

Optimization Measures of Education Management in Colleges and Universities in the Era of Big Data

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Abstract: In the era of big data informationization, domestic Internet technology has been widely used, and the construction of digital informationization has been rapidly promoted, which has brought more development opportunities and challenges to school education. Introducing big data technology into teaching can promote the development of university informationization. Schools use Internet technology and big data information platform to collect data information, establish a digital information management system, promote all kinds of teaching and scientific research work, and improve the overall teaching level of schools. This paper puts forward reasonable optimization measures for education management in colleges and universities.

Keywords: big data era, university education management, education management, management optimization measures

1. Introduction

Nowadays, data has become a valuable resource. By collecting massive structured data and unstructured data, big data technology explores some inherent laws from massive data information, and establishes an analysis and prediction model to provide reference for various behavior decisions. In the education management of colleges and universities, the application of big data technology can improve management efficiency and quality.

2. The impact of big data on modern university education management

2.1. The essence of higher education management

Domestic schools should carry out dialogue teaching and daily academic research tasks, and make use of modern educational management methods to set future teaching goals in scientific research and teaching work. Teaching in colleges and universities is also to realize the close integration of various elements within the school. The teaching work in colleges and universities consists of five items: service, finance, materials, teachers and scientific research. To measure the modern teaching work in an all-round way, the level of educational work is the key to the operation and management of the school, which will affect the overall teaching quality of the school.

2.2. The new requirements of university education management for big data

2.2.1. Meet the needs of the national strategy

Under the background of the current development of big data era in China, big data technology has been applied to enterprises in various industries, and the country has also upgraded big data to an important industrial development field of the country and upgraded it to a national development strategy. At the same time, government departments have also introduced a series of big data development policies. National government departments regard big data resources as the basic strategic resources of the country, so they vigorously promote the integrated development of big data, increase data integration, establish a data resource library and establish a platform for sharing data information.^[1] By using big data to achieve efficient social governance and iterative innovation of social science and technology industry, facing the new international and domestic development situation, it provides a new development orientation for modern teaching.

2.2.2. Requirements of educational laws

Data teaching will involve many subjects such as family, society and school, and modern education is significantly different from the traditional employment practice in the past. With the support of domestic big data technology, modern teaching is more real-time and comprehensive. The analysis and processing work is also more complicated, and it has gradually entered diversified big data, which has also enhanced the data analysis. Under the development of the current domestic digital era, communication technology and cloud computing have not been used in the education industry, which can continuously and efficiently promote the flow of data information and collect information about students and teachers' teaching work. Grasp the macro-development situation and scientifically formulate education policies so that scientific research and teaching resources can be rationally allocated.

2.2.3. Requirements of the Law of Ideological and Political Work

The state vigorously promotes ideological and political work and improves the form of ideological and political work with big data, which can realize students' ideological education and the whole process of education, and introduce new ideological values into school teaching, so as to achieve the goals of scientific education, teaching education, management education and cultural education. On the basis of the existing teaching and education goals, ideological and political teaching and big data technology teaching can be integrated and interspersed, and the work formed here can be combined with management and service. To organize ideological and political work, we need to have a certain grasp of students' overall thinking, divide students into multiple levels, and carry out ideological and political teaching in a classified way. Use big data tools to achieve student segmentation, find out the common characteristics and personalized characteristics of different students, and conduct in-depth analysis for these students, so that students can understand the benefits brought by big data, master the problems existing in students' thoughts, and design scientific, effective and targeted teaching programs and strategies.

3. The characteristics of university education management big data

3.1. Scientific analysis

Students' daily behavior is also relatively regular. Most students can predict to use big data to collect data of teachers participating in various types of teaching and research competitions in school teaching. Big data is closely related to the current school teaching system management mechanism, and there are certain rules. Introducing big data technology into teaching work, making scientific decisions, and at the same time grasping students' specific learning situation and students' demand for knowledge, we should play its remarkable role. There is also a close relationship between students' academic performance and their study habits, learning behavior and learning ability and quality. With the help of data analysis technology, teachers can deeply analyze under the existing teaching management, so as to realize the scientific development of teaching work in colleges and universities and improve the scientific nature of teaching work.

3.2. Resource integration

The establishment of big data information platform between schools belongs to the highest level of the use of the whole resources, which can benefit the teaching and scientific research information of different schools. Only by effectively integrating the value resources of colleges and universities can the use of resources be maximized. First-class universities in China have established large-scale teaching platforms that are open to the society, and the coverage of teaching resources is also increasingly extensive.

3.3. Precision education

The object of teaching management in colleges and universities has the characteristics of differentiation. Teaching students in accordance with their aptitude, individualized management and personnel training are the ideal focus of college education at present. In teaching, we should follow the differences of college students' abilities, study hobbies and family background. The use of big data technology can tailor the teaching list and teacher training scheme for ordinary students, so that all students can share the teaching resources provided by teachers.

3.4. Two-way interaction

Teachers and students communicate with each other in the classroom and answer students' questions. In addition, on the big data information platform, they can also monitor the learning progress and homework of different students. According to the students' learning situation, the teaching plan and teaching strategy can be optimized and improved. Teachers can use the big data information platform to guide and explain, carry out ideological and political education in schools, realize two-way interactive teaching, and encourage students to actively participate in teaching, so as to give full play to the master ideology of college students. On the school teaching platform, students' teaching questions are answered, and teachers cooperate with students, so as to achieve the teaching purpose of students' self-development.

4. The analysis of the impact of big data on higher education management

Big data technology is embodied in teaching, teachers' and students' life and mental health, and has a corresponding impact. In the teaching of professional courses in colleges and universities, teachers can input data information such as the completion of students' homework and the examination and test into the computer. Teachers analyze the relevant data by creating a teaching analysis model, so as to judge which knowledge points students have mastered better, which knowledge points still have problems in learning, and where students' interests and weaknesses are. Schools and teachers can better design courses and provide a curriculum system that is more in line with students' interests and promotes students' all-round growth.^[2]

The solution of teaching problems no longer depends on the vague experience in every teacher's mind, but is based on the description of a large number of teaching problems and the analysis of teaching problem solutions. It can be predicted that in the era of big data, teachers' professional development will also usher in a new transformation, which will undoubtedly contribute to the reform of classroom teaching. In the era of big data, it is entirely possible for teachers to analyze each student's learning data, so as to truly teach students in accordance with their aptitude.

The relationship between big data and higher education is not just a simple application, and universities are by no means passively accepting big data. In fact, universities and big data depend on each other and promote each other. The development of higher education is also the development of big data. At the same time, the development of big data has also promoted the development of higher education. Big data can be said to be a tool. First, it conforms to the development process of higher education, and at the same time it has made many improvements and upgrades for the development of higher education. For example, big data promotes the process of talent training in colleges and universities, which is conducive to colleges and universities to select higher talents suitable for society, tap the potential value of talents, better serve the society, and also serve people, help students find their own advantages and make talent development smooth. As mentioned earlier, big data helps colleges and universities to establish a sound cultural system, which is conducive to the progress of cultural inheritance and the reform and innovation of educational forms. Big data helps colleges and universities to understand social needs and develop and cultivate all-round talents to adapt to society.

In the life of teachers and students, big data technology can better judge students' living conditions and ways. In China, the application and approval of poor college students is a difficult problem, because some students may deliberately falsify their application materials in order to obtain subsidies for poor students; Although some students have poor family conditions, they are unwilling to apply for poverty assistance out of self-esteem. If a public investigation is conducted, there is a risk of infringing students' personal privacy, and it may also hurt the self-esteem of poor students to some extent. ^[3]A university canteen can judge the financial situation of students according to the number of times they go to the canteen to cook and the amount of food and beverage consumption each time, and make funding arrangements based on this.

Conversely, higher education also plays a very important role in promoting the development of big data. Colleges and universities have a huge amount of information, relatively complete records and perfect forms, and a very perfect system for data collection, so college education also plays a positive role in the development of big data. Long-term data utilization in colleges and universities will naturally produce many effective data classification and sorting methods. The research on data is also very detailed and detailed, and the data will be supplemented and improved, and the data recording methods will be analyzed and innovated. Therefore, the sorting and utilization of data in higher education will also make more contributions to the development of big data. After talking about the mutual utilization between

college education and big data, we should also consider the joint development between big data and college education. Many colleges and universities usually communicate and share data processing methods and collection methods with the outside world more frequently after establishing a relatively perfect way of processing and utilizing big data. Most data processing work is purposeful, for example, data retrieval on the Internet is done only after thinking about what is needed first, so it is very important to classify and sort out data. College education is usually divided into liberal arts and science, and then there are engineering, medical, normal, business and so on. Different data have different processing methods, and different data categories are sometimes interoperable, so the processing methods and overall thinking of big data are different and related, which requires researchers to analyze and sort out for a long time.

The use of big data needs professional recognition, otherwise it will waste resources. It seems that only universities and researchers in society are qualified to certify big data. Big data is widely used in information technology, social sciences and other disciplines, and provides a good data reference for more data users while ensuring the authenticity and reliability of the data. In other words, the use of data in the process of college education directly affects the utilization rate of big data. Colleges and universities provide more technical support for big data, but also limit the development of big data, so this relationship between big data and college education affects the common development of the two.

In terms of mental health, college students' mental health problem is a realistic problem that attracts much attention, but it is difficult to find it directly. The action track of college students' daily life, topics concerned by logging in campus forums, books borrowed by libraries, daily consumption track, interpersonal interaction and other data can all be used as the basis for judging mental health problems. Of course, when using big data technology to pay attention to, analyze and judge college students' mental health problems, we need to pay attention not to infringe on college students' personal privacy, and the analysis of big data model is only a reference, and the specific situation needs to be judged by professional psychological counselors.

5. The application strategy of big data in modern university education management

Colleges and universities in our country have always been the cradle of cultivating all kinds of high-tech talents for our country, and have always been the leaders in science, technology and humanities in our country. Now China has entered the era of big data. The era of big data is an era of information explosion. In such an era, the advantages and disadvantages are quite obvious. On the one hand, the arrival of the era of big data can make it easier for schools to manage their education, and many extremely complicated problems can be solved by using the Internet, and communication between schools and between schools and students will become extremely convenient. On the other hand, with the advent of the era of big data, colleges and universities have to make a new look at their own education management model, thus innovating the progress of education management in colleges and universities.

5.1. Establish a top-level plan

Building an information platform for teaching data in colleges and universities, collecting information data, and efficiently integrating and analyzing data operations are the key points for the application of big data in teaching work at present. Schools need to establish a special platform and an internal operating system to build a data collection platform, which can sort out and share the data of students' learning conditions, and can master students' data information resources more comprehensively in teaching, establish a perfect rules and mechanism, and innovate the data use mechanism.

Formulate strict management rules and mechanisms to promote data sharing at a high speed. In the actual application of data collection, there are many problems for managers, which may lead to the leakage of students' data information and bring some security problems to students. Therefore, under the application of big data, major schools should raise data information management to a new height, so as to ensure more reliable data security application.

5.2. Set up an evaluation system

The development of domestic teaching innovation should be promoted, the teaching evaluation mechanism of teachers should be established and the software and hardware facilities of big data should be integrated. Colleges and universities need to take big data as an important technical support for teacher evaluation, and establish a teaching feedback mechanism and evaluation system, so as to promote the

sustainable development of school education. The school promotes the application and development of big data technology, and innovative scientific evaluation is the basis of students' learning. Students do the same thing at the same time, and big data technology will give different evaluations. In the daily teaching work of schools, teachers should build a diversified teaching evaluation mechanism in more detail, scientifically evaluate indicators, comprehensively evaluate students' thinking, understand students' learning situation, and guide students to achieve balanced development of students.

5.3. Enhance the cultivation of big data talents

In the current domestic social development, scientific and technological innovation, and guiding the cultivation of key scientific and technological talents, it is necessary to establish a big data team in the school, realize the collection, analysis and integration of big data, and realize the establishment of big data thinking. In terms of ideological level, we should also use big data to manage students' learning tasks and teachers' work, and enhance the basic ability of learning teachers in big data teaching. In teaching, students and teachers should realize the necessity of big data application, and the teachers should be familiar with the basic theories and methods of big data analysis and master the necessary teaching tools. Talent is an important resource for the development and progress of society, and scientific and technical talents must have better professional ability and quality before they can adopt a large amount of data information, a large amount of data analysis and application creation. Therefore, in order to truly complete the application of big data and then carry out efficient data integration and analysis, schools must have a group of advanced groups with high efficiency to achieve the goal of talent training.

6. Conclusion

Big data technology will be applied to all walks of life, which will bring great development opportunities to online teaching. Teachers should seize the future teaching opportunities, effectively use big data technology to test the teaching effectiveness of schools, promote the informationization development of companies, and realize innovations in teaching technology, management mechanism and development concept. In the existing teaching implementation, the school takes the humanistic aspect of science and technology as the core of development, establishes a big data resource library, and ensures the sharing of big data information resources, so that big data can become a powerful support for the informatization development of teaching work in colleges and universities, and can promote the comprehensive and balanced development of students. The use of big data technology has brought greater development opportunities and challenges to the existing teaching work. School teaching staff should thoroughly study the requirements of big data technology, improve teachers' teaching professional ability and professional quality, introduce big data technology, and constantly promote the innovation of teaching work, so as to improve the quality of teaching work and achieve the goal of cultivating students in an all-round and balanced way.

References

- [1] Li Ziqiang. *The impact of big data on modern university education management and improvement strategies [J]. Friends of Humanities, 2020(24):175.*
- [2] Zhang Yuanyuan. *Research on College Students' Thought and Behavior Guidance Based on Internet Thinking [D]. Chengdu: University of Electronic Science and Technology of China, 2019:5-10.*
- [3] Su Yan. *Talking about the application of information technology in university library management and countermeasures [J]. File, 2020(1):42-44.*