

Research on Big Data Administration Promotion Strategy of Ideological and Political Construction in Institutions of Higher Learning from the Perspective of Cognitive Psychological Study

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Abstract:

In the big data era, profound changes have happened in the ideological and political work environment of higher learning institutions, and big data administration related to ideological and political construction faces new challenges and requirements. Cognitive psychological study focuses on the basis of human information reception and processing, which is closely related to ideological and political work. Thus, it is of great significance to the research on the problem of big data administration of ideological and political construction in higher learning institutions. From cognitive psychological perspective, this study investigated how to promote big data administration strategies for ideological and political construction in higher learning institutions. In this study, 24 colleges in 6 cities of Zhejiang Province with different economic levels were selected through stratified random sampling according to their scale, and 100 participants were randomly selected from each college who were participating or had participated in the ideological and political work. A total of 2400 participants completed a questionnaire. Finally, 2325 valid questionnaires were obtained. The research carried out surveys from the aspects of organization construction, faculty, administration model, student satisfaction, etc. Based on the close relationship between cognitive psychological study and ideological and political construction in higher learning institutions, this paper analyzes the problems in big data administration and proposes optimized operating strategies. The research found that the characteristics of big data of ideological and political construction in higher learning institutions are quantifiable, superimposable, comparable, and integrable. And there are some urgent problems that need to be addressed, such as unclear data sharing requirements, uncoordinated departmental cooperation, unguaranteed data validity, and hidden dangers in data security control. In view of the current problems in big data administration, it is necessary to optimize the operating mechanism considering three aspects of technology, administration functions, data. Based on cognitive psychological study, this research puts forward three optimization strategies to enhance big data administration of ideological and political constructions in higher learning institutions, such as improving the protection of big data talent teams, building a cross-level data platform on campus that combines the unified and divided model, and promoting the system protection. In addition, future research should enhance data sample collection and the development of big data prediction models to provide big data

support for better development in the ideological and political construction in higher learning institutions.

Keywords: *Ideological and political construction, Big data, Administration*

I. INTRODUCTION

With the great changes in the network environment, iterations of technical products and the breakthroughs in computing methods, which make big data continuously penetrate and apply in the process of education and cause the great reformation in the theory and practice of ideological and political education in universities [1]. It makes the emergence of big data of ideological and political education in universities inevitable. Cognitive psychology studies the law of human information reception and processing. Based on the close relationship between College Ideological and political education and cognitive psychology, it is of great significance for the research on the promotion strategy of big data management in College Ideological and political education [2]. The big data of ideological and political education in universities in this article refers to the big data that originated from the field of ideological and political education in universities and applied to the process of it.

This research involved 6 districts of Zhejiang Province with different levels of economic development (2 each of economically developed, more economically developed and less economically developed). 24 universities were selected by stratified random sampling according to the level of operation of the university (key universities, general undergraduate institutions and higher vocational colleges). The research chose 100 personnel from the selected universities who are participating or have been involved in ideological and political education to have a questionnaire survey. The final number of valid questionnaires was 2325. With the theme of the current situation of the management of ideological and political education in universities, the research group carried out the survey from the aspects of organization construction, teachers' strength, management mode and students' satisfaction. The survey results show that the current development trend of big data management of ideological and political education in China's universities is good, but there are still some problems.

II. CHARACTERISTICS OF BIG DATA OF IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES

The big data of ideological and political education in universities includes three types. The first type is descriptive data that includes information about educated people such as gender, ethnicity, family situation, etc. The second type is process data, which mainly refers to behavioral data reflecting a series of activities and their interactive relationships generated in the process of ideological and political education in universities. It includes the data of education and teaching platform, data of book borrowing and reading, access control, school consumption, classroom attendance, campus network use in students' learning life. These data are mainly stored in unstructured forms such as pictures and videos. The third type is result data that mainly refers to the quantifiable data of direct statistical operation results, including the data of academic course evaluation, second classroom, employment and entrepreneurship. These data are mainly

stored in structured form and can reflect the educational effectiveness. The big data of ideological and political education in universities has the following characteristics (Figure 1).

First, it can be quantified. The process of ideological and political education in universities concerning educational environment, resources, activities and effects can be quantified and analyzed by big data analysis techniques such as data statistics and mining. So it can guide the development of ideological and political education activities in universities.

Secondly, it can be superimposed. The data of different time and space, levels and types in the process of ideological and political education in universities can be superimposed and integrated together [3]. Then, the small data can be superimposed into big data, forming a data chain to bring into play the maximum value of big data of ideological and political education in universities.

Thirdly, it can be compared. The big data of ideological and political education in universities can be compared horizontally, comparing data of different students, different educational contents and different types of activities [4]. It can also be compared vertically, comparing immediate data with historical data, tracing the historical origin and predicting the development pattern.

Fourth, it can be integrated. Many fragmented data are being generated in universities all the time. The management of big data of ideological and political education in universities can improve data utilization by establishing application systems, databases and data cubes for data collection [5].



Figure 1: Characteristics of big data of Ideological and political education in Universities.

III. SIGNIFICANCE OF BIG DATA TO IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES

From the perspective of cognitive psychology, big data has had an impact on educational philosophy and practice, educational objects and educators, making it possible to change the process of Ideological and political education in Colleges and universities and make the quantifiable evaluation of educational objects possible [6]. It can fully explore the individual potential of educational objects, transform and

optimize the cognitive structure of educational objects, and ensure the personalized development of educational objects [7], So as to fundamentally improve the effect of Ideological and political education in Colleges and universities.

3.1 Promote the Great Innovation of the Ideological and Political Education Process in Universities

Big data has expanded the content scope of Ideological and political education in Colleges and universities, strengthened the strength of education, enabled more educators to make more effective use of various educational resources and carriers to understand the educational objects in all aspects, and more effectively lead the development of Ideological and political education by using more targeted educational methods according to the needs of the educational objects, This is consistent with the application of information processing theory in cognitive psychology to affect the process of design education. However, the era of big data also poses new challenges to the ideological and political education of colleges and universities [8]. Educational objects are no longer passively educated in the past. Educators need to constantly improve their ability level in order to adapt to the initiative of educational objects and the development trend of big data.

3.2 Provide Quantifiable Assessment of Ideological and Political Education in Universities

Big data can take the originally independent descriptive information of educational objects in the process of ideological and political education in universities. The fragmented process data can form the visual charts, dynamic diagrams that are highly integrated with the complex phenomena of the educational object through the quantifiable index system and big data statistical analysis. The combination of outcome data results in more objective, comprehensive and reasonable big data on the education target. Then the observation, evaluation and guidance of the education target is carried out in conjunction with these data.

3.3 Help the Individualization of Ideological and Political Education in Universities

The combination of Ideological and political education and cognitive psychology can transform and optimize the cognitive structure of educational objects. Through the big data of Ideological and political education in Colleges and universities, educators can efficiently understand the common characteristics and problems of educational objects, accurately obtain the individualized characteristics and problems of educational objects, and grasp the daily learning and life track of educational objects anytime and anywhere, It is convenient for educators to more intuitively and effectively understand all aspects of educational objects and form personalized portraits of educational objects more accurately.

3.4 Improve the Effectiveness of Ideological and Political Education in Universities

Compared with traditional data, big data technology has improved the reliability of information mining and analysis of ideological and political education in universities. With the real-time information processing technology of big data, the understanding and prediction of the ideological dynamics of

education subjects are also more accurate. Big data provides a guarantee for effectively and scientifically formulating strategies and plans for ideological and political education in Colleges and universities from the perspective of cognitive psychology, and improves the effectiveness of Ideological and political education in Colleges and universities.

IV. PROBLEMS IN THE MANAGEMENT OF BIG DATA OF IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES

The big data of ideological and political education in universities comes from various aspects of school management, including learning management system of academic affairs department, apartment management system of logistics department, the second classroom system of academic work department. For the average university with tens of thousands of students and faculty, the amount of data generated daily is massive. In this process, there are certain problems in the management of big data.

4.1 Unclear Data Sharing Needs

The current information technology department is collecting data before integrating and sharing, but often there are differences between the collected data and the actual demand. The ideological and political education work in colleges and universities involves many departments and data, and there are different levels of demand for use between different departments and units due to different attributes and differences in work content, which are both diverse and dynamic. The survey shows that 88.2% of Ideological and political educators in Colleges and universities believe that there are difficulties in sharing relevant data and unclear use needs, and 79.3% believe that there is duplication of work in the process of data collection. For the huge amount of data, the demand at the school level is different from the demand at the level of second-level colleges, and the demand at the level of second-level colleges and each class is also different. Some data are very important for the class or second-level colleges, but not very important for the general situation of the school. On the contrary, some data are important for the macro view of the school, but for the second-level units are just for reference. The direction of data in higher education is upward. The higher unit department can clearly see the various data of the lower level, but it is more difficult for the lower level to see the data of the level or the higher level. Through the coordination of other departments and units, it is not conducive to big data management and work.

4.2 Uncoordinated Departmental Cooperation

Ideological and political education work in colleges and universities involves all aspects of students' development and success. It requires collaborative work from academic affairs to party affairs, from academic staff to logistics and other departments. Some units still need to improve their big data concept, thinking and literacy, and their ability to actively analyze and think about a large amount of correlated data is insufficient. They just provide a large amount of data, and their awareness of using big data to analyze and solve problems is not strong. However, the survey shows that 72.5% of the ideological and political educators in Colleges and universities have not received systematic learning and training in big data

management. Moreover, different departments have different attributes and different leaders in charge, and it is difficult to coordinate data sharing between different departments. The standard of data sharing is not clear, and the degree of confidentiality of data is not clear. Some are often reluctant to take out the data held by their own departments, or some data have to be shared selectively only after repeated requests and reports, which also causes low efficiency.

4.3 Non-Assurance of Data Validity

In the process of data sharing and integration, there is an extra transit in data transmission, and it is not good to determine the timeliness and accuracy of data. Some departments generate more data biased toward practical applications, such as the Department of Academic Affairs and the Office of Academic Affairs. While some departments generate less data, such as the Party Affairs Department. In actual use, for different work, there are significant differences in the degree of understanding and cooperation of different departments. So, a lot of data are invalid. Different departments may have deviations in understanding the perspective of the same work, resulting in some truly needed data not being provided in a timely and accurate manner. The survey found that 95.8% of colleges and universities have six or more systems developed by functional departments, and more than 60% of colleges and universities have multiple data filling systems in one functional department. For example, in the process of student research results statistics, the second-level colleges, the Academic Affairs Office, the Academic Work Department and the University Committee all have their own sources of statistics. It makes data not be unified and be hardly complete. So a perfect platform is urgently needed to ensure the validity of the data.

4.4 Hidden Nature of Data Security

The big data of ideological and political education in universities involves a wide range and strong sharing ability. However, at present, many colleges and universities still lack effective data supervision. Among the colleges and universities surveyed by the author, 92% of the departments responsible for data supervision cooperate with the academic affairs office, library and other departments, only two colleges and universities have separate data supervision departments, and 20.8% of the colleges and universities lack clear big data management methods. There are too many irrelevant data and difficult management constraints. At the same time, the technical loopholes in the network make the data information leak risk, which is related to the personal information security of students. For example, students' personal information may be leaked or stolen or trafficked by unscrupulous elements in the process of evaluating awards and merits, financial aid, etc. The information of some students with psychological problems should be kept confidential. Once the information has been leaked, the impact on the students is irreversible.

V. OPTIMIZATION FACTORS OF BIG DATA MANAGEMENT OF IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES

At present, the concept of big data has been widely recognized in the ideological and political education of colleges and universities [9]. In view of the existing problems in the management of big data,

it is necessary to consider the technology, management functions and data, and further optimize the management mechanism.

5.1 Technical Factors

Technical factors are the basis of big data management of ideological and political education in universities. First of all, we should master the network reliability requirements, network security and specification are the foundation. The university information center department should unify the arrangement, do a good job of the security bottom line of the whole university, and avoid network attacks and information leakage as much as possible. Secondly, we should master and analyze the access computing load of different units and departments in the university, storage and network load requirements, and allocate resources in a targeted way. Ideological and political management in higher education involves a wide range of areas, but different departments have different data needs. It involved individual students commonly used data information access and storage requirements are very high, such as student personal information system, campus access management, etc. There are also related to student management, but data information needs are not very frequent, such as the management of student scholarships, etc. It is a phase of work. And this requires careful analysis of different [10]. This requires careful analysis of the nature of work between different unit parts, treating their data information in a hierarchical classification, and making the maximum optimal use of limited resources within the controllable scope of budget. Finally, we should improve the technical readiness of the ideological and political related unit departments in colleges and universities. Under the background of big data management, the information technology requirements of each unit department should be improved. We should consider whether each related unit department has information system, whether it can collect data effectively, and whether the technical level of each department is relatively balanced. The technical level of departments is relatively weak, and the collected information is incomplete and the quality is relatively poor. The readiness of technology is the key to data sharing and integration.

5.2 Functional Factors

Ideological and political education management system in colleges and universities is generally divided into school, college and class management mode. Each level has different attributes and different characteristics. School level is more macro, college class is more specific. In data management, attention should be paid to differentiation, giving different levels corresponding authority and division of labor. We need to facilitate the enthusiasm of different levels, and not to treat them uniformly, which may easily lead to waste of resources or low utilization. Basic, macro and integrated data should be shared centrally at the university level, while cross-shared data. Data with obvious territoriality of secondary units, proprietary and characteristic data can be more at the secondary unit level. For example, the dormitory and bed arrangement of each student is very important and often used by the college [11]. It can be analyzed by dormitory to analyze the academic style and ideological dynamics of different dormitories, but it is not often used by the school as a whole. If the school needs this data for a certain task, the interface can be opened to retrieve the grassroots data from the second-level departments.

5.3 Data Factors

The content of ideological and political education big data in colleges and universities is very rich and diverse. The first thing to consider is the data standard and update mechanism. Data standard refers to the normative constraints that guarantee the consistency and accuracy of internal and external use and exchange of data. In the management of big data of ideological and political education in universities, the university information center should unify the standard of data and update it timely according to the development and changes of policies and technologies. We especially use it when we involved the data of indicators who are often used in various assessment and analysis of schools [12]. So, it should do a good job in the specification of the underlying data statistics technology and lay a good foundation for the management afterwards.

Secondly, big data itself has certain externalities, and the value of different types of data should be carefully analyzed. Some data are very important for ideological and political education management, while some data are relatively unimportant. In the case of relatively limited resources, there is no need to waste network resources on unimportant data to make it shared [13]. It is necessary to carefully analyze the significance of the value of various data and how great the potential externality of the data is to decide whether this data should be shared and opened, and whether it should be shared and opened at the school or at the level of secondary colleges [14].

VI. OPTIMIZATION STRATEGIES OF BIG DATA MANAGEMENT OF IDEOLOGICAL AND POLITICAL EDUCATION IN UNIVERSITIES

President Xi stressed that “use big data well, enhance the ability to use data to promote various work, and constantly improve the ability to grasp the laws of big data development, so that big data can play a greater role in all work”. Big data is the future development trend of ideological and political work, and optimizing big data management is especially important for ideological and political education in universities.

6.1 Improve the Protection of Big Data Talent Team

To improve the management level of big data of ideological and political education in universities, the construction of talent team is very important. Most of the current ideological and political education in universities team workers' discipline background and experience are not related to big data. Professional data analysis experts do not understand the characteristics and connotation of ideological and political education in universities very well. In the future, ideological and political education in universities big data management talents should have the comprehensive ability of data analysis and ideological and political education.

First, strengthen the top-level design. In the case of mapping the specifics, determine the goal and plan of our university's talent team construction. We should great importance to the work of ideological and

political big data talents in universities from top to bottom. We also need to strengthen the introduction of diversified talents and increase the introduction of talents with professional backgrounds in big data. Second, strengthen data literacy education. Enhancing educators' data awareness makes educators take the initiative to integrate big data thinking into ideological and political education in universities. Third, strengthen professional technical training. Develop courses related to the integration of ideological and political education and big data in universities, and improve educators' big data technology level through self-study and centralized training. Then, we could build an ideological and political education teacher team with excellent big data technology foundation.

6.2 Build a Cross-Level Data Platform on Campus that Combines the Unified and Divided Model

The management of big data of ideological and political education in universities should first deal with the problem of integrating and sharing data between levels, taking into account the configuration of functional departments at the same level. Then, arranging the integration and sharing of data between departments at the same level to avoid the isomorphism of responsibilities and compartmentalization in data space. The core management concept of logical centralization of data resources, rather than physical centralization, should be emphasized. At the same time, it should take into account the technical readiness of each unit department and the spillover of the data resources themselves. Building a model combines the unification and division of the cross-level data platform within the university (Figure 2).

In terms of unification, first of all, the approval should be unified. The ideological and political work of colleges and universities involves a wide range of areas, and students are connected with various links in the school. The school should carry out unified planning and construction from top to bottom to reduce duplicate construction and waste. Then, our work can be more effective and integrated in construction. Secondly, the standard should be unified to ensure exchange and sharing, the technical standard of basic data is unified, so that we can effectively break each information silo and carry out. In reality, it is often difficult to exchange and share the data between academic system, academic affairs system and logistics system due to the different technical standards. Finally, we should unify the layout and build a unified data platform. Only the amount of data is large enough and rich enough to better play the agglomeration effect and let the data live.

In terms of division, first of all, we should deploy decentralized. We should deploy sub-nodes in secondary units. In the deployment, we should fully consider the characteristics of different departments and the work business content to meet the work requirements of different units. Secondly, we should decentralize the data management right. Each unit department has its own relative independence of business, and data as one of the important functions of current management. The management right should correspond to the departmental authority to maintain the departmental authority. In this way, data management can be carried out better. Finally, independent application development should be carried out to ensure localization and appropriate decentralization of the construction of the characteristics of secondary units. As an educational and scientific research unit, universities should retain their own characteristics among different departments of different faculties.

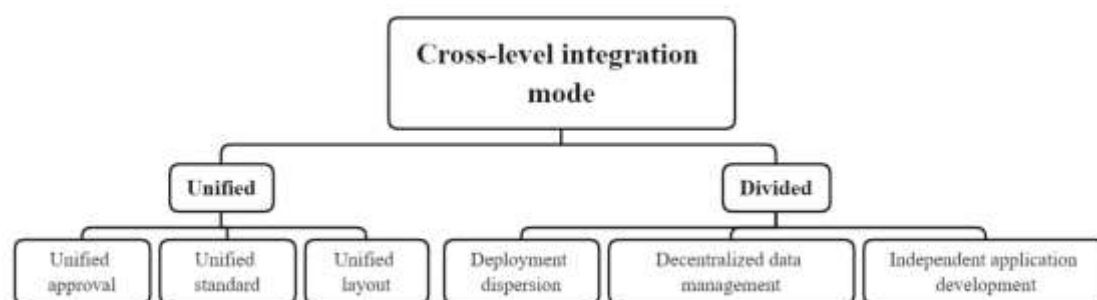


Figure 2: Build a cross-level data platform on campus that combines the unified and divided model.

6.3 Improve the System Protection

The Network Security Law also provides that "to prevent network data leakage or theft, tampering." For possible big data security problems, it is necessary to rely on the law and system to restrain. At present, the management of big data is not only within the universities, but also in various fields of society and people's livelihood. At the national and governmental levels, we should further improve the comprehensive legislation of big data security and improve the system of personal privacy protection. Thus, we can build a harmonious social order by relying on the restraint of law and system to punish the irregular behavior.

For universities, data management at any level should obey the basis of complying with national laws and regulations. They also should further improve and formulate the system guarantee, data supervision, confidentiality and security prevention and control measures related to the application of big data in conjunction with the actual school. According to the specificity of ideological and political education work, the scope and boundaries of the application of big data should be clarified. The collection and use of data and information should be strictly supervised, and excessive reliance on big data should be avoided, while the concept of "people-oriented" should be maintained. Offline communication with ideological and political education targets should be strengthened, and emotional needs should be paid attention to. Finally, in the process of cooperation with third parties such as external social organizations such as mental health assessments, it is important to assess them adequately and to ensure strict control and gate-keeping.

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