

# *Research on Strategies of Improving Teaching Ability of University Teachers from the Perspective of Artificial Intelligence*

Xiaoling Pi<sup>a</sup>, Yanhong Wu<sup>b,\*</sup>

Zhanjiang Science and Technology College, Zhanjiang, Guangdong, China

<sup>a</sup>2446505786@qq.com, <sup>b</sup>margi1983@126.com

\*Corresponding author

**Keywords:** Artificial Intelligence, Teaching Ability, College Teachers, Intelligent Teaching

**Abstract:** With the rapid development of fourth-generation information technologies such as cloud computing, big data and artificial intelligence, China's higher education is gradually maturing. In the process of information, the demand for the teaching ability of teachers in colleges and universities is increasing. Based on this, the discussion of colleges and universities under the vision of artificial intelligence to improve the quality of teachers is an important guarantee of the overall quality of colleges and universities. On this basis, combining with the educational ability of teachers in colleges and universities and the development trend of artificial intelligence, a new concept of "intelligent education power" is put forward, aiming at exploring ways and approaches to improve teachers' teaching ability under the vision of artificial intelligence. By using the method of literature, this paper discusses the current situation of teachers' educational ability development in colleges and universities in China from the perspectives of educational reform, teacher professional development, lifelong education and big data of education.

## **1. Theories Related to Educational Ability from the Perspective of ARTIFICIAL Intelligence**

### **1.1 Educational Ability**

At present, there are few theories and practices about "teaching ability", mainly focusing on "teaching ability". There are different biases and biases in the understanding of "teaching ability" in the academic circle[1]. Most of the domestic researchers define and elaborate the connotation of education from the perspective of psychology and management, and pay attention to explore the teaching level from the perspective of "teaching", focusing on the level of its teaching behavior. However, most foreign researches focus on studying teaching ability and quality from the perspective of "learning", while the focus of research is how to improve students' teaching ability. Many people regard "teaching ability" as another name for "teaching ability", and there is no obvious difference in meaning between the two[2]. The article points out that "teaching ability" and "teaching ability" cannot be easily combined. "Teaching ability" is an important teaching activity, "teaching ability" has potential, and "teaching power" refers to the performance of "teaching ability"

through the action of "teaching".

## **1.2 Educational Ability from the Perspective of Artificial Intelligence**

In recent years, China has issued China's Education Modernization 2035, the Development Plan for a New Generation of ARTIFICIAL Intelligence, and the Artificial Intelligence Innovation Action Plan for Colleges and Universities[3]. It is an important link of constructing "new era" to improve teachers' teaching ability, realize "intelligent" teaching and construct modern classrooms by using intelligent technology. Construct new teaching situation, teaching mode and learning mode; Only in this way can the inner connotation of colleges and universities be developed effectively.

## **2. Improving the Quality of College Teachers Plays an Important Role in the Vision of Artificial Intelligence**

Nowadays, with the combination of education and teaching, "teaching power" can not accurately reflect its comprehensive connotation and characteristics of The Times." Intelligence" is a kind of comprehensive intelligence quality based on intelligence, which can achieve teaching goals by using intelligence technology to carry out teaching activities. In addition to traditional teaching skills such as professional ethics, professional knowledge and information literacy, smart learning techniques, cross-disciplinary and cross-organizational collaboration and innovative teaching strategies are required[4]; On the basis of teaching big data, it expands students' learning space and functions such as mining, analysis and decision-making. In the field of "artificial intelligence", how to improve the educational level of teachers in colleges and universities is particularly important.

### **2.1 Improve the Understanding of Colleges and Universities on Improving the Quality of University Running**

Colleges and universities are the important foundation of higher professional and technical education in China. Its primary mission is to cultivate students' creativity and practical ability. To promote the development of universities, it is necessary to improve the teaching level of universities, and to improve the faculty of universities, it is necessary to improve the teaching level of universities[5]. Improving the quality of university running is an important force to improve the quality of university running. With the acceleration of the process of "popularization" in China, the construction of university teaching staff in China has attracted more and more people's attention. It is urgent to strengthen the construction of university teaching staff at various levels in order to realize the real level of running a school, which puts forward higher requirements for the teaching ability of university teachers[6].

### **2.2 Improving the Level of Teaching Staff in Colleges and Universities is an Inevitable Requirement of the Construction of Teaching Staff in Colleges and Universities**

Knowledge is the process of producing, renewing and flowing knowledge. The rate of death and the total amount of knowledge increase geometrically Abnormal condition. From the perspective of teachers' career development, in the knowledge economy society, teachers should continue to learn and enrich themselves, and continue to interact with the social environment to improve their own ability[7]. To be the organizer and promoter of university education, college teachers should not only have profound subject knowledge (subject specialized knowledge), but also have extensive scientific and cultural foundation and have necessary conditions. Colleges and universities should adapt themselves to the new situation, improve the ability of teaching plans, strengthen the

monitoring and control of classes, and teach students according to their aptitude. The university not only strengthens the construction of teaching staff, but also strengthens the teaching ability of teachers, laying a solid foundation for the development of the university.

### **2.3 It Promotes Human-Computer Interaction Teaching in an Intelligent Environment**

Today, with the rise of "education revolution", artificial intelligence has brought a new meaning to schools and teachers. In the process of the development of education, artificial intelligence provides new opportunities and challenges for education. In the new era, the overall quality of university teachers is required to be higher and higher. In the process of combining with teaching intelligence, artificial intelligence has profoundly changed the orientation of teaching concept, teaching mode and teaching method[8]. Although artificial intelligence cannot replace teachers, in the era of intelligence, teachers who are good at using technology to teach will gradually replace those teachers who are not good at using technology to teach. With the development of The Times, the work of teachers is also facing unprecedented impact and test. The teacher is not only the master of knowledge, but also the organizer, coordinator and even the assistant of learning. In the new period of "man-machine co-teaching", the development of knowledge economy needs teachers to enter into the environment of "man-machine co-teaching" as soon as possible, and teachers also need to continuously improve their teaching ability in the new century.

## **3. Analysis of the Current Situation of Teaching Ability in Colleges and Universities in the Era of Artificial Intelligence**

This paper mainly to questionnaire survey as a research tool, in reference to the existing research and questionnaire based on part of the university teaching. After communicating with relevant experts and scholars for many times, we designed a questionnaire on the Current Situation and Related situation of College Teachers' Teaching Ability from the perspective of ARTIFICIAL Intelligence, with 52 questions in total. The questionnaire mainly investigated the status quo and influencing factors of teaching ability of college teachers from the perspective of artificial intelligence. The summary of the survey results is as follows:

### **3.1 Survey Subjects**

The objects of this paper are teachers from 6 universities in Guangdong Province. The basic situation of teachers participating in this survey is shown in Table 1.

As can be seen from Table 1, the proportion of teachers with bachelor's degree accounts for 6.5%, master's degree accounts for 67.07% and doctor's degree accounts for 26.42%. The proportion of teachers with teaching experience of 0-5 years is 22.67%, and the proportion of teachers with teaching experience of 6-10 years is 23.17%, 11-15 The proportion was 33.33% for years, 14.63% for 16-20 years, and 6.1% for more than 21 years. Teachers under the age of 29, Teachers accounted for 15.25%, 30-39 years old for 50%, 40-49 years old for 24.38%, above 50 years old for 10.16%; The proportion of teaching assistants, lecturers and associate professors is only 21.14%, 47.97% and 20.73% respectively. Cases accounted for 10.16%; This shows that the proportion of young teachers and middle-aged teachers in colleges and universities is large, the teaching age is generally low, teachers teaching strength needs to be improved. As can be seen from the column of professional title, the proportion of professional title in professor is low, the proportion of associate professor is the largest, but the proportion of ordinary lecturer is not low either. Therefore, to explore the integration of artificial intelligence technology and education path, to accelerate the promotion of high School teachers actively adapt to the development of intelligent education,

strengthen the construction of college teachers, improve the teaching ability of college teachers.

Table 1: Statistical table of basic information of respondents.

	project	The number of	Accounted for
A degree in	Bachelor's degree	16	6.50%
	A master's degree	165	67.07%
	Dr.	65	26.42%
Age (years)	Under the age of 29,	38	15.45%
	30-39	123	50.00%
	40 to 49	60	24.39%
	50 years of age or older	25	10.16%
Teaching Years (years)	0 to 5	56	22.76%
	6-10	57	23.17%
	11-15	82	33.33%
	16-20	36	14.63%
	21 years	15	6.10%
The title	ta	52	21.14%
	A lecturer	118	47.97%
	Associate professor	51	20.73%
	professor	25	10.16%

### 3.2 The status quo of Teaching Ability of University Teachers from the Perspective of Artificial Intelligence

This paper discusses the factors that affect the teaching ability of college teachers by statistical method and makes a deep research on them. The first level is to discuss the teaching design level of college teachers from the aspects of teaching design, teaching objectives, teaching content and teaching materials. Through classroom management, teaching environment and teaching regulation, it reflects teachers' teaching organization and management level from the perspective of teaching process and practice. Through teaching reflection, teaching idea, teaching experience and teaching materials sorting out, it shows the teaching effect of teaching evaluation and reflection; Teach students according to their aptitude, answer questions intelligently and assign homework; Through the development of teaching software and intelligent correction, the research, development and application of teaching technology are discussed. Through the research on work attitude, work pressure, teaching reflection and lifelong education, we can understand the individual influence; Through the teaching environment, training activities, training expenses; To examine the whole educational environment of university from the perspective of educational management and concept innovation; Through technical application, data capability, technical capability; This paper discusses the application of artificial intelligence teaching in colleges and universities from three aspects: training platform, policy application and data ecology. The data obtained from the questionnaire were used for average analysis. The information collected from the questionnaire was used to calculate the mean value. The calculation results are shown in Figure 1

From the above data analysis, the main problems existing in the teaching ability of teachers in colleges and universities are as follows:

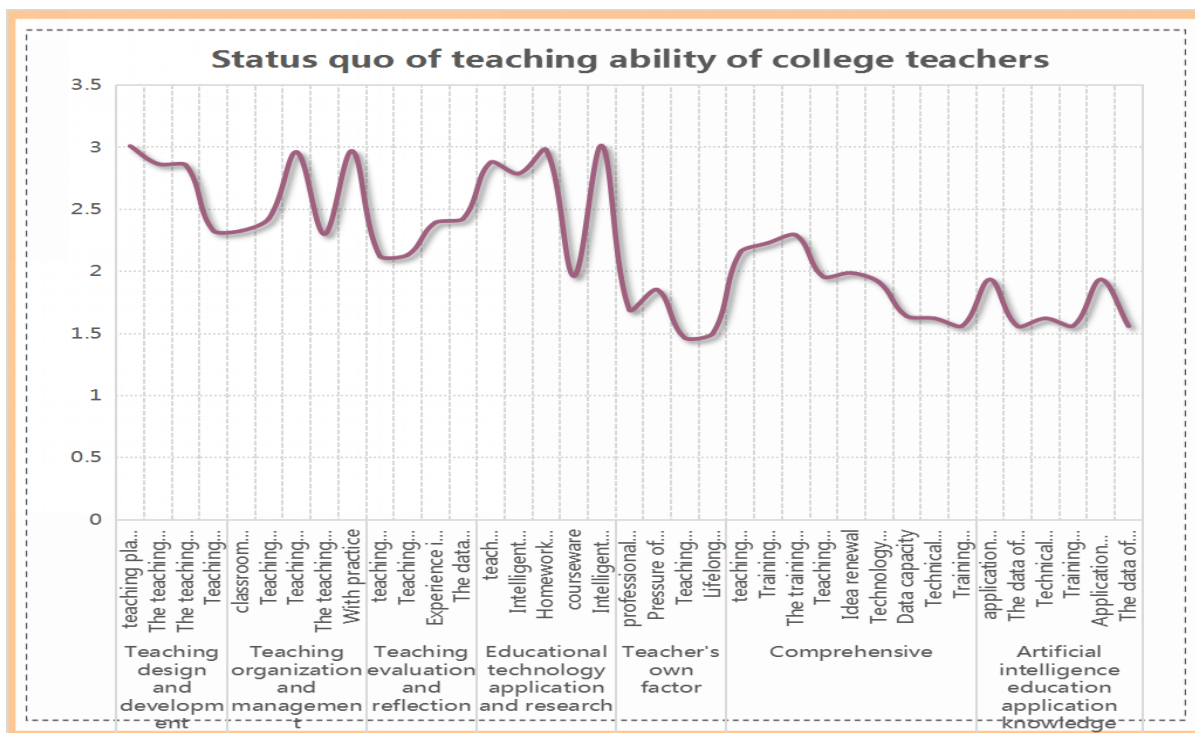


Figure 1: Current situation of teaching ability of college teachers.

### 3.2.1 The Current Understanding of the Educational Application of Artificial Intelligence among College Teachers Needs to be Strengthened

According to the above chart analysis results, it can be seen that college teachers' understanding of the application of ARTIFICIAL intelligence education has a significant impact on teachers' teaching ability. And currently 65.38% of college teachers' knowledge of artificial intelligence is still in the status quo of heard but not very understanding, only 3.2% of teachers in colleges and universities can do application of artificial intelligence education problem is very understanding and can be used in the education teaching activities, especially the title lower college teachers, general lack of deep understanding on the application of the artificial intelligence education.

### 3.2.2 Strengthen the Construction of College Teaching Staff.

The order of effect of each factor of teaching ability on teaching effect is: teaching organization and management, application and research of educational technology, teaching design and development, teaching evaluation and reflection; According to the results of the survey, the teaching ability of Chinese colleges and universities is generally above average, and the teaching development ability, teaching technology application and research ability, teaching evaluation and reflection ability are not high, which needs to be improved. According to the research findings, 47.3% of college teachers have a certain negative effect on their own knowledge and skill level. From this point, we can see that the teaching staff of Chinese universities still need to strengthen their own professional knowledge and skills.

### 3.2.3 University Level: Lack of Adequate Incentives

At present, the cultivation and training effect of intelligent teachers in colleges and universities in China is not obvious. Under the influence of ARTIFICIAL intelligence, teachers in China should have a weak sense of crisis and sense of change. The wide application of artificial intelligence

provides a new idea for the development of artificial intelligence in higher education in China. Strengthen the construction of intelligent classroom, intelligent laboratory, intelligent education and training, teaching big data construction; In the field of teacher teaching reform, we should adopt more sound teacher evaluation and teaching reward mechanism to promote the change of teachers' ideas and improve students' intelligence quality. Seize the tradition and create the era of tomorrow.

### **3.2.4 At the Public Level, There is No Strong Expectation for the Application of ARTIFICIAL Intelligence**

Outbreak in 2019, the social training organizations independent research and development of "intelligent" education management platform and online education service system, homework to the student, classroom behavior, such as test data in real-time data acquisition, analysis of students' learning situation of individualized, targeted guidance to students, achieve the goal of the "according to their aptitude". Based on the expectation of parents and students for intelligent teaching, artificial intelligence technology is introduced into social training teaching, so that autonomous courses, intelligent feedback and robot teaching can be realized. At present, there are many college students living in dormitories in Our country, which leads to a low level of attention to the current situation of school education. College students and teachers are under less pressure from the outside world, and their drive to improve their ideas and skills by means of information technology is not strong.

## **4. Some Countermeasures to Improve the Teaching Ability of Teachers in Colleges and Universities in the Field of Artificial Intelligence**

### **4.1 Establish the Education Concept of "Artificial Intelligence" and Improve the Level of "Education Management"**

In this world of artificial intelligence, the way of knowledge acquisition, dissemination and innovation will change, and students can use it to acquire the knowledge they need at any time. Therefore, higher education teaching must actively improve its own quality with a positive attitude and correct values, in order to meet the challenges of the new century, and actively establish a wise teaching concept. Institutions of higher learning to permeability of artificial intelligence technology in the teaching way and fusion rate for scientific evaluation, carry out the idea of artificial intelligence to the excellent teachers team construction, high starting point plan intelligent teaching force of the development of the ideas and countermeasures, advanced explore + "artificial intelligence" education mode, in perfect education ecological system and education data, on the basis of information construction, Promote intelligent evaluation and quality supervision, and promote the significant improvement of teaching management ability.

### **4.2 Promote the Professional Development of Teachers and Tap the Intelligent Potential of Education**

Teacher professional development is an important step for teachers to accept new knowledge, master new skills and increase their professional ability. The idea of intelligent education, modern classroom technology and methods should be spread to teachers, so that they can change their ideas, improve methods and improve teaching programs; By adjusting the teaching process, the classroom effect can be improved effectively. We should make the wisdom of educational environment, the optimization of teaching methods, the optimization and integration of evaluation models, and attach



importance to advanced thinking and creation. To promote the integration of teacher training concept, system and management. To improve teachers' intellectual quality and teaching methods as the core, establish interdisciplinary knowledge groups, promote teachers' professional development, give full play to their intellectual potential; Improve the internal motivation for the construction of teaching staff.

### **4.3 Accelerate the Establishment of Intelligent Colleges and Universities, and Build an Educational Information-Based Environment**

The establishment of intelligent teaching design, individualized teaching in accordance with their aptitude, dynamic teaching process; Implement scientific education evaluation and construct an intelligent education ecology. Students as the core, to promote education and teaching, school management, resource construction and other aspects of the work. Smart university not only links all the objects in the campus network, but also links different teaching resources with those outside the campus. Based on intelligent network, intelligent classroom and intelligent laboratory, an intelligent teaching service platform with big data intelligence as the core is built to provide strong support for teacher education and teaching reform and realize data sharing and management. Let the intelligent and humanized campus life become real.

### **Acknowledgement**

This project is a phased research result of the 2022 higher education research topic of the 14th Five-year Plan of Guangdong Association of Higher Education: Research on the Teaching Ability improvement Strategies of University teachers from the perspective of artificial intelligence (Project No. : 22GYB146).

### **References**

- [1] Guo Juan. *Research on strategies for Improving Teaching Ability of College Teachers from the perspective of artificial intelligence [D]*. Hunan University of Science and Technology, 2020.
- [2] Pan Lin. *Research on model Construction of Flipped Classroom Teaching Competence of College Teachers [D]*. Henan University, 2017.
- [3] CAI N. *Empirical research on the current situation and improvement path of young teachers' teaching ability in local agricultural colleges and universities [D]*. Jiangxi Agricultural University 2017.
- [4] Hua Lulu. *Research on Artificial Intelligence Promoting Teaching Reform [D]*. Jiangsu Normal University, 2018.
- [5] Yi Yang. Jiang Aihua. Guo Juan. *Research on intelligent teaching ability of university teachers: Concept evolution, Influencing factors and development path [J]*. *Educational Exploration*, 2020 (11): 76-78.
- [6] Liu Junhua, YAO Zhigang. *Analysis on the Composition and Current situation of young Teachers' teaching Ability in Local Colleges and Universities [J]*. *Higher Education Journal*, 2016 (13): 200-201,204.
- [7] Fan Zeheng. *On The Teaching Ability of College Teachers [J]*. *Journal of Anhui Normal University: Humanities and Social Sciences Edition*, 2015 (1):114-118.
- [8] Sun Caiyun. *Teaching Ability of SPOC Course teachers: Connotation and Influencing Factors [J]*. *Frontiers of Theory*, 2018 (9): 18-21.