [0.8, 1]$ is high.

3. Investigation and Analysis on the Use of Artificial Intelligence in Pedagogy Teaching Mode.

In recent years, the use of AI technology in the field of education has become a hot spot. Both industry and education practice regard AI technology as a breakthrough to promote education equity, improve education quality and realize education individualization. Only by establishing an effective education and teaching mode, can AI technology based on deep learning be used in the field of education, and further realize the interpretability of data analysis, so as to provide guidance for the intervention of education services.

In the research and analysis, this paper adopts two ways to carry out the research, which are questionnaire and interview study. 290 teachers and students were selected as the sample. In the process of investigation, this paper found that more than 90% of teachers and students think that AI can promote the teaching mode of pedagogy. In this study, we divided all the subjects into two groups by category. One group is teachers, the other group is students. This paper analyzes the role of AI in the teaching mode of pedagogy. Table 1 data from the use of AI in pedagogy teaching mode questionnaire, from Table 1: AI improves the quality of teaching level, plays an important role in pedagogy teaching mode.

Table 1. Use questionnaire of AI in pedagogy teaching mode

Investigation items	Registered students (%)	School Teachers (%)
It has a promoting effect	91	93
It doesn't work	4	3
No effect	5	4
Hope to increase promotion efforts	93	96

4. Discussion

4.1. Suggestions on the Use of AI in College Psychology

(1) Correct understanding of AI

In the teaching of AI psychology, it is very important to guide teachers and students to correctly understand the teaching methods of AI. With the rapid development of science and technology, most psychology teachers have a certain understanding of AI. Some young teachers bring AI into the classroom in a simple way. While enriching teaching forms, teachers and students begin to enjoy the

efficiency and convenience it brings. Excessive reliance on AI will hit the enthusiasm and creativity of teachers and students, and the lack of supervision on students' use of intelligent equipment, which will cause some problems. Schools should carry out publicity among students, so that students have a more comprehensive understanding of AI, and pave the way for AI to enter the classroom and students.

(2) Monitoring of AI uses

Strengthening the supervision of the use of AI is mainly reflected in the supervision of students. The use of AI technology is inseparable from the carrier. At present, the carrier of AI in the use is mainly smart phones, tablet computers and intelligent all-in-one machine and other intelligent terminals. In the process of using intelligent terminal, the Internet is needed to collect, analyze and push data. We should develop and create a more perfect expert system, correctly guide, actively carry out positive education, so that students have a correct understanding of intelligent devices, and then fundamentally solve the relevant problems.

(3) Construction of AI classroom

Compared with the large-scale use of "intelligent classroom" and "micro intelligent campus", the use of AI and the construction of intelligent classroom are scarce due to its late start, high construction cost and high maintenance cost. The construction of intelligent classroom supported by AI technology has a profound and positive impact on education. We should realize the importance of education and realize that the use of AI is one of the development trends of education. It is necessary to increase the investment and publicity of intelligent classroom construction, so that AI can enter the classroom as soon as possible and serve teachers and students. At the same time, we should strengthen teacher training and actively carry out teaching and research activities with the theme of "applied AI teaching". It provides teachers with a more comprehensive understanding and integration of AI and AI in the process of teachers' self-knowledge, modeling and AI.

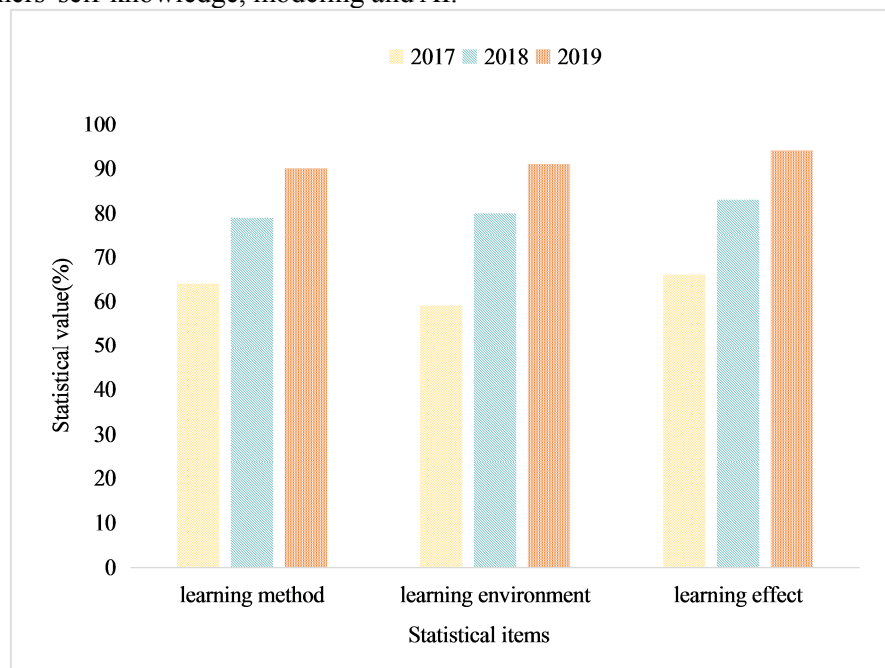
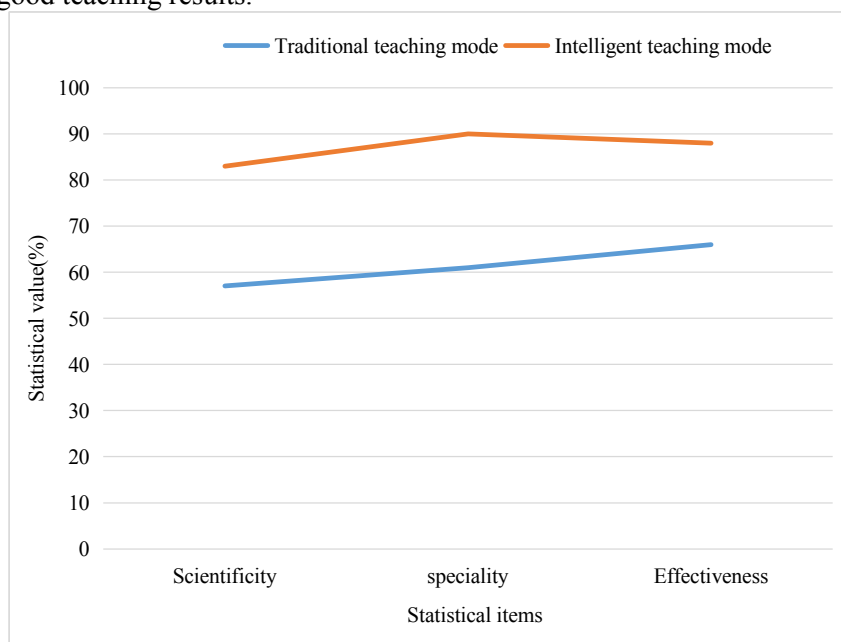


Figure 1. Comparative analysis of satisfactory learning environment, learning method and learning effect after applying AI in Psychology Teaching

Table 2. Comparative analysis of satisfactory learning environment, learning method and learning effect after using AI in Psychology Teaching

Investigation items	2017(%)	2018(%)	2019(%)
learning method	64	79	88
learning environment	59	80	91
learning effect	66	83	94

Figure 1 and Table 2 shows the comparative analysis of learning environment, learning method and learning effect satisfaction after using AI in psychology teaching. Figure 2 data from the traditional teaching mode and intelligent teaching mode data study, from Figure 2 can be seen: intelligent teaching mode is superior to the traditional teaching mode. The traditional teaching mode has limited access to information, involving a small range, and the effect is not ideal. After the intelligent teaching mode is popularized, the scientificity and specialty of teaching are improved, and the teaching effect is also improved. Through investigation and analysis, it is shown that the use of AI in the teaching mode of pedagogy has more advantages than disadvantages, and it is very important to popularize AI in order to achieve good teaching results.

**Figure 2.** Data investigation and analysis of traditional teaching mode and intelligent teaching mode

4.2. Problems in the use of AI in Pedagogy Teaching

(1) Over reliance on AI

Use of AI in pedagogy classroom will attract the favor of teachers and students with its deep knowledge reserve, fast command search and accurate content push. However, the excessive dependence and use of this technology will reduce the ability of teachers and students to learn and analyze history. In the process of teaching and learning, there will be "problems" that continue to the end, and acquire knowledge accumulation and ability through studying related problems. At the present stage of pedagogy, students acquire knowledge through the procedure of solving problems from the beginning of problem rising, and cultivate knowledge ability, including learning ability, problem analysis and problem-solving ability.

(2) Weakening of emotional exchange between teachers and students

At present, AI is still used as teaching tool and assistant to participate in teaching. It cannot communicate with users, which means that AI is just a kind of teaching tool without emotion. AI can

assist teachers in teaching, but they cannot replace teachers. Teachers' emotion in the teaching process has an indelible influence on students' knowledge learning, personality shaping and ability training. Face recognition system in AI system is still in the learning and recognition stage, and it does not have the ability of emotion analysis and expression.

5. Conclusions

Based on the use of AI in the teaching mode of psychology and Pedagogy in Colleges and universities, this paper takes the use of AI in teaching system as the main line of research. After research, this paper considers that AI is an important part of the teaching mode of psychology and Pedagogy in Colleges and universities. Through the investigation and analysis of different groups of people in the education system, we get their satisfaction with the use of AI in the education system. According to the research and analysis results of this paper, in order to make full use of the advantages of AI technology in the teaching mode of psychology and Pedagogy in Colleges and universities, we must combine the teaching mode of psychology and pedagogy with the actual situation of AI technology, take the actual situation as the starting point, pay attention to the scientific introduction, and ensure the healthy development of the teaching system. This research has achieved ideal results and made a certain contribution to the research of exerting the advantages of AI in the teaching mode of psychology and Pedagogy in Colleges and universities.

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