Research on the Effectiveness of Higher Education in the Era of Big Data

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ABSTRACT

Given the constant availability of data from social and commercial activities, people have entered a new era of explosive growth of data. Therefore, how to effectively promote students' development in the context of big data has become a test for higher education workers in universities in the new era. Based on big data, this paper analyzes the opportunities and challenges facing higher education, and explores several optimization paths in the new era. The first is to establish "database" of higher education with the help of "big data". The second is to employ "big data" to cultivate data awareness and literacy and optimize the higher education environment. The third is to innovate the mode of higher education with the help of "big data". The fourth is to improve the teaching quality evaluation system with the help of "big data" to guarantee teaching quality, in a bid to obtain breakthrough in this field and provide a paradigm and reference for the reform and development of higher education in the new era.

Keywords: big data, higher education, effectiveness

I. INTRODUCTION

Big data, also known as massive data, is a unique data phenomenon generated with the rapid development of computer technology and Internet technology.[1]Big data has brought unprecedented changes to information technology, serving as a basis for transformation and innovation in education, politics, economy and other fields. Undeniably, in the new era of big data innovation and data sharing, new media and technology has endowed vitality to higher education, promote the integration of traditional advantages of higher education work with information technology, and enhance the sense of the times and appeal, [2] which is important issues faced by higher education in the new era.

II. THE CHALLENGE FACING HIGHER EDUCATION IN THE ERA OF BIG DATA

A. The massive information of big data has dent the objectivity and accuracy of higher education

Mass information refers to a variety of data accompanied the rapid growth of new network technology, constantly promoting global informatization. The information of varying quality in the era of big data seriously cripples the objectivity and accuracy of higher education. Higher education workers

in colleges and universities must take this into consideration: students will do things contrary to moral ideas and their values will be distorted due to negative information. College students are curious, and their physical and mental development and moral character shaping are completely affected by big data, which requires more for higher education.

Data governance is a process from adopting fragmented data to unified major data, from poor or no organization and process governance to enterprise-wide comprehensive data governance, and from chaos to order. higher education can better its performance only by managing, reasonably using and pooling data. Therefore, managers and workers involved should actively adapt to the era of big data, select target positive information and objectively analyze negative information among the sea of data, improve data quality, specialization, and data index, promote the reasonable application and sharing of the data, so as to guarantee effect and utilization. Attention should be paid to the fact that network is a double-edged sword. The positive one must be employed to lay a solid higher education foundation and build a strict line of higher education.

B. The multilevel subjectivity of big data has paralyzed the subject status of educators involving higher education .

The subject status of educators involving higher education is crippled by the multilevel subjectivity of big data. The access to resources and distribution of

resources has undergone an about-face due to big data. Instead of apprehension of truth, teachers take interaction and development with students as priority. Individuals are both disseminators and receivers, and both teachers and students have achieved equal communication. Wang Jia of Dalian University of Technology points out that Web2.0 lays technological foundation for the change of relationship between subject and object on the web. The inter-subjective communication and practice relationship is formed between the educators and the educated, which is intensified by big data. [3] Obviously, big data has crippled the subject status of higher education educators in colleges and universities, which requires educators to utilize the characteristics of multilevel subjects, to conduct dialogue with students on an equal footing, and analyze specific problems.

In the era of big data, educators and the educated are free to mine, collect, analyze and organize relevant data on the Internet according to their own will and needs. No longer relying on educators to obtain knowledge, some students even sometimes put forward their own opinions and suggestions to challenge teachers. During this period, educators and students boast different concerns and analysis focuses, which requires the former to adapt to this era, analyze problems from the perspective of students, and propose more professional, efficient and convincing answers.

C. The real-time performance of big data has impacted the classroom of higher education

Traditional higher education takes classroom as the only educational front, and most students receive education in the fixed form of class. Therefore, the innovation of teaching method is limited to teaching materials and teaching. The big data in full swing transform the space and time of education from "presence and synchronic" to "online and real-time". The classroom space and time of higher education are affected accordingly. Therefore, colleges and universities have established one or more student-centered educational resources meeting personalized needs to break through the limitations of time and space. To some extent, higher education can also be fragmented. In this way, students can receive data more easily and conveniently, making the open education mechanism possible.

But more attention should be paid to avoid data omnipotence, computationalism, and excessive reliance and blind worship on data. Information from various platforms should be processed at the same time and in a timely and accurate manner. Educators should always pay attention to students' trends through various platforms such as QQ and WeChat. In addition, many teachers carry out network discussions, so that higher education has a multi-dimensional time-space classroom, which allows online communication with no

geographical limitation, accurately grasp the individual growth of students and ideological change, and truly realize personalized education.

III. THE PATH TO MAKE BIG DATA PART OF HIGHER EDUCATION

A. Establishing "database" of higher education with the help of "big data"

At present, most universities in China have established their own network platform, with their own campus network client and network management center. On this basis, the development and utilization of big data explore a new way for the innovation of higher education.

1) Effectively integrate resources and constantly improving data pooling.: "Data is the basic resource for scientific analysis and exploration." [4] At present, the higher education network platform provides certain educational resources, which needs to be further improved. On the one hand, colleges and universities can build an "all-in-one card" platform, improve the smart campus information system, and regularly record all kinds of dynamic data of college students in study, friend-making and life. Data barriers also need to be broken to fully integrate the scattered data resources and solve the problems of poor sharing. On the other hand, the analysis and tracking platform of college students' higher education should be built. Statistical analysis of data should be carried out, and the situation inside and outside the college can be tracked, to enhance the early-warning ability of higher education , and effectively prevent students from psychological emergencies.

2) Universities should make full use of the data: Firstly, the data system of higher education should be integrated into the existing management system to open up channels. Secondly, big data mining technology should be utilized. Combined with the characteristics of higher education, the big data statistics, analysis and prediction of higher education for college students can be realized to effectively stimulate the vitality of relevant data and play its role.

3) The data of higher education should be cloud-based: Clus Puting provides virtualization and cloud services based on a comprehensive multi-redundant cloud infrastructure. The application of cloud computing in higher education is conducive to effective mastery of students' daily behavior and timely planning of relevant work blueprint, providing a comprehensive management approach for work. The combination of big data and cloud computing can better show the unique advantages of big data in education. Thanks to cloud platform, data analysts classify the data, filter the

worthless one, and organize complicated data into valuable systems, to occupy the high ground of higher education in the new era.

B. Employing "big data" to cultivate data awareness and literacy and optimize the higher education environment

Big data involves both technological innovation, and the transform of thinking mode. This requires relevant workers in colleges and universities to cultivate data awareness and literacy with the help of big data and optimize the education environment in colleges and universities.

As for system, top-level design must be strengthened to ensure the perfection of rules and regulations of higher education in the era of big data. At a small level, colleges and universities should establish the working mechanism, rules and regulations on big data of higher education. The college higher education working group of big data can also be set up for supervision. On a larger scale, China should introduce relevant laws in this field.

In terms of the society, the coordinated mechanism of colleges and universities, families and society should be built to realize all-round education. Higher education work not only includes classrooms, courses, teaching, scientific research, teachers, students, administration, the Party and the masses, departments, societies, activities and other internal factors, but also includes family, society and other external factors. It is impossible to achieve long-term development by relying on one department, one course and one measure.[5] All-round education can clear the elements of education in various groups and positions, and eliminate the blind spots and breakpoints in higher education work in colleges and universities through cooperation, so as to truly focus on the effect. The elements of higher education are not isolated, but interrelated and coupled with each other. The common education task and goal make them share attribute and characteristic, as well as common foundation and strength source which realizes the education task. [6] Higher education has been increasingly scientific. Only through joint development and cooperation can the desired effects and educational purposes be achieved.

From the perspective of network security, it is the duty of higher education educators to establish healthy network culture and ethics. When the application of big data reaches a certain scale, it will go deep into some specific fields, thus endangering the security of universities and the stability of the country. Considering that college students choose information through data technology, they are most vulnerable to the influence of network public opinions and negative information. Therefore, on the one hand, educators should grasp the dynamics in real time, see the essence through phenomenon, gradually eliminate the influence of negative information, and establish a correct outlook on life and values for college students. On the other hand, network security work should be done to ensure the security of campus network platform, strengthen the assessment and analysis of vulnerabilities.

Finally, as for the educator himself, it takes good iron to make good products. Therefore, relevant educators must strengthen their awareness of data thinking, excel at data thinking, propose with data as basis, and improve ability to predict the development trend, and explore the relationship between different things based on data.

C. Innovating the teaching mode of higher education with the help of "big data"

Innovation serves as the soul of progress. The higher education can innovate teaching mode with the help of big data. The specific methods are as follows. The first is to develop new teaching methods based on big data. A slew of modes including micro classroom, rain classroom, Pad class (PAD), MOOC, network cloud classroom and flipped classroom, have emerged one after another, refreshing students. This not only changes the traditional way, but also enhances student's subjectivity. For example, Easy Class with wide scope and great influence, cloud class with interaction as core, Cool College of sharing and cooperation and so on. Teachers can fully integrate higher education resources into the modes above, and provide students with courses with sense of the times and popular language and profound thoughts, so that college students can receive education anytime and anywhere and give full play to the value of big data.

The second is to explore the law of higher education based on big data. Educators can track and analyze accurate data in real time on campus forums, post bars, BBS, etc., so as to master the latest trends of students' thoughts, understand campus emergencies and hot spots, and timely guide relevant students. Some teachers also set up WeChat group, QQ group for online communication. Once students with psychological problems are found, teachers should take the initiative to guide them and promote the innovation of education in the era of big data.

The third is to realize the docking between big data and higher education in combination with big data Texts, pictures, music, videos and other forms should be resorted to promote core values. It is necessary to utilize the massive resources of big data to carry out work, establish the data communication analysis model, focus on the analysis of uncertain factors and dynamic factors, and make the big data information database the communicator of education, so as to improve its effectiveness and realize seamless connection.

D. Improving the teaching quality evaluation system with the help of "big data" to guarantee teaching quality

Teaching quality is an indicator of teaching level and effect. The traditional higher education mainly evaluates teaching quality based on factors as teaching materials processing, teaching basic skills, teaching methods and effects. In the era of big data, people's thoughts can also be quantitatively analyzed, which means targeted tracking of college students and combination of qualitative and quantitative analysis.

First, big data drives the reform of teaching evaluation methods. The qualitative evaluation method of traditional higher education is no longer relevant to development. Due to the influence of big data, people's individual behaviors are magnified to some extent, and the network lays more emphasis on user experience and user feeling. Therefore, the scientific use of data thinking makes the evaluation of higher education more accurate and objective.

Second, big data expands the scope of teaching evaluation. Big data promotes the evaluation and analysis of the multiple subjects of higher education, which makes up for the disadvantages of the traditional evaluation system that only evaluates teachers. The bidirectional evaluation and the multivariate evaluation show the crisscross data, which guarantee the teaching quality.

Third, big data helps to make teaching evaluation more accurate. Traditional education is mainly conducted through questionnaires, evaluation of teaching, etc., which fails to truly reflect the satisfaction of students and teachers. However, in the era of big data, individuals can express their real feelings through the Internet. Traditional evaluation methods are dwarfed. Educators can analyze the reasons behind, and find the right entry point, to better carry out higher education activities.

In view of the students are the subject of school, the development of school in the final analysis depends on the cultivation of students. Student orientation is an important fulcrum for improving the teaching quality evaluation system, which is not only the premise and foundation to realize the overall optimization of teaching process, but also the key link for educators to improve the effectiveness of education and teaching. In the era of big data, the micro-dynamics of each data can better explain the fact, and all evaluation factors are influential variables. It is possible to construct a multi-dimensional evaluation system of higher education quality for college students, which is helpful to improve the scientific and accurate evaluation of educational effect and truly reflect the degree of internalization of college students' education.

IV. CONCLUSION

The wide application of big data is an inevitable trend of social development. Only by responding positively to the era of big data, strengthening the consciousness of big data, and constructing the multi-dimensional teaching mode, can the higher education improve teaching quality. The integration of big data in higher education is of great significance in theory and practice to improve the timeliness of education and the comprehensive quality of college students. The new topic is still to be explored, which requires colleges and universities to reform and innovate on the journey of information construction in accordance with actual conditions, to contribute to the cultivation of excellent builders and reliable successors.

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