



Application of Big Data in the Management and Service of College Students

Xuefeng Xiang

Beijing Jiaotong University, Beijing China

Email: tg667788@xzcstudio.com

Abstract. With the rapid development of information technology and the popularization of the Internet, big data is becoming one of the key driving forces in various industries. In the field of education, the application of big data has gradually attracted attention. In the management and service of college students, the application of big data can provide schools with better decision support and management efficiency, and can also provide students with more personalized and high-quality services. However, at present, there are relatively few studies on big data in the management and service of college students, and there is still a lack of systematic comprehensive analysis and in-depth discussion.

Keywords: Big data; College students; Management and service

1 Introduction

Through the research on the application of big data in the management and service of college students, discussing its potential value and challenges can provide a reference for practice and decision-making in related fields. This paper expounds the current situation of college student management, the application significance of big data in college student management and service, and the application strategy of big data in college student management and service, for the reference of relevant researchers.

2 Current situation of college student management

2.1 Outdated data collection methods and single data acquisition methods

In the management of college students, there are problems of outdated data collection methods and single data acquisition methods. The existing data collection methods mainly rely on traditional manual filling and paper documents, which cannot meet the needs of large-scale and high-efficiency data collection. At the same time, the way of data acquisition is also limited to specific channels, and it is impossible to make full use of modern scientific and technological means for data analysis and mining.

2.2 Insufficient scientific data storage and limited data sharing capabilities

In the management of college students, there are problems of insufficient scientific data storage and limited data sharing capabilities. The current data storage methods mainly rely on traditional servers and databases, which cannot meet the needs of large-scale data storage and analysis. At the same time, the ability to share data among schools is also very limited, lacking a unified standard and platform, resulting in the inability to share and communicate with each other.

2.3 Insufficient data analysis capability and single service model

In the current situation of university management, there are problems of insufficient data analysis ability and single service model. At present, most colleges and universities still rely on traditional manual methods for data analysis, lacking the application of advanced data mining and analysis techniques. This leads to difficulties in in-depth analysis and utilization of important data such as student development and course evaluation. At the same time, the service model of colleges and universities is relatively single, lacking personalized and differentiated services.^[1]

2.4 Lack of data security

In the management of college students, the lack of data security is a serious problem. A large amount of student personal information is stored in the student management system, such as ID number, grades, etc. If the data security measures are not perfect, it will bring risks to students' personal privacy.

2.5 The professional quality of management personnel needs to be improved

In the management of college students, it is an urgent problem to be solved that the professional quality of management personnel needs to be improved. Student management requires the knowledge and skills to be able to respond effectively to a variety of situations and needs. However, some administrators may lack systematic training and learning, resulting in deficiencies in student management.

3 The Application Significance of Big Data in College Student Management and Services

3.1 Provide scientific basis for student management

Through big data analysis, it is possible to conduct comprehensive and accurate assessments of students' learning conditions, behavioral habits, and mental health, providing a scientific basis for student management. At the same time, using big data technology, it is possible to make personalized recommendations and guidance for students in terms

of course selection, social relations and other aspects, so as to improve students' learning effects and satisfaction. In addition, through big data analysis, the commonality and differences of student groups can also be found, providing support for colleges and universities to formulate more reasonable management and service strategies. Therefore, actively promoting the application of big data in the management and service of college students is of great significance for improving the management level and service quality of colleges and universities. [2]

3.2 Promoting education and teaching reform

The application of big data in the management and service of college students can promote the reform of education and teaching. Through big data analysis, we can deeply understand the characteristics and needs of students' learning, so as to adjust teaching methods and content and improve teaching effect. At the same time, big data can also be used to evaluate teachers' teaching quality, discover problems and improve programs. In addition, analyzing students' learning behavior and achievements through big data can timely identify learning difficulties and problems, and provide personalized help and support. Therefore, the application of big data in the management and service of college students is of great significance to promote the reform of education and teaching. [3]

3.3 Improving the level of student management

The significance of the application of big data in the management and service of college students is to improve the level of student management. Through big data analysis, we can fully understand students' learning situation, behavior habits and mental health status, and provide scientific basis for student management. At the same time, big data technology can be used to provide personalized recommendations and guidance to students, improving students' learning effects and satisfaction. In addition, big data analysis can also discover the commonalities and differences of student groups, and provide support for colleges and universities to formulate more reasonable management and service strategies.

3.4 Enhance service awareness

Through big data analysis, we can deeply understand the needs and feedback of students, and provide students with more personalized and accurate services. At the same time, big data can also help colleges and universities discover service shortcomings and problems, and adjust and improve service strategies in a timely manner. By analyzing students' learning behaviors and outcomes, targeted learning support and counseling can be provided to enhance students' learning experience and sense of accomplishment.

3.5 Promoting the harmonious development of universities

Through big data analysis, it is possible to understand the situation and needs of students in real time, solve problems in a timely manner, and improve students' satisfaction and sense of belonging. At the same time, big data can also help colleges and universities predict the development trend and demand changes of students, so as to adjust education and service strategies, provide more accurate student support and guidance. In addition, big data analysis can also discover the commonality and differences of student groups, provide data support for colleges and universities, and formulate more reasonable student management and service measures.

4 The application strategy of big data in college student management and services

4.1 Relying on the big data platform to collect and organize student information

Through the establishment of a comprehensive student information management system, collect students' personal information, academic performance, course selection and other data, and organize and classify them. This will facilitate the unified management and real-time update of student information by colleges and universities, and improve the accuracy and reliability of student information. At the same time, using big data technology to analyze and mine student information can provide a deeper understanding of students' characteristics, interests, learning habits, schedule management, identity recognition, behavior recording, etc., as shown in Figure 1, providing more personalized and accurate services for universities. For example, based on students' academic performance and interests, suitable courses and activities can be recommended; Based on students' social networks and communication records, opportunities for mutual assistance and cooperation between students can be provided. In short, these measures will promote students' learning and development, and improve the quality of education and student satisfaction in colleges and universities.

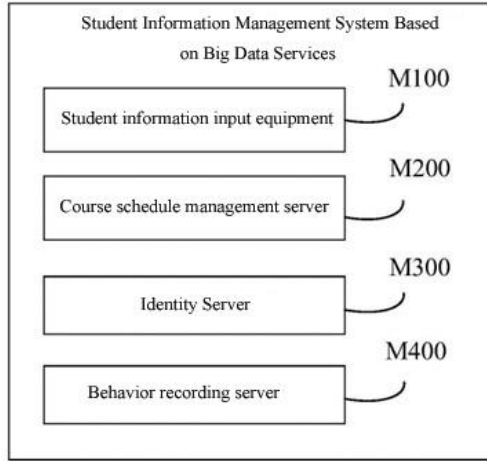


Fig. 1. Big data information management system

4.2 Analyze student information through the big data platform

Through big data analysis of student information, deeper insights and understanding can be obtained, providing more accurate and personalized student services for universities. Firstly, analyzing students' learning data through big data can identify their learning characteristics, tendencies, and difficulties. According to the student's learning history, learning habits and performance, the learning plan and teaching method can be tailored for each student, and personalized learning support and guidance can be provided. [4] Secondly, big data analysis can also help universities identify students' needs and preferences. By analyzing students' social networks, browsing records and feedback, we can understand students' interests and preferences for various services and resources, so as to provide services and activities that are closer to students' needs, such as academic lectures, employment consultation, etc. In addition, big data analysis can also help universities predict and intervene in student behavior. By analyzing students' learning data, activity participation and psychological state, it is possible to predict the problems and challenges students may face, take timely intervention measures, provide corresponding support and help, and avoid students dropping out or dropping out of school. In short, these measures will help to improve the quality of education and student satisfaction in colleges and universities, and promote students' learning and development. [5]

4.3 Innovate the management model and build a new system of student management services

Through the application of big data technology, the traditional student management method can be changed, and the management efficiency and service quality of colleges and universities can be improved. Firstly, big data can help universities establish stu-

dent information management systems. By integrating various types of student information, including personal information, academic performance, social activities, employment status, etc., a comprehensive and accurate student profile is established. This can achieve one-stop management of student information, making it convenient for schools to query, analyze, and utilize student information. [6] Secondly, big data can be used for analyzing and predicting student behavior. By analyzing the data of students' learning behavior, social behavior and consumption behavior, we can understand students' hobbies, behavior habits and demand characteristics, so as to provide students with personalized management and services. At the same time, through big data analysis, it is also possible to predict the problems and challenges that students may face, take appropriate intervention measures in a timely manner, and provide targeted support and assistance. In addition, big data can also promote decision-making optimization in universities. By analyzing and mining student information, more accurate data support can be provided for universities to assist in decision-making. For example, by analyzing students' employment situation and employment needs, it can provide employment guidance and career planning references for universities; By analyzing students' academic performance and feedback on teaching evaluation, suggestions and directions for teaching improvement can be provided to universities. In short, these measures will help to improve the management efficiency and service quality of colleges and universities, provide better education and support, and promote the development and success of students. [7]

4.4 Improving the level of data application and improving the service mechanism

By fully utilizing big data technology, universities can better respond to the challenges of student management and services, and provide higher quality services. Firstly, universities can analyze student behavior and needs through big data, understand students' characteristics and preferences, and improve existing service mechanisms accordingly. For example, by analyzing students' course selection and course evaluation data, colleges and universities can adjust course settings and teaching methods in a timely manner to provide courses that better meet students' needs. Second, big data can also be used for personalized services for student tutoring and support. By collecting and analyzing students' learning data, such as learning time, learning progress and academic performance, colleges and universities can provide corresponding employment guidance and support according to individual differences of students, as shown in Figure 2. For example, by recommending learning resources and developing personalized learning plans, it helps students better master knowledge and improve learning effects. [4] In addition, big data can also be used for the management of student evaluation and feedback. By collecting students' teaching evaluation data and student feedback, colleges and universities can keep abreast of students' evaluations and needs, and improve teaching and service quality in a timely manner. At the same time, through the analysis of teaching evaluation data, problems and improvement points can be found to improve the teaching quality and service level of colleges and universities. In short, the application of big data technology can help universities to better cope with the challenges of

student management and service, provide higher-quality services, and promote students' learning and development. [8]

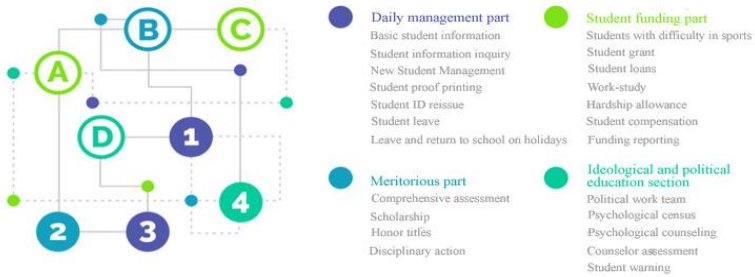


Fig. 2. Integration of student management resources under big data

4.5 Innovate education methods to improve students' comprehensive quality

With the help of big data technology, colleges and universities can explore innovative educational methods tailored to students' individual differences and learning needs, providing more comprehensive and personalized education. Firstly, colleges and universities can analyze students' learning data through big data, such as learning time, learning progress, and academic performance, so as to discover students' learning characteristics and problems, and adjust teaching methods accordingly. For example, by analyzing the degree of knowledge mastery and study habits of students in the learning process, colleges and universities can formulate personalized study plans to help students learn better. Secondly, big data can also be used to evaluate and improve the comprehensive quality of students. By collecting and analyzing students' comprehensive quality data, such as students' scientific research achievements, social practice experience, innovation ability, etc., colleges and universities can evaluate students' comprehensive quality level and provide personalized training plans and guidance accordingly. For example, in the course selection process of students, by analyzing students' hobbies and development directions, colleges and universities can provide students with courses and projects that are more suitable for their development. In addition, big data can also be used to tap the potential of students and discover their strengths. By collecting and analyzing data on students' personal interests, talents, and social circles, colleges and universities can discover students' potential abilities and strengths, and set up corresponding training courses and projects accordingly. In this way, colleges and universities can help students develop in an all-round way and improve their overall quality. In short, with the help of big data technology, universities can provide more comprehensive and personalized education to promote students' learning and development. [9]

5 Conclusion

To sum up, the application strategies of big data in the management and service of college students mainly include: Relying on the big data platform to collect and organize student information, analyze the student information through the big data platform, innovate the management model to build a new student management service system, improve the level of data application and service mechanism, and innovate education methods to improve the overall quality of students. Through these strategies, colleges and universities can better understand the needs and characteristics of students, provide personalized education and training plans, and help students improve their academic performance and overall quality.

References

1. Xu Huan. Exploration of the management of college students in the era of big data [J]. University, 2023 (01): 70-73.
2. Chen Congcong. Research on the informatization construction strategy of University Student Management in the Era of Big Data [J]. Heilongjiang Science, 2022,13 (21): 70-72.
3. Lin Jingwen, Lin Longyu. The dilemma and Path of the informatization reform of university Student management [J]. Journal of Shaoguan University, 2022,43 (05): 54-58.
4. Sun Mengnan. Exploration of service-oriented precision management mode for University Students under the background of big data [J]. Technology Vision, 2021 (32): 157-158.
5. Yue Jia, Zhang Chao, Guo Meng. Analysis on the development and innovation path of college counselors in the Era of Big data [J]. China New Communications, 2021,23 (20): 227-228.
6. Tang Tiantian, Wang Haipeng, Jia Shuyi, etc. Exploration of service-oriented precision management mode of College Students under the background of big data [J]. Science, Education and Culture (China), 2021 (17): 25-27.
7. Zhi L. Design and Implementation of Student Management System Based on Internet Big Data[J]. Journal of Physics: Conference Series,2021,1982(1).
8. Wenhua S, Lifeng W, Yang L, et al. Research on the application of big data in the management and service of College Students[J]. IOP Conference Series: Materials Science and Engineering,2020,806(1).
9. Liu W, Ning X. Construction of Competency Model of Student Managers Based on Big Data[P]. 2022 7th International Industrial Informatics and Computer Engineering Conference,2022.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

