# Reform of School Curriculum System and Teaching Mode under the Background of Big Data

## GE Junfeng

*School of Physics, Jining Normal University, Wulanchabu 012000, China*

**ABSTRACT.**   *With the advent of the era of big data, the traditional education and teaching model fail to adapt to the needs of the development of The Times. Combined with the 4V model features of big data, this paper analyzes the opportunities and challenges brought by big data to the reform of college education and teaching, and puts forward reform Suggestions from three aspects: diversified teaching mode, construction of teacher team and construction of teaching evaluation system.*

**KEYWORDS:** *Big data; Teaching mode; The teaching reform*

## 1. Introduction

The rapid development of information technology and communication technology is driving the arrival of the era of big data. Big data has also brought great changes to the information technology industry, and has influenced the industrial production and all aspects of people's life. In recent years, China has listed big data as a strategic emerging industry supported and developed by the country, and has issued a number of policies to support the development of big data. Talent is the key to the development of big data industry. As the base of talent cultivation, colleges and universities shoulder the important task of cultivating first-class talents. With the advent of the era of big data, traditional teaching methods in colleges and universities are facing unprecedented opportunities and challenges. In order to promote education in colleges and universities teaching method showed a trend of science and technology, informationization, the digital development, the author analyzes the large data of college education teaching method, the influence of and the reform of teaching method for colleges and universities put forward the corresponding strategy, promote the combination of college education and the big

data technology, improve the level of education in colleges and universities teaching, provide talent guarantee for the development of the era of big data. [1]

## 2. Research on teaching mode under big data

### 2.1 reform of computer programming teaching model under big data

In the context of big data, the discipline of computer programming needs to reform its teaching model. And in the reform to multi-pronged, it is possible to achieve good results. For example, in the use of textbooks, the latest version should be selected according to the actual development of the society, and the corresponding textbooks should be constantly updated to make the textbooks close to life and full of interest. In terms of classroom teaching, the role of teachers and students should be changed to endow students with more autonomy in learning and stimulate their interest in learning and awareness of exploration. [2] In the context of big data, computer practitioners are no longer only responsible for simple programming and other businesses, but also need to analyze data comprehensively according to changes in programming projects, and extract corresponding data conclusions, so as to provide technical theoretical reference for program improvement of enterprises. In the actual work, the employees in the computer programming industry are divided into different types of jobs. In the teaching of colleges and universities, it is necessary to carry out corresponding simulation for the work of different positions based on big data, so as to create a good practical training environment for students and improve their practical operation level. In terms of assessment, it is necessary to analyze students' big data, instead of regarding experimental assessment as auxiliary performance. Assessment methods should be diversified, and students' actual operation level should be fully examined in the assessment process. The development of big data has provided conditions for the school to create a more real training environment. The school can make use of big data to cooperate with other enterprises, use real enterprise data for students' practice, and cultivate students' ability to solve practical problems.

### 2.2 Second class construction under big data

As a supplement to students' daily study, the second class can improve students' practical operation ability by carrying out more practical teaching activities. In the context of big data, schools can collect and transmit the data of the second class through the network media and other intermediaries, so as to grasp the actual learning results of students and improve them. This is actually the application of a remote teaching model. In the second class, students can be organized to use social software to express their learning feelings. Finally, the activity trajectory of students can be analyzed through big data to obtain the actual learning situation of students, so as to establish a feedback mechanism of students' actual learning effect. In the

context of big data, students can also use the Internet of things and the Internet to build a smart campus through their school activities. In the context of big data, the second-class activities can be carried out in the spare time of students, without the need to organize corresponding teaching time, thus saving the time of teachers and students. Under the background of big data, the students' comprehensive data will be put on record, do differentiation compared to the data of different students, can make teachers in the design of the corresponding teaching plan, focused, in the actual process of examination, can according to the conclusions obtained from the big data to personal cultivation of student's character, make students physique and get all-round development. [3]

### 2.3 Smart teaching system construction under big data

Big data integrates diverse data information, through which the activity trajectory of specific users can be obtained comprehensively and their activities can be modeled and analyzed. In college education, the feature of big data can be given full play to reduce the difficulty of teaching quality monitoring through the application of big data. Teachers can effectively monitor students' learning situation and timely adjust their teaching progress by collecting, sorting and analyzing student data. In terms of the distribution of the learning resources, teachers can according to the result of large data model analysis to summarize the characteristics of different students, and in accordance with the push of different learning resources, improve the student's study enthusiasm, promote students' learning initiative, to help students form the adaptive learning system, the model analysis results can also effectively capture the granular flow behavior, learners after for teachers teaching arrangement provides a powerful reference.

### 3.The influence of big data on college education and teaching methods

Big data has a profound impact on scientific research, production mode, thinking mode, social development, talent training and other aspects. In scientific research, big data makes scientific research produce the fourth paradigm -- data after the three paradigms of experiment, theory and calculation. In terms of production mode, big data has played a positive role in the formulation of production strategy, the analysis of production demand and the research and development of new products. In terms of thinking mode, causality becomes less important in the era of big data. People pay more attention to the connection between things rather than simple causality. In terms of social development, big data decision making has become a new decision-making mode. [4] The application of big data technology has greatly promoted the close integration of information technology with other industries, and also promoted the development of new technologies and products. In terms of talent training, the rise of big data will gradually change the training program for talents

majoring in information technology in Chinese colleges and universities, and have a profound impact on the education and teaching methods in colleges and universities.

(1) Opportunities brought by big data to the reform of college education and teaching

Big data provides a better foundation for improving the quality of talent training. Under the background of big data, information resource sharing ability stronger, college and enterprise and unit of choose and employ persons closer contact with better access to unit of choose and employ persons of talent demand, so as to adjust the talent training scheme, and carries on the innovation of teaching contents and teaching means, deepening the reform of education teaching, a targeted by means of cooperation between colleges cultivate the applied talents, and to further improve the quality of personnel training.

Big data provides conditions for sharing educational resources and promoting educational equity. The traditional teaching mode is generally the classroom teaching method, and the knowledge students learn is taught by the teachers in the classroom. However, in areas where education resources are scarce, it is difficult for students to learn knowledge other than classroom and books, and it is difficult to guarantee the fairness of education. With the development of information technology and big data technology, some new teaching methods, such as MOOCS and micro-lessons, can realize the sharing of educational resources, the free choice of learning time and place, the learning content can be repeated many times, and even the knowledge can be discussed with learners thousands of miles away. Through the sharing of educational resources, the problem of lack of educational resources in backward areas is solved, and the fair development of education is promoted at the same time. [5]

Big data provides a platform for the modernization and internationalization of education. As stated above, the new teaching way, longed for the popularity of class and class methods such as, at the same time of promoting the education resource sharing, also promoted the development of modern education, because the new teaching way to break the traditional education ideas, make the education content, education method and teaching equipment are raised to the level of modernization. At the same time, large quantities of higher learning are added to the mu class teaching platform, full of learning and absorbing foreign advanced teaching idea, at the same time-sharing high-quality teaching resources, both at home and abroad to establish a local longed-for teaching platform, greatly promote the reform of education teaching idea, improve the teaching quality of education, expand the international influence. At the same time, through these means of education modernization, in the realization of education modernization, but also constantly improve the relationship between domestic and foreign universities, to achieve a win-win situation. Therefore, the development of big data technology brings new opportunities for the education and teaching reform in colleges and universities.

(2) Challenges brought by big data to college education and teaching reform

Big data has brought a shock to traditional education and teaching concepts. In the traditional teaching mode, the teacher-centered, book-centered, and class-centered teaching is easy to form the situation of teachers' one-way indoctrination and students' passive acceptance. In addition, the traditional educational concept

emphasizes theoretical teaching but ignores practical teaching, and the talent cultivation is almost the same as "one thousand schools". However, in the context of big data teaching, the concept of education and teaching has changed. Talent training combines school characteristics, professional characteristics, students' specialties, enterprise needs and other aspects to teach students in accordance with their aptitude, follow their own rules of learning, pay attention to people-oriented, and cultivate more diversified, more comprehensive and more practical talents. This has brought the bigger impact to the traditional education teaching idea.

Big data challenges the traditional teaching model. In the past teaching model, colleges and universities put all their energy on classroom teaching, rarely cooperate with enterprises, students have few opportunities to communicate and learn with other college students, and their hands-on ability is only a few experiments. After graduation, the proportion of students who choose to work in line with their major is relatively low. However, with the development of mobile Internet and big data technology, the learning methods are diversified, the frequency of school-enterprise cooperation is greatly increased, and the opportunities for students to contact enterprises are also gradually increased, especially the promotion of MOOC, micro-course and other learning methods, which bring challenges to the traditional teaching model. [6]

Big data puts forward higher requirements for the education and teaching ability of college teachers. In the traditional teaching mode, teachers play the role of the speaker, and in the era of big data, gradually change from the role of speakers into students learning guidance, the organizers of the teaching process, students learning partners, information consultant, that is to say, the diversification of teacher's role from the original simplification to now, the education teaching ability of the teachers put forward higher requirements. Teachers should pay attention to teaching students in accordance with their aptitude in the process of education and teaching. In addition, teachers must constantly enrich their knowledge reserve, with new knowledge and new technology constantly armed themselves.

## 4. Strategies for teaching method reform in colleges and universities under the background of big data

The development of big data technology has brought both opportunities and challenges to college education and teaching methods. In order to better promote the reform of teaching methods in colleges and universities, the author puts forward the reform strategies from the three aspects of teaching mode, the construction of teacher team and the construction of teaching evaluation system. [7]

(1) Diversified teaching modes

In the context of big data, domestic colleges and universities can learn such classroom concepts as "MOOC" and "micro course", integrate teaching resources, innovate teaching platform, enrich teaching means and carry out diversified teaching mode reform with the help of Internet technology and big data platform. Diversified teaching modes mainly include traditional classroom teaching, task-driven teaching, group discussion teaching, project practice teaching, and extracurricular self-study.

In addition, in the diversified teaching mode, teachers integrate teaching, learning, management, examination and evaluation, making the teaching method more flexible.

In diverse teaching mode, the key in by changing students' learning habits, through the heuristic method of teaching, discussed specific group learning and learning, and with the help of a tablet, mobile phone, notebook, rich original classroom teaching, stimulate students' interest in learning, and greatly increase the student found the problem, ask questions, problem solving skills, promote the further reform and development of colleges and universities teaching pattern.

(2) Construction of the teaching staff

Teachers play an important role in the process of talent training in colleges and universities, and their teaching ability directly affects the quality of talent training in colleges and universities.

Especially in the context of big data, colleges and universities need to encourage teachers to update their education and teaching concepts in various ways, stimulate their enthusiasm for mastering modern teaching methods, and let teachers take the lead in the reform of education and teaching. The construction of the teaching staff can be started from the following aspects: selecting excellent teachers to carry out the reform of public education and teaching mode, so that all teachers in the school can learn and progress together; Encourage teachers to participate in domestic and foreign education and teaching seminars or ability enhancement training classes, and let the teachers involved in learning advanced ideas spread throughout the school; The school has set up a special fund for education and teaching reform to encourage teachers to participate in the reform of teaching mode in the form of projects, so as to further improve the quality of classroom teaching. [8]

(3) Construction of teaching evaluation system

Teaching evaluation is a process of studying the value of teachers' teaching and students' learning, generally including the evaluation of teachers' teaching work and the evaluation of students' learning effect. The traditional teaching evaluation method is simple, which is difficult to provide the basis for the further development of teaching.

In the context of big data, teaching evaluation system construction can be carried out in combination with diversified teaching models. For the evaluation of teachers, can through the teachers' evaluation, teachers, peer, in the form of teaching evaluation, students' evaluation of teachers and the teachers' evaluation may, by way of written evaluation report to analyze the deficiency in the process of teaching, student to teacher's evaluation at the same time, provide the basis for the next stage of teaching work. Evaluation way for the students is more rich than for teachers' evaluation way, because of the diversification of teaching model, students' learning space, trajectory, learning time and learning outcomes can be recorded, preview about the course, students learn knowledge team of master, after-school learning in classroom discussions, assignments, and final exams are as evaluation index, with the help of a large data processing platform, realize the student to study the process of multi-dimensional, comprehensive, visualization of evaluation.

**5.The effects of educational model reform**

(1) Improve the flexibility of teaching process
Nowadays, with the development of big data era, the education and teaching process has been integrated to a certain extent to ensure that the teaching activities are more flexible. Affected by various factors, the traditional teaching model has been difficult to meet the current educational and teaching needs in China. Based on this, relevant colleges and universities need to make rational use of big data to effectively adjust various resources. By using computer technology, students can carry out learning anytime and anywhere, ensuring that teaching activities are more flexible and learning objectives are more effectively realized. [9] At the same time, it can effectively stimulate students' learning interest and ensure that students have stronger subjective initiative when participating in teaching activities.

(2) Make quality educational resources widely available
In China's current social development process, the deepening of computer technology has a great impact on students' learning and future development. Generally speaking, there are individualized differences among different social members. When understanding and solving the same thing, there are great differences in individual abilities. If unified teaching is carried out for students, there will always be serious learning differences among students, which will have a great negative impact on their future development. Based on this, educators need to make reasonable use of computer technology and make scientific choice of course difficulty based on students' personal ability to ensure that students' abilities are constantly improved. At the same time, the development in the era of big data, education staff can also be spread by reasonable application of multimedia technology outstanding teaching resources, to ensure that the education level of China is more effective to ascend, ensure that students can use the information platform to share high quality resources, deliver improved students' learning level, to a certain degree in the field of vision of students, to ensure that the development of education enterprise of China is more stable.

(3) Strengthen the interaction between teachers and students
In China's traditional education mode, students seldom communicate with teachers effectively outside the classroom. In the specific teaching activities, most of the time the teacher is lecturing, and the students always passively accept, and the classroom atmosphere is relatively low. When the teacher raises questions, the students cannot interact in a timely manner. , therefore, in the teaching activities in the past, the interaction between teachers and students a greater degree of deficiencies, the teaching effect is unable to meet the demand of education, the reasonable application of big data technology can to a certain extent in the manifestation of college students, the teacher is more effective for the analysis of the problems have been found in a timely manner, points out that to ensure more effective communication with teachers and students interact, improve the relationship between teachers and students in the certain degree, effectively improve the teaching quality. Only by ensuring more effective interaction between teachers and students can the speed of knowledge dissemination be effectively improved. In our traditional teaching process, most of the students can only communicate with teachers in the classroom, outside of the

classroom is very difficult to communicate directly with the teachers, and in the development of the era of big data today, reasonable application of information technology to students and teachers to communicate at any time, the teacher not only can carry on the classroom teaching in class, at the same time can also be in class at any time to answer all the doubts of students.

## 6.Conclusion

Big data is the development trend of The Times. As the base of talent cultivation, colleges and universities should seize the wave of big data and carry out corresponding education and teaching reform. Work in order to promote the education teaching reform, the author first analyzes the basic characteristics of the large data, and then discusses the era of big data for education teaching reform in colleges and universities bring opportunities and challenges, and finally from the diversified teaching mode, teacher team construction, teaching evaluation system construction three aspects proposed the education teaching reform Suggestions. It is hoped that all universities and colleges can adapt to the development of big data era and actively carry out education and teaching reform.

## Acknowledgement

## References

[1] Tian tiegang(2008). Characteristics of big data and future development trend research. Wireless Internet technology,vol. 1509, No. 61-62.
[2] Zhihui(2017). Discussion on teaching methods of applied talents education under the background of big data. Education modernization, vol.12, No.51, PP.25-26.
[3] Zhou qiaoying(2017). Comparative analysis of information-based teaching mode and traditional teaching mode. Journal of Harbin Institute of Technology, vol. , No.05, PP.43-45.
[4] Zhao jin, zhang jianjun, wang yijun(2008). Rethinking of educational development opportunities and challenges under the big data thinking. Audio-visual education research, vol.39, No.06, PP.21-26.
[5] Li yan, Chen wei, zhang shulin(2018). Application of big data in higher education. Journal of university of electronic science and technology of China (social science edition) , vol. 20, No.02, PP.102-108.
[6] Si guobin, cong jinmei(2017). Research on the reform of college teaching mode in the era of big data. Road to success, vol.6, No.16, PP.18.

[7] Yan taishan, wen yiting, huang hongxia, et al(2008). Research on the design of practical teaching evaluation system in local colleges and universities. Modernization of education, vol.5, No.23, PP.125-127+154.

[8] Zhang Yang, deng lujuan(2018). Construction of "student-centered" classroom teaching evaluation system under the background of "Internet +". Computer products and circulation, No. 02, PP.176-177.

[9] Guo fali(2017). Discussion on the O2O hybrid teaching mode under MOOC and traditional higher education . Heilongjiang science, vol. 8, No.11, PP. 116-117.