

Application of Big Data Technology in College Education Management

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Abstract: With the continuous development and application of Big data technology, college education management has gradually introduced related technologies. Based on the application research of Big data technology in college education management, this paper introduces the development process of big data technology and the dilemma of college management, analyzes the application status of Big data technology in college education management, discusses its advantages and limitations through practical cases, and puts forward the future development direction of Big data technology in college education management. The purpose of this paper is to comprehensively and deeply analyze the application of Big data technology in college education management, and provide reference and support for the digitization and intelligence of college management.

Keywords: Big Data Technology; College Education Management; Application Status; Application Cases; Future Development Direction.

1. Background of the Topic

Big data technology has become one of the widely used technologies in the world today. It can provide real-time and scientific decision support and management ability for various fields by collecting, extracting, cleaning and analyzing a large amount of data. In college education management, Big data technology has been applied for a period of time and has been proven to improve the efficiency and quality of management.

In the past, college management and decision-making were often based on manual experience and subjective judgment, which were easily influenced by personal preferences and constraints. The transparency and scientificity of decision-making need to be improved. With the development of society and the increase of students, teachers, and administrators, college management is cumbersome and complex, and the amount of data that needs to be analyzed is also increasing day by day. Traditional statistical methods are no longer able to meet the requirements of management. The application significance of Big data technology lies in providing comprehensive, accurate, and intelligent management services and support through data collection, processing, and analysis.

National policies and college management require the introduction of Big data technology in various aspects such as logistics management, asset management, enrollment management, student management, scientific research management, and teaching management to promote the digitization and intelligence of university management. Big data technology is expected to provide schools with scientific data analysis, supporting managers to make more accurate, efficient, and scientific decisions. From the dual perspectives of technological development and demand, Big data technology has become an important support for college education management.

2. The Application Status of Big Data Technology in College Education Management

With the popularization of Big data technology in the field of education, its application in higher education management is becoming increasingly widespread. At present, Big data technology is mainly applied in student management, teacher management, course management, and other aspects of college education management.

In terms of student management, Big data technology can be used to analyze students' learning habits, formation mechanisms of academic performance, and various aspects by collecting data such as grades, attendance, and physical fitness. This can improve students' academic performance, reduce the burden on teachers and students, and help teachers develop more effective teaching strategies.

In terms of teacher management, Big data technology can collect data on teachers' teaching situation, teaching quality evaluation, teaching experience, teaching effectiveness, and teaching feedback to evaluate their teaching ability and level, provide more accurate training and support for teachers, and improve and enhance teaching quality.

In terms of course management, big data technology can comprehensively evaluate course content, teaching methods, classroom management, and other aspects through course data analysis, in order to develop course settings and improvement plans that better meet students' needs, improve the effectiveness of course teaching, and enhance students' learning quality.

In addition, Big data technology can also assist universities in scientific research management, talent management, and other aspects. By collecting a large amount of data for analysis, it provides scientific basis and reference for university management decisions.

However, the application of Big data technology still has limitations. Firstly, data quality and data security are issues that need to be taken seriously in big data applications; Secondly, the particularity of educational data and the

complexity of university management also pose a series of specific requirements for data collection, processing, and analysis. Therefore, while formulating strategies for the application of Big data technology, it is necessary to fully consider the problems that may be encountered in the practical process and take corresponding measures.

3. The Practical Application of Big Data Technology in College Education Management

3.1. Practical Application Cases in Student Management

3.1.1. Student Smart Home Service Platform in Tsinghua University

Student Smart Home Service Platform in Tsinghua University is a smart student service platform based on Big data technology. The platform adopts Internet plus and Internet of Things technologies. Various sensors, intelligent devices, etc. are installed in student dormitories, which can monitor various data of students' learning and living conditions, including sensitive information about students' sleep, diet, health, etc. By analyzing and processing data, Tsinghua University can timely understand the status and problems of each student, achieve personalized services, and improve students' quality of life and campus safety management level.

3.1.2. Electronic Proofreading System in Beijing Institute of Technology

The electronic invigilation system of Beijing Institute of Technology adopts Big data technology to monitor students' exam behavior, which can detect students' cheating in real time during exams, improve exam supervision efficiency, and ensure exam fairness. Students' exam information, cheating behavior, and other data can be recorded and analyzed through big data to evaluate their performance in the later stage, helping teachers to comprehensively, scientifically, and accurately evaluate students' learning situation.

3.2. Practical Application Cases in Teacher Management

3.2.1. Faculty Management System of Yonsei International University in Korea

The system is a teacher management system based on Big data technology, which can analyze the workload and quality of teachers from various dimensions. The system can generate many data reports automatically, which can provide more scientific reference for teachers' management decision-making and help teachers to realize self-evaluation and improvement.

3.2.2. Rishi Education Management Platform of Beijing University

The platform is a teaching management platform based on Big data technology, which can make statistics and records of teachers' teaching activities, and can accurately identify excellent teaching teams and high-quality course resources, to provide scientific support for teachers' career development and management decision-making.

3.3. Practical Applications in Course Management

3.3.1. The MOOC Platform in University of Toronto

The MOOC platform in University of Toronto is an online

open course platform based on Big data technology, which can provide comprehensive online education services. The platform collects and analyzes learner data, and provides more personalized course services for different learners through recommendation algorithms and data analysis, at the same time, it can realize the continuous improvement of teaching quality and improve students' learning experience and learning effect.

3.3.2. The Curriculum Effectiveness Analysis System in Shanghai Jiao Tong University

The system is an application of Big data technology that the educational administration office of Jiao Tong University analyzes the teaching quality in class. It can collect and analyze the information of each class, for example, teachers' teaching activities, students' active participation, learning feedback, performance, etc. . The system analyzes and statistics these data to achieve accurate monitoring and feedback of teaching and provide scientific support for future teaching improvement.

All of the above cases can reflect the advantage and potential of Big data technology in higher education management. But there are also many problems and challenges.

4. Future Development Direction of Big Data Technology in College Education Management

With the emergence of new Internet technology and the rise of digital management in colleges and universities, Big data technology will play a more important role in college education management. In the future, Big data technology may have the following application directions in higher education management.

4.1. Smart Campus

The construction of smart campus will become one of the important directions of Big data technology in higher education management. With the development of information technology in colleges and universities, all kinds of facilities and data in campus will be brought into the big data management system. For example, the establishment of students' personal files, recording students' physical, performance, behavior and other data, and through data analysis to provide students with more personalized services and learning aids.

4.2. Personalized Education

With the continuous development of big data processing algorithms, through the analysis of students' learning habits, interests, Big data technology can achieve more personalized education services. For example, each student is provided with quantifiable learning guidance, a learning plan based on the student's actual situation, and personalized coaching and course recommendations through in-depth analysis of data mining techniques.

4.3. Intelligent Teaching Aids

Big data technology can help teachers make more accurate assessments and aid teaching. Through the data analysis and mining of students' learning situation, it provides teachers with more accurate assessment of students' ability, as well as more personalized teaching advice and assistance.

4.4. Quality Assurance

Through the information management of Big data technology, the overall tracking and supervision of each course can improve the course quality, provide accurate feedback and suggestions for teachers, and provide better teaching services for students.

In a word, the application of Big data technology in higher education management will be more important and extensive in the future, and will further promote the education industry digital process.

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