# Reform Strategy of University Education Management System Integrating Big Data Technology

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***Abstract:*** *BD(Big data) has developed by leaps and bounds, and its influence has become increasingly widespread. In this situation, the country has raised BD to a strategic level. In the UEMS(university education management system), the data of university teachers' participation in various competitions, teaching data and scientific research data are closely related to the university management system and management mechanism, and contain certain rules. The participation of BD in the mechanism, on the one hand, can avoid the autocratic decision-making of the top personnel of the mechanism, so that more educators can influence the direction of decision-making, on the other hand, it can also integrate the student group into the decision-making group, making decision-making more efficient. In view of the problems that need to be solved urgently in the current UEMS, this paper puts forward the reform strategies of innovating data management consciousness, creating education BD platform, building diversified teaching evaluation mechanism and improving campus network environment, and using BD technology to promote the development of modern UEMS with the times.*

***Keywords:*** *Big Data, University Education, Management System*

## 1. Introduction

In today's economic globalization, with the rapid development and innovation of science and technology, it is urgent to realize university education and teaching informatization. Under the background of university education system reform, in order to highlight the effectiveness of personnel training, we should not only focus on the reform of students' education courses and the improvement of students' academic performance, but also strengthen the optimization and reform of university education management [1]. Applying BD(Big data) to the modern UEMS(university education management system) is the premise to ensure the university to adapt to the development of the new information technology era [2]. In view of this situation, this paper discusses it from both theoretical and practical aspects, hoping to provide a new idea for UEMS reform.

## 2. Value analysis of the reform of UEMS in the era of BD

As a data set, the management concept and processing technology of BD are obviously different from traditional data, which also determines the value contained in BD and is bound to be richer. In addition, the value of data is difficult to be measured. With the growth of scale, the value of BD is also increasing. Both enterprises and individuals can promote their own development by searching and obtaining the required knowledge in the database.

Restricted by external factors such as time and space and teachers' outdated teaching ideas, they are often in a passive position, and their enthusiasm and initiative for learning have not been effectively mobilized, so it is difficult for teachers to cultivate their strong interest in learning. By organically combining the characteristics of BD technology with teaching management, university teachers can use BD to comprehensively analyze the learning information and data obtained by students in the teaching process, and work out the most suitable teaching plan for them accordingly [3-4].

BD has developed by leaps and bounds, and its influence has become increasingly widespread. In this situation, the country has raised BD to a strategic level. In the UEMS, the data of university teachers' participation in various competitions, teaching data and scientific research data are closely related to the university management system and management mechanism, and contain certain rules [5]. The participation of BD in the mechanism, on the one hand, can avoid the autocratic decision-making of the top personnel of the mechanism, so that more educators can influence the direction of decision-making,

on the other hand, it can also integrate the student group into the decision-making group, making decision-making more efficient.

## 3. Problems to be solved urgently in the current UEMS

### 3.1 The educational management mode is relatively simple

As an important part of urban cultural construction, university cultural construction can effectively radiate and drive the cultural construction of surrounding communities. The management mode of higher education in China is relatively simple, and the reform and development of related education management system is lagging behind. There is a general lack of attention in the innovation of UEMS, and the importance and necessity of teaching management system innovation are not really recognized. In the implementation of the system, it blindly follows the policy instructions, and there are also some redundancy problems in the design of the teaching management department, which makes the overall efficiency low and restricts the development vitality of the UEMS [6].

### 3.2 The information construction mechanism is not perfect

At present, the organizational structure between university education and teaching management informatization is unbalanced, and modern education is generally the leading factor. Some universities have also set up some management organizations that specialize in various construction work, and these organizations are promoted and promoted by the Science and Technology Center [7-8]. In the BD era, there have also been some changes in the organizational responsibilities of UEMS informatization, mainly due to some overlapping functions in the actual promotion of informatization construction, which leads to the redundancy of data and information, which is not conducive to the effective implementation of UEMS informatization.

### 3.3 The information operation mechanism of university education and teaching management is not perfect

Many universities have been equipped with multimedia teaching systems and management system. Generally speaking, these systems are mainly divided into two types. One is the teaching system that universities buy from software development companies. This type of teaching system can manage scientific research, teaching, student work, teacher training and ideological education in universities, and university administrators can manage university affairs only by mastering the operating principle of the system. Although the informatization construction of UEMS has made great progress in recent years, in the long run, UEMS has not formed a complete management and operation mechanism, and UEMS has not been effectively guaranteed. Therefore, it is necessary to further strengthen the informatization construction of universities and their UEMS.

## 4. Reform strategy of UEMS integrating BD technology

### 4.1 Innovate the consciousness of digital management

As an important "tool" that may even trigger a social change, BD itself is not value-neutral. It still represents a quantitative and empirical tendency, a natural expansion means of instrumental rationality, and also contains the purpose of "digitizing" the world. UEMS informatization is of great significance to higher education, which profoundly changes the traditional educational concept and teaching mode, and effectively promotes the fair development of education and the improvement of education quality. Therefore, attaching importance to and vigorously promoting the informatization process of higher education is not only an effective practice of the interactive structural relationship among technology, education and society, but also an important means for higher education to innovate and reform itself.

University education and teaching information management has invested heavily, but network security supervision is weak. How to ensure the security of university networks has become a top priority. Universities should correctly understand their development characteristics, formulate targeted development strategies, and constantly improve their UEMS, so that it can better develop in the direction of informationization. To realize the informatization of UEMS, we should not only base on advanced science and technology, but also solve the management concept of leaders, the establishment of

information institutions and the optimization of personnel arrangement [9].

With the deepening of BD technology, UEMS reform in universities is facing unprecedented opportunities and challenges. Universities should seize the opportunity and use BD technology to promote the rapid development of UEMS informatization in universities and realize the changes in educational technology, management mechanism and development concept. Building a sound data system is the foundation of building a smart campus, and data accumulation and aggregation is the premise of BD technology application. Universities should start the top-level design at the earliest time, integrate the existing management systems and databases, build a unified data standard, and build a data sharing mechanism and norms, so as to solve the difficulties of data sharing among various business systems and complete the co-construction and sharing of campus data as soon as possible. On this basis, the collected data are analyzed in multiple dimensions, and the data are modeled and analyzed, thus providing scientific basis for the university to formulate its work plan and development goals.

### 4.2 Create an educational BD platform

University BD application platform optimizes the allocation of university software and hardware resources by integrating the university's current information systems such as teaching, scientific research, management and digital library, and uniformly planning and upgrading hardware equipment, which establishes the foundation of hardware and software for the collection, integration and analysis of university BD, and is the basic premise for further application of university BD. The establishment of university BD application platform mainly includes the upgrading and construction of data acquisition equipment, data transmission network and data storage and analysis system on the basis of integrating the original information system, and the complex BD processing program is delivered to professionals through the high integration of data and application, thus reducing the burden on front-line teachers.

Establishing BD platform based on user device, collecting data and effectively integrating and analyzing data operation are the keys to BD application in teaching. Moreover, in the teaching process, students can have a more complete understanding of the source of information, and can have a better understanding of the source of information. Therefore, under the application of BD, schools should raise UEMS to a new height to ensure more reliable data security applications [10]. Schools should also build a data information security inspection mechanism, control the application by using strict norms and systems, and ensure the security of data information. The architecture of education BD platform is shown in Figure 1:
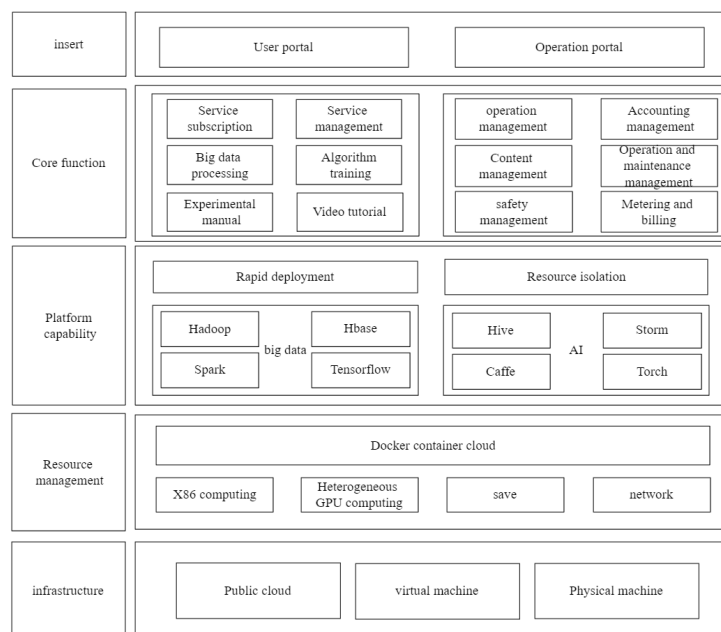


*Figure 1: Education BD platform architecture*

On the one hand, university education and teaching management can cooperate with other universities or social institutions, actively improve the data management platform, and strengthen the combination and sharing of data resources between university education and teaching management and other schools and social institutions.

On the other hand, university education and teaching management can effectively connect with different system storage platforms, use cloud computing technology to collect and integrate students' classroom performance, test scores, violation of discipline and failure in school, and effectively store them through the cloud storage platform, so as to better facilitate students to search and find relevant data resources in the future and realize effective statistics on students' relevant information and management content.

### 4.3 Set up a diversified teaching evaluation mechanism

The effective application of BD in educational management decision-making mainly includes: from the perspective of BD, the enrichment of educational data collection methods, the creation of educational data platform, data mining and analysis to improve the effective use of data, and the improvement of educational management and decision-making evaluation mechanism. For the improvement of the teaching level evaluation mechanism, it is necessary to combine BD technology to collect and classify a lot of information involved in teaching work, analyze the information data and synthesize a scientific and effective evaluation result. BD technology has provided great help to deal with this problem from the information aspect.

Through BD teaching platform, university teachers and students can interact in real time and answer questions for them. Through this system, teachers can monitor students' learning process and the speed of solving problems in real time, and make corresponding solutions to specific problems; On this basis, teachers can also coach and explain students on the BD teaching platform.

### 4.4 Improve the campus network environment

In the process of giving full play to the advantages of cloud computing and BD, universities need to fully consider both hardware and software to realize the continuous updating of teaching information equipment. In this process, universities need to be clear about the importance of information management. In the process of network system running, there may be some viruses and hackers because of the existence of traffic, which will have a great impact on the stable operation of the system. Therefore, in the future work, we need to fully realize the various impacts of the above phenomenon on management. Constantly improve the campus network environment and effectively promote the smooth development of university education and teaching management.

## 5. Conclusions

Introducing BD into UEMS is a prerequisite to ensure that universities can better adapt to the development of UEMS in the new information age. The school uses network technology and BD information platform to collect data and construct digital UEMS, which promotes the development of various teaching and scientific research work, thus improving the overall teaching level of the school. The efficient use of BD in UEMS decision-making is mainly reflected in: from the perspective of BD, enriching education data collection mode, building education data platform, improving data utilization rate and optimizing education management decision-making evaluation mechanism. Based on BD technology, the information involved in teaching management and decision-making can be extracted to explore the hidden information, which also makes teaching work more closely integrated with the development of the times and makes educational decision-making keep pace with the times.

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