Research on Innovation of University Education Management under the Background of Big Data

Baoqin Huang，Thada Siththada*

Department of Educational Administration graduate school, SuanSunandha Rajab hat University, Bangkok 10300, Thailand. E-mail: hbq89118@163.com

Abstract：The management mode in the era of big data is to use computers and other information technology to achieve automatic information management mode. This management mode provides great convenience for enterprise management, and promotes the innovation and development of management mode of all walks of life, so that each of these fields has a greater foundation for development. As an important base for cultivating economic and political talents, the management quality of universities directly affects the cultivation of talents. Therefore, in the face of the educational management of universities, how to innovate educational management, so that the management level has a qualitative rise is particularly important. University administrators should realize the information of education management to make data management more scientific and effective, and it is also of great significance to promote the innovation and development of university education management.

Keywords：Big Data; Education Management; Innovation

The application of big data resources and technical means to university education management has the following significance. Firstly, the intrinsic value of relevant data and information in educational management is continuously collected, stored, transmitted, applied and mined, which provides a basis for educational management innovation. Secondly, big data technology is used to analyze the trends, weaknesses and strength of university education management, so as to determine the direction of the reform of university education management, and at the same time determine the key innovation of education management reform. On this basis, administrators should scientifically allocate resources needed for educational management innovation, support educational management innovation in universities, and improve the management level.

1．The status quo of university education management under the background of big data

1．1 Teachers and students in universities lack awareness of the use of big data

At present, the application of big data technology is not comprehensive in the educational management of universities, and teachers and students still lack the awareness of using it. In practice, the internal data model of universities is not unified, the

technical equipment is not perfect, and the information security and privacy of data make the application object of the internal data of universities unclear. The data management of many universities is not standardized, and various factors of data transmission affect the application depth of big data, and the data circulation is not perfect. Therefore, the application of big data technology in the implementation of higher education management is still an important problem to be solved.

1.2 Difficulty to collect and sort out big data in universities

Under the background of big data, the data structure of university education management is complex, with many channels and a large amount of information. As more and more data of students' information is collected, it is undoubtedly a huge project for university education administrators to establish a database to cover the data of different university students. For example, the software on many network platforms will always generate a lot of data and information, so that the data information involved in university education management is diverse. Due to the universality of the application system, the big data technology is still in its infancy in the educational management of universities. Therefore, there is no fixed data standard, which may lead to university administrators collecting duplicate student information data. In addition, in the process of data collection and integration, if the functional relationship between various departments in universities is not properly handled, the management department may have problems with data maintenance.

1.3 Differences in information data among universities

Each department of universities has fixed responsibilities and different data and information collected, which leads to differences in data and information within the universities, thus forming a "data island". And the information standards in universities are different, which limits the cooperation between them. At the same time, repetitive construction will lead to the unnecessary loss of many resources, and bring certain challenges to the analysis and collection of data information.

1.4 Universities lack big data technology and management talents

For big data professionals, universities need to have certain high requirements and standards. Big data talents need to master multiple skills. They should be able to master the functions of various departments and the required data, and analyze and integrate relevant data. At present, there are still some problems that need to be solved in the technology, analysis form and integrated research of big data. Due to the lack of actual exploration content of researchers and the small number of research institutions or research groups of big data technology in domestic universities, there is a gap in research scope and research methods.

2. Innovation approaches of university education management in the context of big data

2.1 Introduce advanced management concepts

2.1.1 The concept of active adaptation

The concept of active adaptation means that education management must adapt to the requirements of social development for talent training, seize the demand of information society for talent at anytime and anywhere, adjust the concept of education management timely, and conform to the trend of the times. At the same time, positive adaptive thinking will become the guiding ideology of higher education management. Education administrators should decentralize moderately and adopt flexible attitudes to deal with the changes of internal factors and external environment.

2.1.2 The concept of people-oriented

The central task of school management is educational management and teaching management. The people-oriented management concept is first reflected in the management process, emphasizing the subject status of people, so that the school management can be

truly people-oriented. Teachers and students should not only participate in management activities together, but also in the process of work and study, by improving their physical and mental, ability and knowledge innovation ability, so as to bring great potential to teachers and students. Students are the main body of learning and teachers are the main body of education. Creativity and enthusiasm play an important role in improving the quality of education management. Therefore, in the process of educational management, teachers should study students' creativity and enthusiasm, pay attention to all aspects of management activities, and improve the quality of teaching.

2.1.3 The concept of total quality management

The idea of total quality management mainly comes from the management ideas of American companies, and the implementation of total quality management in higher education management mainly includes the following aspects: First of all, the whole process of quality management. In order to ensure the orderly development of teaching activities centered on teaching objectives, quality management must be carried out in all links of education management. Educators must grasp every step of the teaching process and ensure that each step meets established quality standards. Secondly, total quality management needs to implement comprehensive management, as long as it involves links or factors affecting teaching quality, it should be taken into account. For example, problems in logistics service departments and management departments in quality management work will affect the quality of education management if there are problems in these departments. Finally, education managers should carry out quality management for all staff and school members (including all teachers and students), actively participate in quality management, and strive to improve the quality of work, so as to cultivate high-quality professionals.

2.2 Build a professional educational management team

Strengthening professional personnel training and establishing and improving multi-level and multi-type big data personnel training system are the key to guarantee human resource management of higher education in China under the background of big data in the future. In order to improve the construction of the educational management team, we must reform the training system of universities, establish and perfect the training system of teacher professional development, and redesign the training program. Teachers' pre-service training should be reformed, the original technical courses should be transformed into pre-service training courses, so that teachers can use technology more deeply in post-service training and put forward the teaching reform ideas of "basic courses+specialized courses+basic subjects+elective courses". In addition, the curriculum system should not be immutable, but should aim at different curriculum settings, training courses and teaching materials to improve the effectiveness of data literacy of all teachers. The training content of each training object in different periods is also flexible and should be determined according to the needs of the training object. In order to cultivate more excellent in-service teachers, schools need to adopt "individualized teaching", "diversified training" and "individual training" according to the needs of education management and the characteristics of teachers. Secondly, education managers should also innovate training methods. From the point of view of content, the training of university teachers not only includes big data technology, but also includes the training of big data thought and big data theory. Information technology training should be combined with curriculum and specific projects, and effective teacher training programs should be implemented to ensure the feasibility of teachers' mastering and using big data technology. To simulate how to select and use appropriate application tools to support learning and evaluate the safety and practicability of these tools, universities should carry out activities such as autonomous learning, interactive learning and exploratory experiments. Administrators of universities should also make full use of the network platform for discussion and communication, so that teachers can experience new learning methods and make them use the knowledge appropriately and accurately in future teaching.

Finally, university administrators should combine various forces. The big data literacy education and training system for university teachers has three main bodies: First, education administrative departments; Second, information technology providers; Third, the establishment of cooperation mechanism. Universities should make full use of social resources to improve the ability of university teachers. Universities can rely on the government to set up training programs, quickly select suitable teachers to participate in, while cooperating with companies, big data application companies, big data training companies and other enterprises, and constantly improve the talent training system. University trainers need to train teachers in the use of information technology, data analysis, teaching reform and innovation. Based on this, we should establish our own training base and build first‑class universities, so as to give full play to the development of teachers. At the same time, we should also strengthen cooperation in international education, strengthen cooperation with other countries and learn from each other, to promote the continuous improvement of big data literacy of Chinese university teachers. Teachers should also cultivate and improve students' big data literacy.

2.3 The formulation of university education plan under the background of big data

At the first, educational plans should meet the following requirements: ① According to the objective requirements of socialist market economy, we should try our best to design various talent training modes, and at the same time, we should also consider the changes of talent training modes, and try our best to design various intelligent structures adapted to the future environment. ② Students should look for models that suit their development prospects, and schools should offer different types of models as much as possible. For specific methods, please refer to the following suggestions: In the credit system, you can develop a complete credit system. With the development of information technology, distance higher education has made great progress, and students can study freely on the network platform. In teaching arrangement, information technology should be used to make students have enough space to make choices and give full play to students' subjective initiative. However, we must realize that there is no uniform standard for the various needs of university students, so we must promote the development of university students.

In the second place, formulate the general procedures of education management plan, analyze the needs, training objectives and professional demonstration work in the fields of social investigation and talent cultivation, understand the spirit and provisions of relevant documents and the opinions and requirements in the teaching plan; Take the school as the unit to preside over the formulation of teaching program, the department teaching committee for deliberation, by the school teaching work committee review verification, verification signed by the executive principal signature confirmation.

Thirdly, the content of university education management plan mainly includes two aspects: They are to determine reasonable professional training objectives and establish corresponding course management standards, because professional training objectives and course quality standards are related. This paper studies the professional training objectives and curriculum setting of higher education, and mainly adopts the method of investigation when determining the training objectives.

In the whole process, we should make full use of big data technology and conduct statistical analysis of the survey information. At the same time, we should pay attention to the following aspects: One is to make a reliable forecast of the employment situation of graduates, only to meet certain confidence, in order to improve the employability of graduates. The second is to introduce more excellent teachers, improve experimental equipment and necessary teaching materials, as much as possible to improve the living and learning infrastructure. The third is to form a wide‑caliber education model as widely as possible. At present, it is becoming easier and easier to obtain the information of teaching and learning, but it is difficult for teachers and students to carry out knowledge reorganization and innovation. Fourthly, universities should have their own characteristics, and the discipline construction should

combine the geographical and traditional advantages of the school. Fifth, we should consider the occupation hot spot and direction problem, adjust the professional that accords with social employment requirements in a timely manner.

In the context of big data, universities should carry out education management according to the following points: In the first place, universities should emphasize maintaining a relatively stable education system and implementing strict education management plans. To this end, we can develop the following criteria: One is to divide the annual teaching plan into classroom teaching plan and annual teaching plan through the enrollment system or the compilation of annual teaching plan, and then university teachers write working documents and arrange teaching tasks according to these; In the second place, relevant education departments formulate relevant education and teaching management plans, such as social practice, experimental teaching, training, etc. Secondly, education plans should establish appropriate policies and an appropriate environment to ensure educational infrastructure and require active cooperation and cooperation between education departments, teachers and students. In this process, we need to grasp the following five aspects: One is to maintain the seriousness and authority of the educational management plan, strictly abide by the educational management plan, and make corresponding adjustments; Second, in the specific implementation process, teachers and students should follow the education and teaching plan and arrangement to carry out; Third, universities should strengthen the construction of teaching staff to ensure that front-line teaching and educational management work is carried out as planned; Fourthly, managers and supervisors should formulate educational management quality assessment plans and strictly supervise their implementation. Fifth, university teachers should organize management education and teaching in strict accordance with the educational management plan.

2. 4 Reform student management training mode

In the context of big data, higher requirements are put forward for talent quality. Therefore, it is necessary to reform the training mode and management mode of big data technical personnel to provide favorable conditions for this reform. The reform of student cultivation methods in the context of big data mainly includes three aspects:

The first is to promote "participation" (also known as cooperative education or cooperative learning). In teaching, this teaching method is characterized by questioning teaching, open content, no uniform answers to questions, little or no homework and examination papers, giving students enough space to carry out heuristic education. Learners use network technology and computer technology to collect relevant information to answer questions, and complete the learning process by answering questions. In this process, students not only master the ability to solve various problems with the help of the network, but also finally master the ability to use the network to learn relevant "problem" knowledge. At the same time, for different students, teachers carry out basic research and comprehensive promotion, divided into three levels of learning and training, and teach students in accordance with their aptitude. According to the characteristics of students, develop corresponding training objectives for students to design and develop strict and appropriate teaching plans, so that everyone can get as good development as possible.

In the second place, universities should vigorously cultivate students' social practice ability and strengthen practical teaching. In many cases, the lack of practical resources and experimental resources will affect the level of practical teaching. What should we do if we don't have enough resources? We can use computers and the Internet to write a program that functions as a virtual laboratory where students can simulate the anatomy of a frog. The use of computer software in virtual laboratory experiments, its advantages are low cost, experiment failure, easy to start again, students can repeatedly practice, until they master so far. It can simulate the situation that is invisible to the naked eye, or the experimental environment that is difficult to really establish, and can meet all the experimental requirements as far as possible.

Eventually, students should be encouraged to study across disciplines and cultivate comprehensive talents. At present, with the

development of information technology, new disciplines keep emerging, most of which are composed of interdisciplinary. The multi-disciplinary training mechanism is a harmonious core discipline to cultivate students of universities under the multi‑disciplinary background. We can learn from the successful experience of foreign interdisciplinary teaching to break the educational barriers between disciplines and establish the cross‑disciplinary teaching training mechanism. The specific implementation process is as follows: Selecting courses required by students according to the training plan. Subjects include literature, science, engineering and other fields, whose purpose is to cultivate students' comprehensive analytical ability and stimulate their innovative spirit. Courses and teachers of a variety of subjects should be provided for students, so that students can determine their own training goals according to their interests. Autonomous learning, which allows students to cross departments, disciplines and classes, is a curriculum that universities must improve. Seizing the new growth point of interdisciplinary, organizing the strength of interdisciplinary development of education, providing necessary teachers, form the teaching mode of interdisciplinary, train students to innovate, guide students to open up new fields and develop themselves in an all‑round way.

At present, most of universities implement the credit system, which is a management mode formed in economic times. At present, in the big data environment, we advocate a more personalized student management system, with teachers as the main body of student management. With students as the center and students as the main body, teachers are guides to help students establish service centers. The specific process is as follows: One is to establish psychological consultation, first aid, action research and learning mechanisms, and establish relevant community management; In the second place, on the basis of student dormitories, cancel classes and form a complete class with 8-15 teachers and students; Thirdly, let outstanding graduate students or university students assist in management. This management mode is conducive to the cultivation of students' comprehensive ability, conducive to the cultivation of students' innovative spirit, so that students actively develop.

2.5 Strengthen the reform of teaching management

Curriculum construction should not be ignored. In a sense, courses are more important than majors, because they reflect their expertise. In the era of big data, knowledge is becoming more and more important. The merits and demerits of university curriculum system can be evaluated from the following aspects: One is the integration of curriculum system, the other is the further study of curriculum system. Thirdly, the sustainable development of the curriculum system. Fourthly, the balanced structure of the curriculum system refers to the hierarchical structure and internal relations of the curriculum system. According to these indicators, the following points should be paid attention to when improving the curriculum system:

In the first place, we should pay attention to the updating of teaching content, so as to realize the updating of ideological, scientific, pioneering and innovative curriculum content, so as to timely provide the latest research results. Scientific curriculum setting, arousing students' learning enthusiasm, combining classroom teaching with network teaching, and actively developing network education. Secondly, it emphasizes interdisciplinary curriculum construction, emphasizes the mutual penetration of science, engineering and literature, emphasizes the construction of disciplines and disciplines, and also points out many problems existing in textbooks. Both the existing textbooks and the old ones with a long history have a low utilization rate. There are few new teaching materials. Through the survey of teaching materials, it is found that the proportion of new teaching materials is very small. In order to solve this problem, the education administrators put forward a new solution. Universities should formulate relevant policies to guide and support the construction and use of new teaching materials and strengthen the construction of teaching staff. Thirdly, pay attention to summarizing the achievements and experience of the curriculum system reform and teaching content reform in recent years, absorb beneficial factors, actively expand the teaching content for teaching reform, and increase the type and number of

courses. Finally, the courses of the university credit system are divided into compulsory courses and elective courses, which must have a certain proportion. At present, the proportion of elective courses is relatively low, which needs to be further improved. At the same time, optional courses can also be added to the elective system of compulsory courses. Homework selection mechanism is introduced in the classroom, so that mathematics, physics, computer application, English courses and a series of homework have different levels, students can choose appropriate courses according to their own professional direction and interest.

2. 6 Give full play to the role of campus network in strengthening educational management

The environment is the foundation, the foundation of education management is the construction of campus network platform, now education cannot do without an information platform. First of all, we should pay special attention to the role of campus network, especially considering the overall development of campus network, make reasonable planning, clear its profound significance and applicability. In large-scale network construction, network construction is an investment link, specifically, how to combine the characteristics of the school, all the network files on the campus to detect, manage and debug. The second is the overall design. Considering the process of network application development and software development, campus network construction must be very rational, do a good job of network interface, limited funds to stage in place, in order to achieve maximum benefit. Third, act tough and talk soft. Generally speaking, we should build hardware and software together. Because the software design is time-consuming, more time is needed to perfect the network management information system. Teaching consists of several aspects, from the various stages of the teaching process, from management to implementation to query and feedback of results, but systems can be individually designed, purchased and used. Pay special attention to the suitability and share-ability of the software. The fourth is to have special applications, three technologies and seven management, in order to achieve the best results. At present, due to the lack of management, network application problems, even difficult to use, the school must seriously arrange skilled teachers to manage the campus network, promote the use of the Internet. Fifth, further strengthen the training of higher education. Campus network affects all teachers, students, education administrators, schools should pay attention to campus education. Pay attention to the management and training of teachers. Sixth, strengthen the use. The ultimate purpose is to create benefits, only make full use of the campus network, in order to improve the construction level of campus network. At the same time, we should improve the data information platform of higher education management. The goal of higher education management is to design a scientific and reasonable construction scheme of higher education management information platform based on the construction of big data information system and the organic combination with the education system. Through the analysis of the present situation of university resources integration, optimize the personalized development structure, integrate information resources into the system platform, ensure the compatibility of data system, and provide technical support for university resources integration. Secondly, based on the existing material resources of universities, a perfect data acquisition system is introduced to enhance the purchasing power of the data system, improve the consistency of data acquisition, optimize data resources and ensure the effective management of the system.

3. Conclusion

In the context of big data, the efficiency and quality of all kinds of information education management have been improved. In order to promote the development of higher education management, we should also study related information and data technology. In order to strengthen the order of higher education management and promote the innovation of higher education management, we must make full use of information platform and information technology. We should grasp the needs of the times, strengthen personnel training, and promote the information and digitization of university management.

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