

# The Impact of Information Technology on the Sustainable Development of an Organization

Zhang X.

Southern Federal University,  
Rostov-on-Don, Russia

Repina E.A.

Southern Federal University,  
Rostov-on-Don, Russia

Murzin A.D.

Southern Federal University  
Don State Technical University,  
Rostov-on-Don, Russia,  
admurzin@sfedu.ru

**Abstract**—Education is the awakening of the soul, and data is the record of reality. The amount of data accumulated by human beings is growing exponentially, as the maturity of network technology and database technology and the popularization of data application. At present, data is everywhere and big data is surging. Cloud storage and cloud computing have become social public resources like water and electricity. In the face of increasing data, people are not satisfied with just managing data, but hope to analyze data and find knowledge or information from a large number of data. Especially when big data comes into the field of education, to what extent will our classroom and learning be reconstructed by big data? This article mainly describes the importance of education big data in the field of education from what is education big data, the characteristics of education big data, the application of information technology based on big data in education, and the impact of information technology based on education big data on the sustainable development of educational institutions.

**Keywords**—big data in education, influence, information technology, sustainable development

## I. INTRODUCTION

Big data technology is based on the rapid development of data collection, storage and analysis. With the rapid improvement of mobile network speed, as well as the popularity of cloud computing and Internet of things applications, more sensor devices and mobile terminals are connected to the Internet. The unprecedented interconnection between devices has been realized, and the data generated is immeasurable. In the 21st century, the level of education has become the most important basis for whether a country is strong or not. Germany has experienced defeat and miraculous recovery. It is precisely because of its tens of millions of well-educated citizens. Japanese college students account for more than half of the whole population. Why is the United States so powerful? Because they have generally well-educated citizens,

knowledge is the primary productivity. Therefore, compared with the data research of commercial institutions, the data research of educational institutions is more worthy of people's attention. It represents the overall level of education and science and technology development of a local or a country. In the field of education, with the construction of digital campus, the education data is growing exponentially. Education big data is becoming a new driving force that can not be ignored in the field of education, and plays an increasingly important role in the research and practice of education and teaching. The rapid development of educational big data has also attracted the attention of researchers and practitioners. Scholars at home and abroad have extensively discussed education big data from the aspects of connotation, technology application and practice cases. China's famous consulting company iResearch consulting data show that China's online education market is expected to reach RMB 2002.06 billion in 2017, with a year-on-year growth of 27.9%. In the next few years, the growth rate of China's online education market will continue to decrease year-on-year, but the growth momentum will remain stable. It is estimated that the market size of online education in China will reach 543.35 billion yuan in 2022. According to iResearch, the number of online education users in 2016 was 9.014 million, up 21.5% year on year. In the next few years, the number of online education users will continue to grow at a rate of more than 20%, reaching 160 million by 2019 [1]. At the same time, it also proposes that online education in primary and secondary schools, online education for higher education and vocational online education will always be the main market players of online education, accounting for more than 95.0% of the total online education market scale. LinkedIn has collected career data of more than 60000 graduates from Carnegie Mellon University and Purdue University. The amount of data is huge enough to see clear rules in it and assist students in career screening. These data tell us that the data generated in all activities of teaching and

learning has important and great significance to individuals, educational institutions, society. How to effectively tap the hidden value behind data, analyze and use these data to improve teaching effect is one of the hot issues not only in the education field, but also in the whole society.

This article mainly focuses on three aspects of education big data; first, the concept and characteristics of education big data; second, based on the existing research of education big data, analyzes its advantages and disadvantages; third, expounds the influence of social education big data on educational institutions.

## II. WHAT IS EDUCATION BIG DATA

Students will produce a lot of learning data in the process of learning, especially cloud computing, mobile Internet and other technologies and ubiquitous learning, mobile learning and other popularization, education big data naturally become a new thing in the field of education. The inherent logic of the development of education, the cascading and high correlation between educational phenomena, contents and laws are required to be deeply analyzed and mined with the idea and method of big data.

Big data comes from the network. With the development of Internet of things, cloud computing and other network services, traditional data analysis methods and tools are difficult to deal with the massive data in the network production process. The generation of big data mainly comes from two aspects: online and interactive.

“Big data” has surpassed the traditional concept of “data” in connotation and extension. In fact, the word “big data” can not accurately summarize the whole field of big data research. The key point of big data is not “big”, but the idea of diversity, order, sharing and generation, and the technology, method and thinking generated by people in the process of coping with the challenge of big data under the guidance of philosophy of technology. The thinking and technology based on big data should be stable, repeatable, interpretable and implementable in practical application [2].

In China, the definition of education big data was first found in Xu Peng's “big data perspective analysis of learning change”. Starting from the main body that produces education big data, he divides education big data into broad and narrow meanings: the broad sense of education big data generally refers to the behavior data of human beings in daily educational activities; the narrow sense of educational big data refers to the behavior data of Learners [3].

From the perspective of how education big data is generated, Zhang Yi et al. Defined it as: the data set in accordance with the characteristics of education big data generated by each link of teaching and learning under the support of information technology, which is the product of the track of teaching and learning behavior in the information technology environment [4]. In October 2013, Ryan Baker of Columbia University opened the course “big data in education” on coursera platform [5], which introduced the common data mining methods and how to apply these methods to educational data mining and learning analysis. Knewton education company of the United States divides

education big data into two categories: one is data about students' basic information (e.g., identity data); the other is data based on students' learning activities to improve learning effect, including learning interaction data, inferred content data, system wide data and inferred student data [6]. Compared with big data in other industries (medical treatment, transportation, meteorology, finance, etc.), education big data is characterized by educational, interactive and generative features. Education big data is the data generated by “teaching” and “learning” as the center. It is mainly generated in the online interaction process with “learning” as the center, and presents a certain degree of self-organization in the process of formation and development. The “big” of education big data is not only the large index, but also emphasizes the big “value”. That is, it can discover the relevant relations, diagnose the existing problems and predict the development trend from the complicated education data, so as to play the role of education big data in improving the quality of education, promoting education equity, realizing personalized learning, optimizing the allocation of educational resources and assisting education science Important role in decision-making.

## III. CHARACTERISTICS OF EDUCATION BIG DATA

Professor Zhou Jin et al pointed out in his article “Application of big data in the Reform of College Education Model”: “in the field of higher education, the characteristics of big data can be summarized in four V, that is, Volume (data scale is large), Variety (data form is diverse), Velocity (data processing is fast and result report is generated quickly), Value (data potential value is large) [7]. Specifically, the diversity of data forms requires that a program can handle both traditional structured data and unstructured data such as pictures, audio, video, which makes existing database technology difficult to cope with; the speed of data processing determines the speed of the result report, and the rapid response is to minimize the time cost of the user. Therefore, the speed of data processing needs to be further improved; the high potential value of data means that the value density of the data book is low and the hidden information needs to be mined. In addition, the validity and authenticity of large-scale data are difficult to distinguish.

Looking at the whole process of higher education, the sources of big data of higher education mainly include: traditional non electronic documents, various information systems of universities, online course platforms of universities, social open learning platforms and open websites, and relevant departments of education administration. From the perspective of micro individuals, the current education big data mainly comes from online education platforms. Researchers can easily obtain relevant data about learners' interests or learning activities by using these platforms, so as to help teachers find better teaching methods. Finally, researchers hope to accurately “measure” the learning progress and effect of students' various courses by analyzing the big data on these platforms. From the perspective of macro teaching management, the teaching management department needs to monitor the teaching quality, get the feedback of teaching process data in time, so as to evaluate the teaching effect and make necessary adjustment to the teaching operation in time.

Compared with the traditional education data, the collection of education big data is more real-time, coherent,

comprehensive and natural, and its analysis and processing is more complex and diverse, and its application is more diversified and in-depth. The traditional education data collection is often staged, and it is usually carried out with the user's knowledge (unnatural state). The analysis methods are simple summary statistics and comparative analysis. The focus is on the group characteristics of the educated and the overall situation of education development at different levels of the country, region and school. In the era of big data, mobile communication, cloud computing, sensors, pervasive computing and other new technologies will gradually integrate into the whole process of education, which can collect more micro process data of teaching and learning in real time and continuously without affecting the teaching activities of teachers and students, such as students' learning track, the time spent on each assignment, the number of times teachers ask questions and smile in class, etc. The data structure of education big data is more mixed, and the conventional structured data (such as scores, student status, employment rate, attendance records, etc.) is still important, but unstructured data (such as pictures, videos, teaching plans, teaching software, learning games, etc.) will occupy a more and more dominant position [8].

IV. APPLICATION OF BIG DATA-BASED INFORMATION TECHNOLOGY IN EDUCATION

Educational big data mining the huge educational value behind the data of educational process. Provide decision-making for education. Provide support for teaching design. To provide data reference for teaching and learning, so as to better improve the effect of education and teaching. The following is an introduction to the application of big data based information technology in education.

A. Construction of Learning Intervention Model Based on Education Big Data

According to the model of learning intervention, Zhang Chao, a teacher of East China Normal University in Shanghai, based on the analysis of the characteristics of the intervention in education and teaching, defines the learning intervention in the distance learning environment as follows: "learning intervention is a variety of learning service providers take for learners to improve their learning performance and solve their learning problems The ultimate goal of the integration of indirect strategies and behaviors is to help learners develop specific knowledge, skills and attitudes [9] Chen Shan, a teacher at East China Normal University in Shanghai, also pointed out that learning intervention is based on the difficulties and difficulties of learners, and provides more targeted support, including resources and activities [10]. On this basis, teachers from Tianjin Institute of education and Beijing Normal University, in the common project "design and Application Research of learning analysis tools based on education big data", they discussed the construction of learning intervention model based on education big data based on learning analysis technology. As one of the important applications of big data in education, learning analysis can construct a prediction model of learners' learning behavior by analyzing the process data such as learners' learning situation, so as to obtain and predict learners' learning status, such as learning progress, learning path, etc. Based on the analysis of education big data based on the learning process, the synthesis of various supporting strategies and guiding activities

implemented according to the specific learning state of each learner [11].

Intervention model is to guide the design and implementation of the whole intervention process from the perspective of system and whole, which plays an important guiding role in the smooth development of the intervention process and the realization of intervention goals. The current research on the theoretical level of learning intervention mainly discusses the basic principles and suggestions of designing intervention measures, as well as the intervention methods and contents at the micro level. There is no systematic and complete intervention model. On the practical level, the existing projects and systems have achieved effective intervention through automatic and semi-automatic methods, and the intervention mechanism involved provides reference for the design of intervention model in this study. Based on the comprehensive analysis of the existing research, the research group proposed a learning intervention model based on education big data. The model takes the intervention engine as the center, and takes the discovery of learners' learning difficulties and the improvement of learners' learning effect as the goal, including the recognition of learners' learning state, the calculation of intervention strategy matching, the implementation of intervention strategies and the effect of intervention Results four cycles were analyzed.

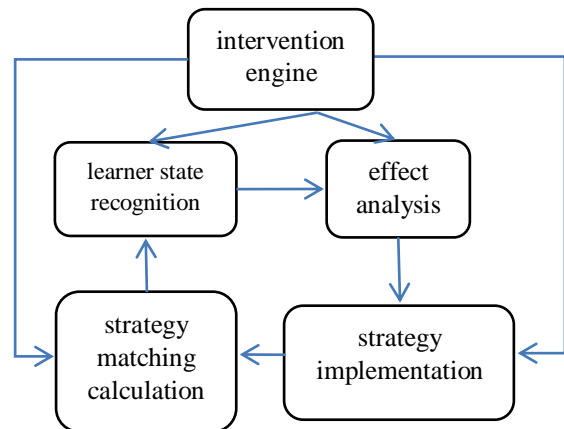


Fig. 1. Intervention model diagram

- (1) The intervention engine is the core of the model and plays a key regulatory role. It monitors the implementation status of each link, and timely adjusts the intervention process, so as to ensure the effective intervention.
- (2) Accurate identification and judgment of learners' learning state is the starting point and key link in the selection and implementation of intervention strategies. Learner state recognition is to obtain learners' state information based on education big data, identify the key features of learners' learning state, so as to locate learners' learning stage and judge learners' learning status. Learning analysis technology based on education big data can effectively support teachers to collect, analyze and output learners' relevant education big data and obtain their learning status, such as the completion of learning tasks and the mastery of learning contents, so as to provide effective support for learners' state recognition.
- (3) Intervention strategy matching calculation is to select relevant intervention strategies from the intervention strategy library according to the key characteristics of learners'

learning state, and then conduct matching calculation with the key characteristics of learners' learning state to obtain the best intervention strategy with higher matching degree. The matching of appropriate intervention strategies is an important guarantee for the effect of intervention implementation, and the calculation of intervention strategy matching depends on the stored intervention strategies. Therefore, the key to the construction of learning intervention model is to design intervention strategy library and matching mechanism.

(4) The implementation of intervention strategy is to push the appropriate intervention content to learners according to the best intervention strategy and in the right way.

(5) Analysis of intervention effect: intervention is a systematic and cyclic process. The intervention model starts with the data of learners' learning state obtained through learning analysis, and then judges and identifies the key features of learners' learning state. At the same time, relevant intervention strategies are screened from the intervention strategy library, and the key features of learners' learning state are matched to calculate the intervention strategies with high matching degree (including intervention methods and specific intervention contents). After the implementation of the intervention strategy, the intervention engine will continue to track the learning state of the learner. On the one hand, it is to judge the effect of the implemented intervention strategy, on the other hand, it is to timely discover the new learning state of the learner for selection and implementation of a new round of intervention.

The experiment takes a group of 20 people as an example. Through the observation and analysis of the teaching process, the result is that this model can find the help stage for different students. The concept is very practical, but it lacks detailed design. The purpose of learning intervention in online learning environment is to promote the achievement of learners' learning goals. It should be based on the mining and analysis of educational big data, and take the identification of learners' learning status as the starting point of intervention. At the same time, appropriate methods should be used to intervene according to learners' learning status. Moreover, the intervention process is a cyclical process, which requires continuous tracking, analysis and judgment of learners' learning process and state. This document can be used as the ideological rudiment of big data entering the education industry, and bring certain conceptual basis for later research.

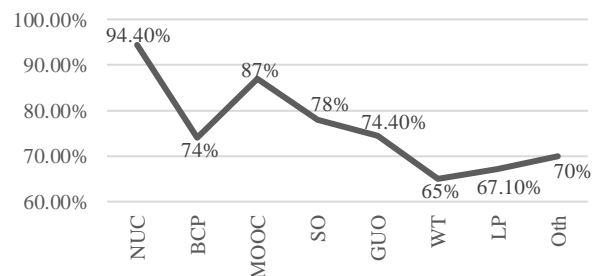
**B. Research on Interactive Design of Educational Virtual Community Based on Education Big Data**

Tian Huisheng, President of China Academy of Educational Sciences, pointed out that big data and its technology provide unprecedented means for understanding and exploring the laws of education, provide strong support for changing the way of teaching and learning, and lay a foundation for improving the scientific level of educational research and educational decision-making [12]. In the report "new goals of education in the 21st century and the application of big data in education reform". Bao Lei, doctoral supervisor of Ohio State University and director of China US Education Research Center, pointed out that the promotion of education reform needs the help of big data. The role of big data in education reform is mainly reflected in scientific reasoning through the analysis of education big data [13]. All these are enough to prove that people attach great importance to the

great changes brought about by education big data. Teachers of Qufu Normal University have carried out practical exploration on the advanced development form of online education - education virtual community [14].

Educational virtual community is based on learners' learning, which is a process of meaning construction. John seelv Brown pointed out in his article the culture of situational cognition and learning that meaningful learning promotes the growth of personal knowledge through interaction, sharing resources with others, asking challenging questions and providing constructive feedback [15]. Chia Yang's research also shows that in the online learning environment, students' academic performance and interaction have a positive correlation [16]. On the interaction in the educational virtual community. Many experts and scholars have done relevant research and analysis Munities mainly refers to the activities of learners in the special social field of "educational virtual community". It ultimately points to the establishment of good interpersonal relationship, the perfection of students' personality and the construction of their overall life [17].

On the basis of the above theoretical research and practical exploration, the members of the research group take the community interaction, the basic activity mode of educational virtual community, as the research focus, and carry out research and practical exploration based on education big data, so as to provide reference for improving the effect of community interaction. In the early stage, 55 excellent special education communities organized and constructed by the school online, the twelve learning platform, the MOOC of China Universitywere investigated. Based on the specific university teacher resources platform, the probability of being selected is relatively large, mainly including teachers' University cloud platform, Baidu cloud platform, MOOC, school online, Good university online, Wisdom tree and Learning link. Among them, the cloud platform of Normal University attached to a specific university has the largest number of participants, and the number of MOOC registrations is closely followed. The number of smart trees with disordered teacher curriculum arrangement is relatively small, and only 65% of them choose it, as shown in Fig. 2.



NUC - Normal University Cloud, BCP - Baidu cloud platform, MOOC - Massive Open Online Courses, SO - School Online, GUO - Good University Online, WT - Wisdom Tree, LP - Learning pass, Oth - others

Fig.2. The situation of use of educational communities

In addition, the teaching materials provided by the website are also one of the important factors for people to choose. For example, the learning resources of online teaching in Fig. 3 mainly include teaching ppt (84.07%), teaching video (59.99%), electronic teaching material (58.79%) and electronic teaching plan (33.29%). In addition, the teaching syllabus, assessment requirements and other guidance

documents accounted for 55.71% and 44.66% respectively, which provided an important reference for students' learning [14]. Taking these as the sources of big data of education, the organizers, hosts, teachers, students and technical managers were deeply interviewed to analyze the teaching. On this basis, the paper makes an empirical analysis on the influencing factors of community interaction effect, finds out the factors that are conducive to improving the interaction effect of community. Combined with the supporting role of education big data for interaction, it designs other organizations that are conducive to the development of self-organization.

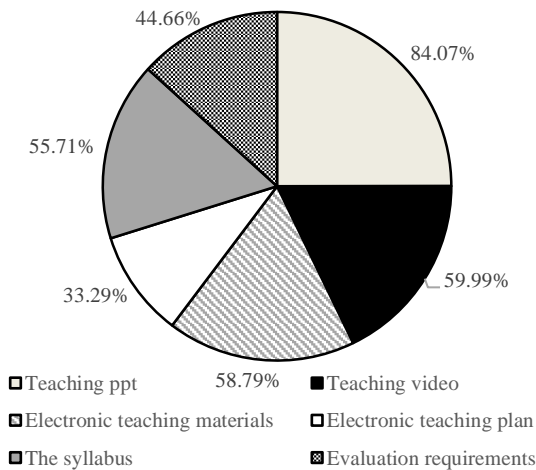


Fig.3. The teaching materials in the online platform

This experiment provides some basic data for future research, such as online classroom options, enrollment, comparison of major platforms, etc. However, its research has limitations, only data research on students can not provide more data basis for teachers or decision-makers. Fully mining the data in the process of education and revealing the educational value behind the data is the due significance of educational big data. On the one hand, for education managers and teachers, the analysis of education big data reflects the status quo of education, so as to provide feedback for education decision-making, education consultation and teaching design. It is also used as the basis for formative evaluation of students, which provides data support for teaching and management. Especially in online learning and online learning, teachers can not carry out face-to-face teaching. They have little understanding of students' learning progress. However, with the support of big data, teachers can grasp students' learning situation through online learning duration, learning frequency of knowledge points, repetition error rate and other data, so as to carry out targeted teaching. On the one hand, for learners, the learning progress and knowledge mastery generated by each student's learning process data can be used as the basis for personalized learning customization. To achieve "precise" learning. Moreover, learners roam in the ocean of educational big data, whose data sources are more extensive, and they can obtain high-quality education resources more conveniently. It can meet the needs of fragmented learning and realize ubiquitous learning. The value appeal of educational virtual community interaction itself lies in how to promote learner development and community sustainable development. Education big data, which has the functions of "accurate analysis", "accurate push" and "personalized service", just meets this demand.

### C. Transformation of Network Teaching and Research

The third case is the transformation of educational big data to network teaching and research. As a way to improve teachers' professional development, network teaching and research platforms include education blog, school-based network, regional network, national teaching and research network and QQ group. Network teaching and research is the use of Internet and computer and other advanced means to build a digital environment in the process of research and training, endow the work with valuable resources and tools, and optimize all aspects of teaching and research [18]; network teaching and research is the product of the Internet era, and it is a supplement to general teaching and research. The traditional network teaching and research can break through the limitation of time and space, but the results of the analysis are relatively one-sided, and most of them make qualitative evaluation based on the past experience of the teaching and research staff, and lack of strong empirical data support. Based on the research on the relationship between education big data and online teaching and research, Professor Wang Litong and others published an article, "the impact of educational big data on online teaching and research" [19].

In contrast, the traditional education data collection is usually carried out in stages, often carried out when the respondents understand the environment. The commonly used analysis methods are summary statistics and comparative analysis, while the evaluation method in network teaching and research tends to be qualitative analysis. The conclusion of this qualitative analysis is mostly based on the teachers' original experience and cognitive level, which has certain limitations, lack of data support, the reliability of the conclusion is relatively low, and the role of teachers in improving teaching methods and professional level is also limited. With the advent of the era of big data, education has gradually integrated with cloud computing, mobile communication and other new technologies. It can collect the complex actions of teachers and learners in real-time, accurate and continuous manner without affecting the teaching process. These data used in network teaching and research can tap the great value of classroom teaching, and form an intuitive language description of the content that is difficult to observe and describe through the data, which has irreplaceable advantages in promoting the improvement of teachers' professional level and personalized development. Compared with the traditional education evaluation, the development of big data makes education evaluation move towards objective evaluation, accompanying evaluation, comprehensive evaluation and intelligent evaluation. It pays attention to the process development of teachers, and provides empirical support based on data analysis for teachers' teaching reflection, making the evaluation results more comprehensive, authentic and reliable.

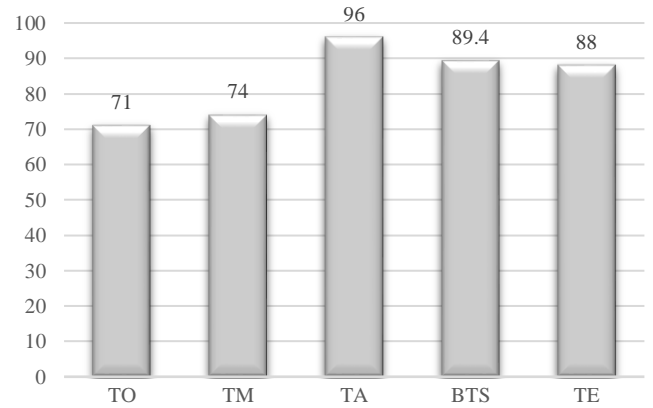
Education big data has the functions of discovering correlation, diagnosing existing problems and predicting development trend. It can determine the teaching style and teaching mode of teachers, discover the problems existing in the classroom, and improve the professional level of teachers. Based on the advantages of education big data for network teaching and research, to explore this problem, it is necessary to analyze the ways in which network teaching and research can promote teachers' Professionalization under the background of big data. Under the background of big data,



network teaching and research needs to collect classroom data, conduct real-time analysis of data, form visual scale and language description, realize “qualitative + quantitative” evaluation and analysis of teachers, and finally promote teachers' professional level. Based on this big data, the general process of network teaching and research mainly includes data collection and data analysis Data visualization. First, data acquisition is the basis of network teaching and research. In order to make the analysis results of network teaching and research more authentic and reliable, it is necessary to add quantitative analysis on the basis of traditional network teaching and research. Quantitative analysis needs a large amount of valuable data support. Based on this data collection is the premise of quantitative research of network teaching and research, and is the basis of network teaching and research. In network teaching and research, intelligent recording and broadcasting system is often used to realize data acquisition. Data acquisition needs to select classroom observation points according to the classroom observation theory, use audio and video acquisition equipment to record classroom teaching content in real time, and generate education big data by dot recording.

Secondly, big data processing technology is an important support for big data analysis and application, which has multiple and complex characteristics. According to the types and research significance of many data, select reasonable representation method and process the results in time. In recent years, the academic and industrial circles have continuously launched new or improved computing models or system tool platforms, including: after the mainstream Hadoop platform is improved, it will coexist with other algorithms and systems; hybrid computing mode will become an important means to meet the needs of diverse big data processing and application; memory computing will become more and more important for data processing and application The key way to conduct research. Through data analysis, we can find the correlation from the complicated education data and extract new learning points, which is the key to the value mining of education big data. The mining of educational big data needs to develop more intelligent data mining technology. For example, establish a unified algorithm and technical route, and take high-dimensional data analysis as the core of big data technology. From the traditional two-dimensional, one-sided analysis method to the big data three-dimensional, holographic analysis method. These high-dimensional analysis specifically includes: more complex and large-scale research and processing; synchronous discussion and disposal; analysis and research benchmark test, etc., which are important links in education big data analysis.

Last, data visualization is an important means of intuitionistic presentation of network teaching and research results. Data visualization refers to the use of visualization technology to turn the studied and analyzed figures into obvious forms, and can also be used to achieve certain interaction [20]. Data visualization technology is mainly used to help find the rules, trends and relationships in large heterogeneous and dynamic data sets, which makes it easier for analysts to understand all kinds of data. Data visualization technology in the network teaching and research can get the data modular presentation, the number into an intuitive, clear chart, so that the network teaching and research more intelligent, image.



TO - Teaching objectives, TM - Teaching method, TA - Teaching attitude, BTS - Basic teaching skills, TE - Teaching effectiveness

Fig.4. Statistical chart of average score of evaluation items

The Fig.4 is based on the actual situation of teachers in an educational institution. It shows the comprehensive evaluation statistical chart of 15 teachers from five aspects of teaching objectives, teaching methods, teaching attitude, teaching basic skills and teaching effect [19]. Each teacher's teaching attitude is more positive, teaching basic skills are relatively high, but due to the different teaching objectives and methods, it is easy to lead to the final teaching effect is not as high as expected. This experiment can make statistics on Teachers' performance in class through big data, and give trend analysis. Using big data acquisition technology (such as IOT sensing technology, intelligent recording and broadcasting technology, online learning and management platform technology, etc.) to collect data for classroom teaching, analyze teachers according to the collected data, and push personalized training content, which will become a trend of network teaching and research. Therefore, based on the big data collection and analysis technology, Internet plus research training will gradually become the norm of web based teaching and research. It not only improves the enthusiasm of teachers, but also makes the data more comprehensive, promotes the common growth of teachers, and finally improves the professional level of teachers. This is also one of the key points of educational big data research.

#### V. IMPACT OF EDUCATIONAL BIG DATA ON EDUCATIONAL INSTITUTIONS

The belief that educational big data is shared in education, that is, big data is the basis of educational scientific research. Through the capture, aggregation, analysis and research of educational big data, it is the element, motive force, method and support of educational development and reform, which reflects the new educational cognitive view and practical view. The following is to explore the impact of some education big data on educational institutions.

Based on big data, accurate diagnosis of learning situation, personalized learning analysis and intelligent decision support greatly improve the quality of education, which plays an important role in promoting education equity, improving education quality and optimizing education governance, and has become an essential support for the realization of education modernization. The main functions of education big data for educational institutions are as follows.

First, it is conducive to promoting personalized learning. Based on big data, it can describe students' characteristics, insight into students' learning needs, guide students' learning process and diagnose students' learning results. Through the measurement, collection and analysis of all kinds of data related to learners' learning background and process, this paper summarizes and analyzes their learning styles and learning behaviors from the massive data related to students, so as to provide personalized learning support. For example, Arizona State University uses Knewton online education service system to improve students' mathematics level. The system distinguishes the advantages and disadvantages of each student through data analysis and provides targeted guidance. After using the system for two semesters, the graduation rate of 2000 students in the university has increased from 64% to 75%, and the students' scores have also greatly increased [21].

Second, it is conducive to the realization of differentiated teaching. Big data can realize differentiation under the condition of ensuring the scale of education. On the one hand, teachers can teach students according to their aptitude. Teachers can recommend appropriate learning resources according to different needs of students. On the other hand, it can achieve a larger scale of education. For example, MOOC platform has broken through the limitations of traditional education in the physical classroom. The course has a wide audience and can meet the learning needs of hundreds of thousands of learners at the same time. In the teaching process, MOOC platform can rely on big data to build a learner experience model to evaluate its online courses, redesign online courses, change the learning order of courses, optimize teaching strategies, and provide different teaching services for each learner, so as to realize diversified and personalized teaching under large-scale [22].

Third, it is conducive to the implementation of fine management. In the traditional education environment, the data that education management departments or decision makers are based on is limited, which is generally static, local, scattered and lagging data, or the data reported and processed step by step. Most of the time, we can only make management and decision based on experience. According to the comprehensive data sources of all aspects of society, big data can realize real-time and accurate observation and analysis, which is of great significance for promoting the transformation of education management from empirical, extensive and closed type to refinement, intelligence and visualization. Taking school curriculum design as an example, Sherpa (personalized service recommendation assistant system for Higher Education) developed by Ma'anshan college in California, USA, can recommend courses, time periods and optional sessions according to students' preferences, so as to help school curriculum design consulting experts to solve the problem of course selection faced by students. In addition, the system also provides feedback for teachers and curriculum designers through intelligent analysis, so that they can improve the teaching materials with a definite goal.

Fourth, it is conducive to the provision of intelligent services. Big data can collect and analyze the behavior records of managers, parents, teachers and students, comprehensively improve the service quality, and provide better services for learners, teachers and parents. The comprehensive collection, accurate analysis and reasonable utilization of education big data has become the driving force for schools to improve their

service ability, form the driving force of speaking with data, making decisions with data, managing with data, and carrying out accurate services with data. For example, in the aspect of school selection service, the application of big data intelligent analysis technology can help solve the perceptual problem of school selection, and promote rational school selection. The "College navigator" project launched by the American Academy of Educational Sciences (AIS), which analyzes various resource indicators (such as location, tuition, scholarship, enrollment rate and graduation rate) of more than 7000 universities in the United States, and sorts and selects all universities, so as to help parents and students find the ideal university [23].

## VI. CONCLUSION

In a sense, human civilization is a process in which human beings constantly cognize the world and themselves. The so-called cognition is the process of processing useful data, and big data of education is a veritable "Treasury". The transformation to education big data mode is the development direction of pedagogy research and practice. From the perspective of human education development, because of the arrival of education big data, ushered in a major transformation opportunity; from the perspective of national education development, it is a great opportunity for the education field to achieve curve overtaking. However, it is necessary to realize clearly that the education research led by big data mode also needs breakthroughs in big data management technology, analysis technology and data visualization technology. Therefore, we need to firmly believe in the big data model of education. At the same time, we need to consider the complexity and variability of human beings, the new possibilities arising from the changes of learners' psychology and body, the support of various paradigms for pedagogical research, and the overall consideration of ethics and law, so as to promote education. The development of big data is under its own control, serving the development of learners and social progress.

This article aims to study the penetration and influence of big data on today's education industry, so as to accumulate further research on education big data in the future. However, in this process, it is found that most of the researches are aimed at students or teachers, but there are few related literatures on institutional managers. This will also be taken as the next research direction, focusing on the impact of educational big data on the management decision-making of educational institutions.

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