

# Exploring the optimization of education management in universities based on big data era

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**Abstract:** The continuous development of science and technology has led to the gradual application of new technologies such as big data technology and cloud computing to many industries. The emergence of massive quantitative data information requires a more advanced and reliable technology to collect, analyze, process and transmit data information, to explore the value of data information, to better use it for people and to improve the efficiency and quality of work. For colleges and universities, they also need to pay more attention to the scientific analysis of the characteristics, trends and technical advantages of the era of big data, use big data to strengthen education management, optimize management process, innovation, mode and improve management level. However, there are still more problems in the process of specific utilization and the quality of data is not high, so it is necessary for universities to strengthen reflection, build digital education management platform, optimize the management process and road base to meet the needs of schools, for which this paper mainly discusses the optimization ways of education management in universities in the era of big data.

**Keywords:** Big data era; College education management; Ways to optimize.

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## 1. Introduction

In the current era of big data, data and information have become the representatives of many industries and the key to improve competitiveness. For colleges and universities, they also need to grasp the opportunities and meet the challenges, and need to do a good job in education management, analyze various problems in college education management through big data technology, supervise and control college students, the current situation of education work and management in a dynamic way, optimize the process, improve the mode, and innovative ideas, give full play to the value and role of big data, strengthen the technical training of staff, tap, integrate and use big data resources to better serve the school, and create a big data work platform to improve the management level.

## 2. Overview of Big Data

In a broad sense, big data refers to the collection of huge data information in real time through various means and ways and channels, the mining of valuable data information and the elimination of useless data information, so as to give full play to the advantages of data and better serve people. big data is also a technology, the application of which in various industries can prompt the transformation of paper resources into big data information resources, which is also a product of the information age. Under the big data can be timely and comprehensive collection, analysis and collation, storage and utilization of the sea quantified and complex data information, through processing and transmission to better play the advantages of data and realize the sharing of data resources. Big data specific sea quantization, authenticity, value density, and timeliness, its can optimize the Internet of Things and Internet-related technologies, can quickly process, automatically classify, and automatically store data information. In essence, big data refers to the data aggregate that uses specialized measurement software and tools to measure the data information of the sea quantization at a

specific time, and big data is more widely applied, which can inject vitality and power into the transformation, development and innovation of various industries. Applying big data in college education management can improve the education management mechanism and promote the development and progress of college education work [1].

## 3. Problems in the application of college education management work based on big data era

### 3.1. Insufficient information platform construction

There are still great problems in the existing education management system of colleges and universities, which cannot guarantee the smooth implementation of education work, and there are greater drawbacks and problems, which do not meet the characteristics of the big data era. The analysis of the reasons is mainly that there are still great shortcomings and problems in the construction of informatization education management platform in colleges and universities. The analysis of its reasons has the following two points: firstly, the existing education management platform infrastructure is not perfect, and the application platform still has problems, which cannot provide power support for the construction of information technology platform, and cannot scientifically handle the sea quantified data information, and cannot promote the operation of the platform, and does not configure relevant hardware equipment. The existing equipment is seriously aged and of a single type, which cannot meet the needs of education management and has many problems. Secondly, the existing working platform has big operation problems, leading to frequent leakage and loss in the process of information transmission and analysis, which cannot guarantee the quality of information processing. Thirdly, people do not design the platform according to the specific needs and do not configure advanced software facilities, which cannot bring into play the actual role and value of the platform.

### **3.2. Education management data and information are not obtained in a timely manner**

There are still problems in the operation of the current education management system of colleges and universities, which cannot obtain relevant data information in time and ensure the integrity and authenticity and reliability of data. In the current era of big data, colleges and universities do not collect information resources in real time according to the characteristics and requirements of the era of big data and the current situation of education management, and the acquisition is not timely. Because of the lack of support of data and information resources, it is impossible to carry out in-depth research and analysis, which leads to the worrying status of education work and cannot lay the foundation for the management work. It is necessary to pay more attention to this, and it is necessary to use big data analysis technology to build a data collection system module and give full play to the advantages of this module to carry out all-round supervision and control of education work and obtain more comprehensive information [2].

### **3.3. Mining education data information is not in place**

Big data deep learning technology is one of the big data technologies, and data mining refers to the use of certain algorithms to deeply analyze the potential data information in the era of big data, to mine the hidden value of the data, and later form a data analysis library to organize the potential value and resources after deep analysis. The use of big data in college education management is very extensive and frequent, for which people need to grasp the current situation, achievements, laws and characteristics of education by mining data information, discover problems in time, improve programs and countermeasures and integrate resources, so as to improve the level and quality of education and teaching. In the current universities in education and teaching management there are still problems that data information resources are not mined in place and not deep enough to evaluate the specific situation of students in a comprehensive and all-round way, and there is no analysis of students' potential and teachers' professional ability, effectiveness of teaching methods, problems of teaching mode, etc. There is no teaching according to the material, no promotion of students' individual development, no improvement of teaching quality and effectiveness, etc. The analysis of this reason is mainly due to the lack of technical personnel related to big data mining in schools and the introduction of advanced technical personnel, and the low technical level of the existing teaching team, which leads to technical problems in information acquisition and algorithm integration and cannot provide human resources support for the educational management work.

## **4. Optimization ways of college education management in the era of big data**

### **4.1. Update the concept and strengthen the importance**

The era of big data has caused certain impact on many industries. For colleges and universities, they need to grasp

the opportunity in this era, increase innovation and transformation, meet the challenges, scientifically analyze the problems in education management, pay attention to the role and value of big data technology, and give full play to the role of big data to better promote the in-depth development of education management. For school leaders and management scientific cognition, establish the concept of information-based education management, need to actively carry out publicity and promotion of big data technology, increase digitalization and information technology construction, strengthen the investment of funds and human and material resources, and create a big data environment, specifically from the following aspects: First, schools need to strengthen the leadership of publicity and education, create a big data environment and atmosphere, so that all teachers and students First, the school needs leaders to strengthen propaganda and education, create big data environment and atmosphere, make all teachers and students aware of the role and value of big data in education management, apply it to the whole process of education management in colleges and universities, strengthen the training of teachers' team, and improve teachers' knowledge and skills of big data. Secondly, schools need to apply big data management theories and methods to college education management, integrate the traditional working mode and data resources, effectively build a data-based education management system, reform the working mode and methods, accurately analyze the problems in education management, and later develop scientific solutions and countermeasures through big data analysis and processing [3].

### **4.2. Strengthen the construction of informatization education management platform**

In the current era of big data, colleges and universities need to pay more attention to it, need to scientifically analyze the characteristics and development trend of the era of big data, keep pace with the times, update the concept, introduce new technologies and new methods, realize the innovative development of education management, scientifically analyze the problems and shortcomings of the existing education management means, and build an informatized, digital and intelligent education management platform according to the work status and requirements. And according to the characteristics of the times, we constantly improve the platform function and structure system, scientifically analyze the difficulties and drawbacks in the construction of the platform, the influencing factors, technical problems, etc., and timely solve them through big data analysis technology and processing technology, highlight the necessity of platform construction, improve the application platform, improve the infrastructure and strengthen the hardware construction. The information-based education management platform and the traditional work platform can be integrated and used as the starting point of all work, providing guidance for the creation of other work platforms, integrating education and teaching work and daily management, normalized control and system construction, etc. to ensure that all work is carried out efficiently, for which the following aspects can be carried out: first, after collecting valuable data information and importing it into the Second, in the process of management, it is necessary to not only screen the duplicated, wrong and redundant data information, but also add new data information to improve the functions of the platform and

broaden the coverage of the platform; third, it is necessary to strengthen the daily operation and maintenance of the platform to ensure the safety and stability of data information storage and to provide a basis for later work. provide the basis for the later work [4].

### **4.3. Strengthen the construction of talent team and create an information exchange platform**

Colleges and universities want to build an information education management platform with efficient operation, stable performance and powerful functions in the era of big data, they need to play the role and value of big data, they need to introduce advanced and professional big data talents, ensure the quality of talents, finally the reserve work of talent team, supplement the talent team, play the role of talents and do the work well. And universities also need to strengthen the training and education of the internal talent team to ensure that personnel technology to learn advanced big data technology knowledge and skills, improve the professional skills and level of personnel, improve the information literacy of personnel, and effectively carry out education and management. In this process, it is also necessary to regularly test the operation of the platform, update the platform, develop new technologies, new software, etc., tap new resources, inject vitality and momentum into the conduct of education management work, improve the utilization of big data technology, and innovate big data mining methods. For example, the school leadership needs to organize big data personnel to actively learn big data knowledge, which can be done through daily training sessions, working meetings, practical activities, technical competitions and other methods to improve the technical level of personnel and strengthen their sense of responsibility. After the training is finished, the training results need to be assessed and analyzed, and the salary and promotion mechanism of the personnel will be linked to the assessment results, so as to mobilize the training enthusiasm of the personnel. And the school also needs to improve the rewards and punishments and incentives mechanism, do a good job of rewarding, mobilize the enthusiasm and creativity of personnel to ensure that personnel continue to learn, improve themselves and skilled operation.

In addition, the school also needs to set up a special big data department, clarify departmental functions, arrange personnel scientifically, ensure clear division of labor, clear authority and responsibility, and collaborative work, so as to do all the work well and provide help for college education management. And create an information exchange platform to broaden the communication channels and provide ways for information exchange and interaction, experience sharing and problem solving among staff members to ensure common growth and progress among them. Schools can create WeChat groups, open forums, etc. to update big data knowledge and resources in real time to ensure that personnel are not subject to any time and place, space status quo, and can learn anytime and anywhere to obtain the latest knowledge of big data technology, and finally improve the comprehensive quality and professional ability of personnel and effectively improve the efficiency and quality of education management [5].

### **4.4. Improving education management mechanism**

Big data technology, as a new technology in the new era,

has two sides and is a double-edged sword, so schools need to pay more attention to it, scientifically analyze the advantages of big data technology in school education management, scientifically apply it therein, improve the management level and efficiency, optimize the process, clarify the goals, and solve problems. It is also necessary to pay attention to the issue of information security under big data, to ensure that the privacy of students and teachers is not leaked, to ensure the privacy and integrity of students' personal information and school information, and to avoid problems that can cause large losses. For this kind of problems need to pay more attention to schools, strengthen information security management, strengthen information security construction work in the era of big data, need to establish a sound information-based education management mechanism and system, refine the process and content, clear standards and requirements, ensure the reliability and feasibility of the system, restrain the behavior of personnel, ensure that education management work is standardized and effective, ensure the safety and integrity of data and information, and reduce Leakage occurs. In order to strengthen the protection of data information and resources, it is necessary to build a resource library and develop an information security defense mechanism, and it is necessary to set up a special information security management department to regularly monitor the status of school information, and if problems are found they need to be dealt with at the first time. For this department both need to do a good job of analyzing and organizing and storing data in daily work, and also need to protect data information. In addition, the school can classify the data information and divide it into different levels, for different information need to set different login privileges, arrange special personnel to manage, for some important information, confidential information need to set a double layer password, can browse under the relevant authority, prohibit open to the public.

### **4.5. Strengthening information security management**

The school needs to pay more attention to the above information problems, needs to establish the awareness of information security management, needs to develop security management strategy, needs to have relevant formulation and mechanism to guarantee information security, which can be carried out from the following aspects: First, the introduction of advanced password setting and permission setting technology, firewall technology, virus identification technology, security defense mechanism and other network security technology, effectively identify, intercept and filter undesirable information, reduce hacker attacks and invasion, and prevent virus invasion. Regularly upgrade, update and improve these technologies to improve the technical level and reduce the occurrence of vulnerabilities. Second, regularly check the information network system, timely find the abnormal operation of the system, failure problems, analyze the causes, timely repair and control. Third, set management rights and access rights, track, identify and analyze the behavior of entering the network, and discover abnormal problems in time. For management rights can only be accessed by school leaders and management, and other personnel are prohibited from using them to avoid the problem of information leakage and loss. For the coverage of permissions need to be scientifically controlled and adjusted, want to access need to be carried out through the approval

process, under supervision, scientific analysis of the openness of the network conditions. Fourth, the development of information records and privacy protection system. Regulation and control also need to be strengthened for different ways of accessing information to detect problems in a timely manner [6].

## 5. Conclusion

In conclusion, in the current era of big data, colleges and universities also need to strengthen improvement, keep pace with the times, update the concept, apply big data technology scientifically to education management, give full play to the advantages and values of data technology, grasp the connotation of big data, innovate and improve education management mode, build modern education management system, strengthen the construction of data-based and information-based education management platform, improve the platform function of real-time collection of relevant Data information resources, mining data value, realizing data resource sharing, effectively solving the problems in the past education management, and promoting the development in school education management.

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