

# Research on Diagnosis and Improvement of Teaching Quality in Vocational Colleges Based on Big Data Analysis

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**Abstract**—Since the National Ministry of Education promulgated the "Notice on Establishing a Diagnostic and Improvement System for Teaching Work in Vocational Colleges", the education department has insisted on promoting this in vocational colleges across the country in order to establish a comprehensive training mechanism for vocational colleges. The implementation of a notice, always urge vocational colleges to do a comprehensive job of teaching diagnosis and improvement. This paper focuses on the in-depth analysis of the teaching quality diagnosis and improvement path of vocational colleges in the context of big data era, improving the quality of teaching and promoting the sustainable development of teaching in vocational colleges in China.

**Keywords**—*Big data, Teaching quality, Diagnosis and improvement, Applied research sustainable development*

## I. ANALYSIS OF THE TEACHING QUALITY DIAGNOSIS AND IMPROVEMENT SYSTEM OF VOCATIONAL COLLEGES UNDER THE ERA OF BIG DATA

The rapid development of technology has brought great convenience to people's lives. It is no exception to school education, especially the impact of current big data analysis on vocational college teaching. The education of vocational colleges is an educational model with the main goal of cultivating high-tech applied talents. Compared with ordinary high schools, education pays more attention to cultivating students' practicality and technicality. To improve the quality of personnel training in vocational colleges, it is necessary not only to supervise and promote the education departments and parents, but also to improve the education of the vocational colleges themselves. The schools must base on their own characteristics, school teachers, students' overall level and different The course requires the inductive and analytical analysis of big data, thus refining the unified standards for the diagnosis and improvement of teaching quality in colleges and universities, and then using the data of professional personnel to form a mature teaching quality diagnosis and improvement mechanism. Through the effective integration of big data analysis and vocational college teaching, the disadvantages of traditional teaching can be avoided, the quality of teaching can be improved, and the difficulty of teaching can be reduced [1].

The term "diagnosis" is a common term in the medical world. It was slowly used in the education sector around the 21st century and has far-reaching implications for schools to develop new development ideas. This measure undoubtedly marks the rise of vocational colleges and effectively promotes the work process of national talent training.

## II. THE SIGNIFICANCE OF TEACHING DIAGNOSIS AND IMPROVEMENT IN VOCATIONAL COLLEGES

In recent years, in order to implement the "Decision of the State Council on Accelerating the Development of Modern Vocational Education", many vocational colleges have begun to make efforts to diagnose and improve their own teaching quality. This measure is in line with the development of the times and has a distinct historical meaning. In order to maximize the value of teaching diagnosis and improvement, vocational colleges must diligently study and work hard, and deeply understand the relationship between the diagnosis and improvement of teaching quality and sustainable development and understand the new concept knowledge and culture, establish a solid problem awareness, lay a good foundation for teaching diagnosis and improvement, and establish a comprehensive teaching diagnosis system and specific working mechanism.

The rise of various online classrooms marks the rise of the era of network information such as big data. How to keep up with the historical trend in the rapid changes of society, how to use various data analysis to diagnose and improve education and how to make correct changes all require the hard work of educators and hard work.

## III. THE WAY TO DIAGNOSE AND IMPROVE THE TEACHING QUALITY OF VOCATIONAL COLLEGES

### A. Vocational colleges should increase supervision over teaching quality

The quality control and evaluation management departments of most vocational colleges are mainly divided into three departments: the Academic Affairs Office, the Supervision Office and the Quality Management Office. The Academic Affairs Office focuses on administrative organizations, mainly to formulate some schools' talent training programs and specific teaching methods, and to timely correct and adjust problems in the teaching process; the supervision department focuses on feedback issues, through teacher teaching and student learning. Supervise and manage the school's control, discover and summarize the problems that arise, and achieve the purpose of motivating teachers, students and even schools, thus ensuring the healthy operation of vocational colleges; and the quality management office is mainly responsible for tracking the quality and

establishing schools through organization. The education quality management policy and the school management is responsible for enrollment and students, including the site facilities during the event, the various inspections during training, etc., record the quality of all aspects [2]. These three departments jointly constructed a quality supervision model for vocational colleges, which comprehensively guaranteed the quality of teaching in vocational colleges.

*B. Vocational colleges should enhance teachers' big data literacy and broaden teachers' new horizons in teaching diagnosis and improvement*

Since the era of big data, people have begun to rely on new technologies such as cloud computing to preserve historical data, record current data, and even predict some future data through professional calculation processes to obtain more accurate information to realize the modern big data way of thinking. The advent of the era of big data has made people gradually realize that all aspects of life have become more convenient because of the analysis of big data, and each industry chain under the era of big data also relies on data analysis for decision-making, management and innovation. Therefore, in the field of vocational colleges, whether it is teachers or students, or assistants of school teaching, they should strengthen their awareness of big data and actively respond to the call of the era of big data, so that they can face big data calmly. The changes of the times, because these changes include not only the changes in the teaching methods of teachers and the changes in the way students learn, but also the promotion of the work of all grassroots educators, which helps the vocational colleges to diagnose and improve the quality of teaching [3]. One of the biggest features of big data analysis such as an informational era is that it can quickly process the data that needs to be recorded during the teaching process. These data are recorded in the network disk and help teachers and students, teachers and schools. More intuitive communication will help the school to establish a new "online + offline" hybrid teaching model, which can strengthen the education management of students. Therefore, improving the big data literacy of school teachers, students and educational assistants can help the reasonable education quality diagnosis and improvement of vocational colleges.

*C. Schools should build a mature big data management platform to ensure the diagnosis and improvement of education quality*

The theory of total quality management also puts forward the inevitable requirement of paying attention to data speech for teaching rectification. Since ancient times, people have instinctively recorded their lives and work. With the network, people have recorded data in a much faster way. The arrival of the era of big data and rapid development has become an inevitable trend. Until now, it is really in the era of big data. People have discovered that data is the most important source of information for people. Therefore, it is necessary to build a reasonable and mature big data management platform [4].

First of all, vocational colleges should unify the rules of data standards, data exchange and era replacement interfaces, and establish a mature school-based big data management office to collect and process in time. Secondly, since the data management center has been established, the vocational colleges should separately summarize and integrate the data on the basis of the data management center for teachers, students, teaching assistants and different professions, and give different quantitative standards and management limits.

Finally, vocational colleges should also strengthen the phased management of the data management department, and promptly urge them to establish a variety of data collection methods by issuing indicators, so as to better collect and process big data. After the information processing is completed, the data management office also needs to conduct regular summarization, analysis and interpretation to the school, and strive to timely feedback the learned data to the school to facilitate the school to carry out the next step.

It can be seen that a complete big data processing platform can fully consider different factors to obtain a more realistic data. After processing and analyzing the data, it will become an important theoretical basis for school quality management.

*D. Vocational colleges should establish a complete teaching quality system to facilitate the collection of educational diagnostic data*

There are various problems in the classroom teaching of most vocational colleges. At this time, the school needs to establish a monitoring system to control it. Using information technology such as network data analysis to help establish the monitoring of classroom teaching quality can help teachers to carry out rigorous teaching, and also help students to study hard. On one hand, the system needs to monitor the quality of teaching separately for different subjects including majors, teachers, students, and school leaders. On the other hand, it must be taught from the teacher's teaching methods, students' learning methods, teaching content, teaching environment, and overall student learning. Level and other aspects of monitoring and the establishment of relevant evaluation systems, and ultimately form a scientific and reasonable teaching quality monitoring and evaluation system [5]. The school then analyzes the data collected in the system, so that it can be targeted to diagnose and improve the quality of teaching, so that the school's reform measures can be fully affirmed, and a lot of time is saved. Some unnecessary measures and various resources required to implement the relevant measures. Big data analysis and other similar information processing platforms have greatly facilitated the improvement of teaching quality. Not only can schools use data analysis to "prescribe the right medicine", teachers can also selectively teach students through data analysis, thus making teachers Teaching can be maximized by students [6].

Therefore, establishing a classroom teaching quality monitoring and evaluation system is an important part of effectively improving the teaching quality diagnosis and improvement progress of vocational colleges. Monitoring and evaluating the quality of classroom teaching is first a scientific determination of quality indicators, followed by the effective use of big data analysis methods, or the innovative changes in the teaching methods of vocational colleges.

## V. IMPROVE THE CLASSROOM TEACHING DIAGNOSIS MECHANISM AND PROMOTE THE FORMATION OF EFFICIENT CLASSROOMS

The so-called diagnosis and improvement of teaching is to help teachers discover the problems existing in the teaching process. Through the direct presentation of data, teachers can help them find the cause of the problem, and use big data analysis to find out the solution to the problem, so that teachers can directly analyze the data. The method is applied to practical teaching, and the importance of a reasonable and scientific educational diagnosis and improvement mechanism is also revealed. The mechanism can be specifically carried out according to the following methods:

1) Establish a reasonable evaluation system, which is mainly reflected in the comprehensiveness, timeliness and results of the evaluation. Different from the quality improvement of education, the evaluation system focuses on the encouragement and promotion of teaching quality. Only by establishing a reasonable evaluation system can the teaching quality be rectified more accurately, and a reasonable rectification system can fully realize the advantages of the evaluation system.

2) Constructing a classroom teaching quality diagnosis and improvement mechanism integrating schools, teachers, students and educational assistants, combining the comprehensive, timely and consequential evaluation system with the rectification mechanism, and finally making the whole rectification mechanism organized, clarified, and periodic.

3) Vocational colleges should always pay attention to the dynamic data on each platform, conduct detailed statistics, classification, analysis and processing, and track the analysis results to various groups in time so that each group can better implement the next step.

4) Vocational colleges should relate the actual operation and final effects of classroom teaching rectification to the year-end performance evaluation of school educators and the final grades of students. When the measures involved everyone's own interests the students and teachers will truly respond to the school's measures, and the school's diagnosis and improvement of the quality of education will run more smoothly.

The rapid development of the era of big data conforms to the historical trend. With the rapid development of the Internet era, big data analysis has opened a new era. Applying big data analysis to vocational college education in China makes the classrooms of vocational colleges in China more professional and more convenient. In short, the era of big data not only facilitates the progress of education, but also plays a role in better integration of the network and education, which has led to new thinking of educators.

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