

Research on the Informatization Construction and Innovative Development of University Teaching Management in the Era of Big Data

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Abstract: Big data is an advanced technology derived from the information age, playing a pivotal role in the development of education modernization. This paper of "big data era of university teaching management and the information construction and innovation development" as the central problem, with the analysis of the big data era and the connotation of university teaching management informatization construction, expounds the teaching management informatization construction, by strengthening information talent construction, repositioning teachers, attaching great importance to the artificial intelligence research and strengthening the construction of information education teaching resources. In this way, it can improve the information management and safety standard of five aspects of university teaching management informatization construction and innovation. It is committed to promote the university education modernization process forward steadily.

1. Introduction

At present, the education cause has officially moved towards the development process of education modernization, and has made outstanding achievements in the reform and innovation. Colleges and universities are the main body of higher education in China, and they naturally follow the guidance of the country. At present, the informatization construction of college education in China has basically completed the infrastructure construction, colleges and universities have basically realized the wireless network coverage of the campus, and the degree of inter-university resource sharing is gradually improving. Big data is a technical means derived from the process of social informatization. In the field of education, big data can realize the efficient and accurate analysis of data, provide reference for the construction of teaching management informatization, and has rich research and practical value.

2. The connotation of university teaching management information construction in the era of big Data

Information construction is to rely on information technology to provide support for the modern way, means and process of management. Education informatization refers to the use of information technology to comprehensively optimize education, enhance teachers' ability, improve students' information literacy, and build a new information and digital education system. The construction of educational informatization mainly refers to the construction of the resources needed by educational informatization in colleges and universities, which includes both the construction of hard

environment such as information teaching equipment, and the construction of soft environment such as teaching concept. The purpose of the information construction of teaching management is to make use of the advantages of modern information technology, change the disadvantages existing in the previous education and teaching management mode, and use multimedia, cloud computing, big data, database and other technologies to maximize the sharing and regeneration of information resources. The construction of teaching management information can make domestic and even international universities form a pattern of information exchange, help to improve the overall level of higher education in China, narrow the gap of strength between colleges and universities, promote the construction of education fairness, and achieve the goal of quality and balanced development.^[1]

3. Research on the current situation of university teaching management information construction in the era of big data

China's information education is still in the exploratory stage. It is not difficult to find from the current published research literature that there are many theoretical studies on the connotation, technology and integration of information teaching, but relatively few practical studies, and the goal of completing the information construction in the whole process of education and teaching. At present, some educators still cannot recognize the importance of education informatization, and the work concept stays in the traditional teaching mode, and maintain a negative attitude towards the application of information technology means. In addition, most colleges and universities lack the reference of teaching management information construction, can only rely on experience and research to explore, so it is not only difficult to guarantee the time of information construction into use, but also easy to fall into the misunderstanding of information construction.^[2]

4. The change of university teaching management informatization construction in the era of big data

With the development of information technology, education and teaching has changed from the single computer-aided teaching to the network information platform teaching, and then developed to the integration of information technology and various majors and professional courses. In the process of continuous innovation, teachers' teaching methods and students' learning methods have undergone certain changes, and teaching and learning are developing towards diversification. The information construction of teaching management is a purposeful and planned educational reform. This reform is not a complete negation of the previous "one-size-all" education mode, but the integration of big data technology, intelligent technology and other digital means on the basis of inheriting the core of education and education to realize the comprehensive optimization and adjustment of teaching.

4.1 The construction of teaching management promotes the innovative development of teaching resources and environment

People will not only acquire and accumulate knowledge through learning, but also find knowledge in the subtle images of the environment. A good environment is beneficial for learners to acquire knowledge. In the era of big data, the network environment has become the main environment for students to contact with. With the improvement of people's cognitive level and the development of science and technology, big data is becoming more and more widely used in the field of education, and its importance is becoming more and more prominent. With the support of big data and information technology, the intelligent learning environment has become the mainstream environment of the current educational information environment construction.

Intelligent learning environment is the result of teaching resources and environment innovation. It can record the dynamic learning process of learners and analyze their learning behavior and learning results. For teachers, the intelligent learning environment can perceive the characteristics and behaviors of learners, digitize all kinds of information through big data analysis, and provide teachers with more intuitive data reference. For students, in the intelligent learning environment, learning is more personalized, learning is more interactive, and they can obtain a richer learning experience.^[3]

4.2 The construction of teaching management information promotes the innovative development of teaching methods

The construction of teaching management information is bound to bring an impact on the traditional teaching methods. In traditional teaching, the main tools used by teachers are blackboard, chalk and other teaching AIDS, and the teaching method is usually class collective teaching, which is relatively fixed in time and space. The teaching process is inclined to one-way teaching, the teaching content focuses on cognitive education, and students' learning state is passive and the main role is lacking. With the advancement of education informatization, all kinds of more advanced teaching equipment in the current era have gradually come into the classroom. At the beginning stage, the advanced teaching tools and equipment introduced into the classroom mainly include TV, projector and other technologies, which start the transformation from traditional teaching to audio-visual teaching. In this process, students' vision and interest in learning have been improved to some extent, but their learning style has not changed substantially. After entering the era of big data, the informatization level of teaching in colleges and universities has been further improved, and the advanced teaching modes emerge in an endless stream, and the education mode in colleges and universities has begun to produce substantial changes. In the era of big data, the positioning of "teaching" and "learning" is clearer, and new teaching modes are widely used, such as flipped classroom, MOOC MOOCs, virtual reality, etc. Teaching presents an intelligent and diversified trend. Big data means can further improve the intelligent level of teaching in colleges and universities. Relying on the teaching platform and big data means, colleges and universities can optimize the existing teaching mode and improve the quality of running schools. For teachers, big data can screen out quantifiable information in the classroom, such as attendance, homework completion rate, high frequency errors, learning time, etc., using digital data to express the dynamic teaching process, making it easier for teachers to control the teaching process. In the support of big data and the reform of teaching informatization, the positioning of teachers has changed, and the role of teachers in teaching is more organizational and guiding, and the personalized characteristics of students' learning in the information environment are more obvious.

4.3 The construction of teaching management information promotes the innovative development of teaching evaluation and teaching management

Evaluation is the basic work in teaching management. With the support of big data, teaching evaluation should also be developed to intelligence. Big data can track and monitor the learning process of learners, and complete data collection while monitoring. After sorting and analysis of data, the real data of learners can be formed. The data can reflect the personalized needs, ability level and knowledge reserve of learners. After mastering the accurate data of learners, teachers can have goals and targeted guidance to students, so as to reduce the probability of teachers' subjective judgment to make the evaluation of incomplete results and inaccurate phenomena. Big data can also generate students' thinking habits and knowledge maps, guide and supervise students' learning

activities, improve the integrity of evaluation, and ensure that students have corresponding evaluation in each stage of learning activities.^[4]

In addition to evaluation, big data means can also improve the work efficiency of teachers, and teachers can invest their limited time and energy into more urgent teaching and teaching management. The application of big data in teaching management is mainly to explore relevant data, and to make scientific decisions on various work through data analysis results and teachers' personal experience. On the one hand, teachers can complete the collection of original data through big data means, and then quickly and accurately find out the prominent problems in teaching through big data analysis, and choose scientific solutions according to the content of the problem. On the other hand, big data has improved the intelligent degree of teaching management. With the support of big data, teaching management has been transformed from manual management to intelligent management. It not only saves a lot of time, but also the scientific and intelligent big data is also widely recognized by people. If we look at the overall situation, domestic universities have completed the construction of education management information, then the education management will be continuously improved in sharing and communication, and the efficiency and reliability of intelligent management will be further improved.

4.4 The construction of teaching management information promotes the change of teachers' roles and positioning

With big data and artificial intelligence entering colleges and universities, personalized learning has become the main way for learners to improve themselves. Personalized learning also needs to rely on the Internet and big data technology. In the information of education management, teachers' lesson preparation, teaching, knowledge point evaluation, homework correction and other work can be carried out through the teaching platform, and the above work can be completed by artificial intelligence and big data means. Students can also choose their own learning content through the learning platform, and the learning process is more interactive and more personalized. Informationization of teaching management reduces students' dependence on teachers in learning activities, and teachers will shift their work focus in this case. In the traditional teaching mode, teachers carry the two main missions of "teaching" and "educating people". The importance of these two missions is equal, and the realization process is peer in the same direction. With the support of big data, the "teaching" work can be completed by big data and artificial intelligence means. Teachers need to invest less energy in the "teaching", and the work center focuses on "educating people". No matter how advanced big data and artificial intelligence develop, they can not replace the emotional communication between teachers and students. To implement the fundamental task of cultivating morality, teachers also need to do it by themselves.

The era of big data has also brought new development opportunities for teachers. Although in the era of big data, the role of teachers has changed, there is no doubt that the essence that teachers are the inseparable subjects in the classroom. Teachers can obtain massive teaching resources through the information acquisition and collection function of big data means, push suitable materials for students through the screening function, and answer questions online through the information teaching platform. In this process, teachers will gradually master the essentials of information teaching, the information literacy will be comprehensively improved, and the knowledge structure will be supplemented. The support of big data means and the construction of teaching management information promote the progress of teachers, and help them to grow into creative, knowledge-based and skilled compound talents. As the disseminators of knowledge, teachers should walk in the forefront of the development of The Times, transform big data means and artificial skills into a great boost of teaching and teaching management, meet the needs of information teaching

management in the era of big data, and do a good job in the role of reformers in the reform of teaching management information construction.

5. Informatization construction and innovation development strategy of university teaching management in the era of big Data

Big data and information construction will create a new pattern of the development of college education. In the era of big data, personalized learning, deep learning and intelligent teaching have become an inevitable trend. Only by accurately grasping the development opportunities and implementing the requirements of the country to accelerate the modernization of education, can we adapt to the development of The Times.

5.1 We will strengthen the development of information-based talents

In the era of big data, the goal of colleges and universities is to cultivate new talents. To achieve this goal, it is necessary to ensure that students can master the professional knowledge, but also have the necessary information literacy. In order to realize the goal of teaching management informatization construction, colleges and universities need to train the informatization talents who master the excellent information technology and have the application ability. In higher education, information talents can be divided into two types, one is engaged in management or teaching personnel in the field of education. In the process of promoting educational informatization, the personnel engaged in management and teaching generally have a certain understanding of information technology and big data means, and the application scope of the above technologies and capabilities is also more extensive. The other is the researcher of education work. This type of talents are generally proficient in educational technology, and can efficiently complete the information collection, processing and analysis of the work, which belongs to the senior education information talents. Most colleges and universities have insufficient reserve of this type of talents, so it is necessary for colleges and universities to introduce talents through various channels, establish a systematic training system, improve the feasibility of teaching management information construction through talent construction, and explore more subjects to promote the construction. In order to ensure the enthusiasm of talents in the construction of teaching management information, colleges and universities can establish corresponding incentive systems. For those who perform actively and make outstanding contributions, colleges and universities should give material rewards or spiritual rewards, and open up the promotion channels of talents to provide fair opportunities for the promotion of talents.^[5]

5.2 Reposition the teacher role

Education administrators should recognize the importance of education informatization and actively participate in the construction of teaching informatization. Colleges and universities can set up intelligent teaching and research groups to encourage teachers to jointly explore new ways of intelligent teaching, and carry out lectures and class evaluation activities in various majors. Teachers of all majors can work together to summarize the prominent problems in teaching, discuss solutions together, and explore a path in line with the actual situation of the school and the development trend of education informatization. In addition, colleges and universities should also do a good job in the ideological work of teachers, regularly carry out relevant training and lectures on teaching management information construction, to ensure that front-line teachers can adapt to the role change, adapt to the tide of teaching in the era of big data, and face opportunities and challenges bravely.

5.3 Focus on future AI research

Big data and information technology have shown great potential in the field of education, but the current construction of teaching management information in colleges and universities is still in the primary stage. To create an ideal intelligent education environment and build a national learning society, it still needs a long process of development. Colleges and universities can cooperate with educators to increase the training of information-based talents, innovate the application of big data and artificial intelligence means in teaching management, and solve a series of difficult problems in teaching in practice. In addition, colleges and universities should strengthen technical cooperation. To the teaching management of informatization construction, only by the combination of education workers is difficult to achieve, colleges and universities should strengthen the cooperation with the experts of information technology, in the cooperation and exchange of information technology and university education management, strengthen the application of informatization means in the teaching management, strengthen technical cooperation, because from the depth of the informatization and education fusion, rely on the education workers is not enough, also need field experts cooperation, in the exploration of teaching management innovation and development of informatization construction in colleges and universities.^[6]

5.4 Strengthen the construction of information-based education and teaching resources

In the era of big data, the access to educational resources has been expanded, and information collection is more convenient, which is conducive to the resource construction of teaching management information in colleges and universities. At present, there are two main ways to obtain the information construction resources of university education management. One is to search keywords through search engines, so as to obtain massive related resources. Although this method searches for many resources and rich resource types, it is difficult to guarantee the quality and adaptability of resources. In order to get valuable resources, it is necessary to conduct artificial screening of resources. The screening process is boring and lacks interactive experience, and the correlation and accuracy of resources generally need to be determined by clicking on the details of resources, which takes a long time and energy. The other resource is the network education resources built by the country, including the high-quality education resources of universities, such as open classes, courseware, educational interpretation, etc. With the support of big data means and artificial intelligence, the construction of teaching management information resources can complete the resource collection more accurately and efficiently.

5.5 Adjust and improve the educational information management standards and information security

At present, the construction of teaching management in universities in China is in the processing stage, and there is a certain gap in the level of education management among universities. With the continuous advancement of information construction, the degree of resource sharing is constantly improved, but there is a lack of perfect protection measures for the shared resources, and there is a certain risk of leakage. Colleges and universities should also fully consider the construction of data protection when carrying out the construction of teaching management information. On the one hand, colleges and universities should establish campus network security centers to maintain the data and resources in the platform. On the other hand, colleges and universities should strengthen the information security awareness of all staff and students, and strengthen the protection of intellectual property rights. While maintaining campus information security, they should also

respect the intellectual property rights of others to ensure that everyone can abide by laws and regulations in the information environment and establish a correct value orientation.

6. Conclusion

Big data has changed the traditional teaching management mode and brought challenges and opportunities to the teaching management in colleges and universities. Teachers should recognize the changes of their own roles in information teaching management, pay attention to the use of big data and modern information technology, find the convergence point between information and education, and better promote the cooperation and innovation between teachers and personnel engaged in information technology.

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