

# Thinking on the Application of Big Data in Vocational Education

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**Abstract:** As vocational education with the same important status as general education, it has become the focus of China's education reform. The use of big data technology to promote the development of vocational education, the construction of a modern vocational education system, and the realization of modernization of vocational education have become the consensus of the industry. This article starts with the connotation of big data and the positioning of vocational education, analyzes the changes brought about by big data to vocational education, summarizes the impact of big data technology on vocational education, and proposes several measures for the use of big data in vocational education. It has certain reference value for further development of vocational education and construction of vocational education system.

## 1. Introduction

With the rapid development of information technology such as artificial intelligence and big data, the application of big data has penetrated into all areas of human society, which has a huge impact on social life and economic development. In the field of education, new types of education and teaching models, such as advocacy classes and micro-classes that use big data technology, are rapidly emerging, affecting the development direction of education, especially modern vocational education.

With China's industrial upgrading and economic restructuring, the need for skilled talents in all walks of life is becoming more and more urgent. The establishment of a vocational education system adapted to social development and economic construction has become the focus of education reform. In 2019, the State Council issued the "Implementation Plan for National Vocational Education Reform", which clarified that there can be no education modernization without vocational education modernization [1]. Modernization of vocational education is inseparable from science and technology, applying big data technology to vocational education, giving full play to the role of modern technology in promoting education, studying how to use big data platforms to develop vocational education, building a new era of vocational education system, serving vocational education, and promoting vocational education. The social recognition of education is of great value and far-reaching significance for further advancing China's vocational education, strengthening vocational education to rejuvenate the country, improving the quality of vocational education personnel training, and serving economic construction.

## 2. Correct Understanding of Big Data and Vocational Education

### 2.1 Big Data

Human society has entered the era of data in an all-round way. Data is the result of reflecting objective facts or observing things. It is the original material for expressing objective things. It can be continuous analog data or discrete digital data. Computer technology allows data to develop rapidly, so that everything in the world can be represented by a certain amount of data. Nowadays, data is growing exponentially, and Big Data has been generated. It can be simply defined as a particularly large volume. There is no way to capture, manage, and process a collection of data with conventional software tools within a certain time frame, that is, a mass data collection with Volume (mass), Velocity (high speed), Variety (various), Value (low value density), Veracity (authenticity) and other characteristics [2]. Big data cannot be captured, managed, and processed with

conventional software. A new processing model must be adopted to analyze and process all data in order to obtain more useful information and form information assets. Future data resources will be more precious resources than petroleum. [3] Big data has brought changes to many fields and industries, and has brought unprecedented changes to modern vocational special vocational education. The scientific, objective, and rational use of big data information assets will definitely promote the rapid development of vocational education.

## **2.2 Vocational Education**

Vocational education refers to the education of vocational knowledge, skills, and ethics required for a certain occupation or productive labor. It is the same type of education as general education [4]. Vocational schools can be divided into three types of schools: secondary vocational education, higher vocational education, and applied undergraduate education. Their talent cultivation orientations are different. Secondary vocational education mainly trains students who have graduated from junior high school and cultivates new labor force. Students entering high school and secondary vocational schools train skilled talents; applied undergraduate education mainly trains high-skilled students through college entrance examinations and selections, and some schools also carry out professional degree graduate education. Vocational training includes pre-job training for newly recruited employees and reemployment training for laid-off employees. Vocational training can be jointly undertaken by vocational colleges and social training institutions. Generally speaking, vocational education is to cultivate application-oriented talents suitable for social development and workers with a certain cultural level and professional skills. It focuses on the cultivation of vocational practical skills, practical work ability, and craftsmanship. It is to improve the overall quality of workers, An important way to serve socio-economic development is an important part of promoting the development of human society.

As our country enters a new era, industrial upgrading and economic restructuring continue to accelerate, the demand for technical and skilled personnel in all walks of life is more and more urgent, and the important strategic position and role of vocational education have become increasingly prominent. However, compared with the requirements of the state to build a modern economic system and build a strong country with education, compared with countries with good vocational education, vocational education in our country is generally lagging behind, and there are still many problems, mainly manifested in the following: Insufficient recognition of the importance of education, low recognition of existing vocational education, low status of vocational and technical talents, unclear characteristics of vocational education, and unattractiveness, causing the development of some institutions to be in trouble; higher vocational education majors The setup does not adapt to market demand and serious homogeneity, which leads to prominent structural conflicts between talent supply and industry and industrial manpower requirements, difficulty in enrollment, employment, and shortage of skilled workers; basic conditions for secondary vocational education are weak, management is not standardized, and professional education courses There is a shortage of teachers, a low level of Informa ionization, a low quality school, a shrinking school scale, imbalanced development, and obvious polarization. The support policy for school-enterprise cooperation is not clear and effective, and the motivation for enterprises to participate in vocational education is insufficient. Insufficient integration, difficulty, service economy The development ability of the association is not strong; the school running between vocational education sections lacks overall planning, the teaching content is not sufficiently connected, and the knowledge and skills progression and echelon system are not formed; the vocational education and the general education are not well connected, and the development of vocational education students is blocked , There are institutional obstacles

These existing problems have caused the state to attach great importance to the development of vocational education and modernization of vocational education as an important part of education reform. On the basis of the guarantee of policies and systems, because the data related to vocational education has the characteristics of large capacity, variety, and timeliness, which is in line with the characteristics of big data, big data technology can be used to solve the problem of vocational

education development, and build big data Vocational education system.

### **3. Objective Analysis of The Impact of Big Data on Vocational Education**

#### **3.1 Changes in Management Style**

With the development of society and market demand, especially the emergence of massive vocational education data, the management model of vocational education is constantly developing and changing. The traditional government-sponsored organization has gradually transitioned to a government-integrated management and socially diverse school-running pattern. The government's overall management must strengthen data construction, establish a data platform, and provide data support to vocational education school subjects, such as: national policy systems, industrial structure, industry needs, and management standards, and other data. Carry out professional setting, education and teaching, recruitment and employment. Employers can propose talent training standards according to the needs of talents, and carry out order-type joint training of applied technical talents with vocational schools. School management is also undergoing a qualitative change driven by big data technology. It will highlight "student-centric", focus on students' skills and technology development and future development, and establish a lifelong vocational learning management model for students.

#### **3.2 Changes in Education and Teaching Models**

With the advent of the era of big data and the use of modern information technology in the field of education, teachers' methods of imparting knowledge have also changed from traditional teaching methods to flexible and informatized teaching models [5]. In the information-based teaching model, teachers and students in vocational education must reposition their roles. In the teaching process, the focus is "teaching" and "learning" as the center. Teachers are transformed from knowledge lecturers and communicators to knowledge collectors, organizers, and practitioners of skills. Teachers must not only carry out teaching activities through various information equipment and media, improve student participation and enhance students' enthusiasm for learning, but also use advanced information technology in teaching to build learning situations and practice platforms for students. The learning process and behavior provide guidance, evaluation and support, improve the effectiveness of teaching practice, and promote students to master practical skills and knowledge; the use of big data learning platforms, more interaction between teachers and students, active classroom atmosphere, can also solve practical problems Insufficient equipment, and so on.

The vocational education teaching mode must fully realize information-based teaching, combining traditional teaching modes with modern education methods, and realizing students' transition from passive learning to active learning. Students can search the learning materials of their own interest online at anytime, anywhere, and other teachers Students online discussions. This learning mode enables students to study at any time, enhances the fun, effectively improves the enthusiasm and initiative of students, is conducive to the improvement of students' comprehensive quality, and greatly promotes the personalized development of students. Vocational education is craftsman education, and the traditional model of craftsman education must be reflected in the teaching mode, and it must be seamlessly integrated with modern education.

#### **3.3 Changes in Evaluation Methods**

The purpose of vocational education is to cultivate the application-oriented talents who are adapted to social development and serve the regional economy, which is the basis of national development. The evaluation of vocational education is an important means to promote the development of vocational education, mainly the evaluation of the quality of talent training. In the era of big data, the evaluation of students' learning conditions is no longer focused on performance assessment, but the evaluation of students' learning conditions should be changed from a single evaluation of evaluation results to a process evaluation. Existing manual recording and evaluation, the mobile terminal should also record the student's learning practice process, student-teacher

interaction and the process of implementing homework. Through analyzing the students' questions and answers on the teaching content, the frequency of discussions, and the number of homework answers, a comprehensive and objective comprehensive evaluation of the students is conducted. Through the evaluation results, students can reflect on their own learning methods and skills, improve learning methods, and improve learning efficiency, which is conducive to further improving students' enthusiasm and initiative.

On the basis of evaluating the students' learning situation, the teaching evaluation of vocational education should also evaluate the teaching quality of teachers. You can use recorded big data such as classroom teaching, teacher-student interaction, student assignments, and examinations to analyze teachers' teaching behaviors and find out their own teaching skills and insufficient teaching. Based on the analysis results, teachers reflect on their own teaching methods and skills and improve them to improve the quality of teaching, which is conducive to further improving the teaching ability of teachers. It can also be used to use big data to evaluate the situation of vocational education in the entire school, so as to promote evaluation and promote the construction, and to promote the healthy development of vocational education.

### **3.4 Promote the Improvement of Teachers' Information-Based Teaching Ability**

Teachers are the key to achieving teaching in vocational education. In the era of big data, in order to realize the information-based teaching model, teachers must have a certain level of information literacy, master relevant information technology, and skills in addition to mastering the knowledge of the courses taught. Combining knowledge with information technology to implement information-based education and teaching.

Teachers must be proficient in the characteristics, functions, and operating methods of conventional information education media, and be able to apply these methods to teaching. Teachers can scientifically combine information technology with teaching knowledge and skills to produce auxiliary teaching such as advocacy classes and micro-classes to increase the practicality and interest of the curriculum; teachers must use the Internet to collect and integrate teaching resources in massive data. Producing teaching materials, while innovating teaching methods in teaching, effectively improving teachers' information teaching ability.

## **4. Measures for the Use of Big Data in Vocational Education**

### **4.1 Improve Professional Structure Based on Big Data**

Professional structure refers to the horizontal structure of professional education professionals, which is the composition of different disciplines, including the proportional relationship between professional categories and the relationship between professional categories and economic and technological structures [6]. The relationship between professional structure and industrial structure is the most direct and determines the talent structure required for industrial development. Establishing a vocational education service platform covering industrial structure and other contents can be used to adjust and optimize the professional structure for vocational education and education. In terms of academic vocational education, according to regional economic development and industrial needs, the government coordinates the professional structure and realizes the professional structure to meet the industrial structure; in vocational training, it can extract relevant professional needs based on the trainee's data and information, and provide trainees with accurate professional promotion Knowledge, training trainees' professionalism, improving professional skills, enhancing their ability to hold posts, while broadening their knowledge, improving their knowledge structure, and improving their humanistic qualities

### **4.2 Building a Vocational Education Curriculum System Based on Big Data**

There are many types of objects for vocational education. The focus of different types of objects is different, and the training content should also be different. The content of vocational education should be based on the knowledge and skills required by the trainees to perform on-the-job jobs and

duties, as well as the core skills and vocational qualities, including cultural knowledge, professional knowledge and work skills. On the basis of improving the professional structure, vocational education colleges make full use of big data technology, combined with talent training goals, and set a curriculum system. The curriculum system consists of basic modules, professional modules, and practical modules. Teachers should give full play to the role of big data, construct and reshape curriculum content according to the training target, and establish curriculum content that meets the goal of talent training. Schools should organize classroom teaching reforms of professional courses. In the process of teaching practice, they should give full play to students' initiative to learn independently, allow students independent thinking time, exercise students' operational and practical abilities, and improve students' practical skills.

Courses are developed on the vocational education platform for vocational training. Trainees choose courses and learn according to their learning priorities, and record their classroom learning process, teacher-student interaction, and homework through the education platform.[7] By analyzing these large amounts of data, the learner's concerns about the course content are summarized, a dynamic course adjustment mechanism is established, and the course content is continuously optimized and improved to achieve accurate push of the course content and ensure that the trainees acquire more knowledge and skills.

#### **4.3 Use Big Data of Vocational Education to Provide Basis for Market Selection and Employment**

At the present stage, there is a disconnect between vocational education training talents and market employment. The problems that are not learned are outstanding, and people cannot do their best, causing talent waste. Establish a management database for vocational education talents, set up a road map for the growth of vocational skills, establish e-learning archives, realize lifelong vocational education, and effectively combine talent training with market needs to solve the problem of talent use. Using big data, the human resources department of the employer can select the talents needed by the enterprise through learning results and process evaluation. After completing the same course for different people, the results may be all qualified, but through the analysis of their learning process data, the evaluation is not necessarily the same. If someone learns professional cutting-edge knowledge and professional skills, and analyzes the big data of the learning process, and finds that some of them are good at learning new knowledge, and other students are better at applying professional technology to practical work, their learning evaluation is definitely different. Yes, it's different in post use. Therefore, the market is choosing and employing people. It is necessary to consider the qualifications and academic credentials obtained, as well as the procedural evaluation of the learners, and select the talents suitable for the development and construction of the enterprise.

### **5. Conclusion**

The development of the information age and big data has affected many fields. In the vocational education, we should make full use of the advantages of big data technology and look at vocational education with an innovative development perspective. Vocational education practitioners should make use of big data education platforms, innovate education management models, build rich education and teaching resources that meet the needs of vocational education, build a scientific and reasonable vocational education system, train qualified socialist builders, and contribute to economic construction and society by providing strong talent support.

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