

THE UTILIZATION OF INFORMATION TECHNOLOGY IN HIGHER EDUCATION QUALITY ASSURANCE IN CHINA

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Abstract

It is an effective innovation for large scale of higher education countries to carry out quality assurance by information technologies for quality monitoring. After more than ten years of efforts, China has built the national data platform for the quality monitoring of higher education, which features a large scale, strong functions and advanced technologies. China has carried out the quality monitoring of higher education on the basis of massive data from the national data platform. The data platform plays an important role in supporting periodic evaluation, accreditation and the development of national higher education quality reports. In this paper the background, process, system design and efficiency of the national data platform will be introduced in detail.

Keywords: *information technology, data platform, higher education quality monitoring.*

Introduction

Today, we have already entered the information network era. Information and technology has become the basic driving force for social development. Information technology has also developed rapidly. In recent years, cloud computing, big data, artificial intelligence, virtual reality and mobile internet as the representative information new technologies emerge endlessly. In the field of education, information technology has had a great impact on traditional education. It has changed the ideas, concepts, patterns and methods of education, and that led to the great transformation. Education informatization means to effectively apply information technology in teaching and scientific research, and pay attention to the development and utilization of education information resources. Education informatization is the basic approach of education reform and innovation, and it is also the combination of education and new information technology.

The Chinese government always attaches great importance to the information work of education and actively implements policies of educational data regular release. In July 2010, the Ministry of Education issued “The Outline of China’s National Plan for Medium& Long-term Education Reform and Development (2010-2020)”, in which it states: Integrate education informatization into the overall strategy of national informatization development Plan, speed up the school management informatization process, and promote the standardization of school management. In October 2014, the Ministry of Education issued “Guidelines for the Construction and Application of Education Management informatization”. It plans: By the year 2020, finish building of education administrative information system which covers all levels of

administrative departments and all kinds of institutions (schools). Make sure the education information technology will be widely used in management activities in administration and in institutions. And that will improve the education management in decision-making, monitoring and evaluation, etc. With the completion of the first stage of Chinese characteristic education informatization construction, its functions show gradually.

As for 2017, the gross enrollment rate of higher education is over 45%. China has rapidly entered the higher education popularization stage. China has 2,914 HEIs (Higher Education Institutions, HEIs), including 2,631 regular HEIs and 284 adult HEIs. With a higher education enrollment of 37 million, which is more than one-fifth of the whole world, China now has the largest body of higher education in the world. How to shift from a big country of higher education to a powerful country of higher education, how to transfer the higher education resources into human resources, how to make more contributions to the great rejuvenation of nation and the progress of human civilization, these are the issues of concern to the Chinese government. To become a powerful country of higher education, essentially is to promote the development of education and improve the quality.

It is well known that periodic evaluations and accreditations can effectively improve the quality of higher education. In China, HEEC has conducted multi-level external quality assurance activities in several aspects such as institutional evaluation, program accreditation, program evaluation and international accreditation. How to conduct high-quality and efficient external quality assurance for HEIs across the country is a serious consideration for HEEC. After more than 10 years of exploration and research, we now believe that information technology has been proved as an effective way to monitor and improve the quality when large numbers of HEIs are concerned. China has built the national data platform for the quality monitoring of higher education, which has featured with the largest scale, very strong functions and very advanced technologies. China has carried out the quality monitoring of higher education on the basis of massive data from national data platform. The data platform plays an important role in supporting the “Five in One” quality assurance framework of China: institutions’ self-evaluation, institutional evaluation, program accreditation and evaluation, international accreditation and the data platform monitoring. It effectively improves the reliability and validity of quality assurance, and introduces new methods and models of quality assurance in higher education.

The Design of the National Data Platform for Regular Quality Monitoring in Higher Education

The National Data Platform for Regular Quality Monitoring in Higher Education is designed according to the inherent rules of teaching and learning in HEIs. As a web-based data collection system, the Platform collects and analyses data in order to monitor the education quality in the HEIs. All the data submission and analysis services are provided online. The Platform is a basic quality monitoring platform, and it is also a public education services platform for government officials and HEIs managers at all levels.

The Construction of the Platform

The start of the Platform could be retraced to the year 2007. With the special funding directly from the Ministry of Education, HEEC was authorized and began the Platform design program. After the formation of the overall framework and identifying the main data items, from June 2009 to October 2010, HEEC conducted 6 trial data collections in 23 HEIs in order to test the system. From the year of 2011, HEEC started the annual data collection and acquired data from 173 HEIs. Till now, after 10 years of hard work and accomplished 3 version upgradings, the Platform has now become a large data platform for data collecting, data extraction, data analysis, data mining and data visualization for education quality monitoring. With annual data collections, the Platform monitors the higher education quality objectively and efficiently. By the end of 2016, the National Data Platform for Regular Quality Monitoring

in Higher Education has collected data from more than 1200 colleges and universities across the country, covering 31 provinces.

The Platform Data Items

As for the national data platform, the Platform aimed to reflect the teaching status in HEIs when initially designed. In other words, the factors in the teaching and learning are highly valued. There are status data at the level of institutions, departments and programs, and data of teaching stuff, students and lectures, and also data of funding, infrastructures and learning outcomes. It includes 7 categories:

- Institutional Characteristics
- Education Resources
- Faculty
- Disciplines and Programs
- Teaching & Learning
- Students
- Quality Management & Monitoring

The Framework of the Platform

Designed to provide the “Information Services”, the Platform took the data’s characters like diversity, dynamics and variety into consideration, and integrated a framework of collection, analysis and application. The framework mainly includes data integration layer, data analysis layer and data display layer as in Figure 1.

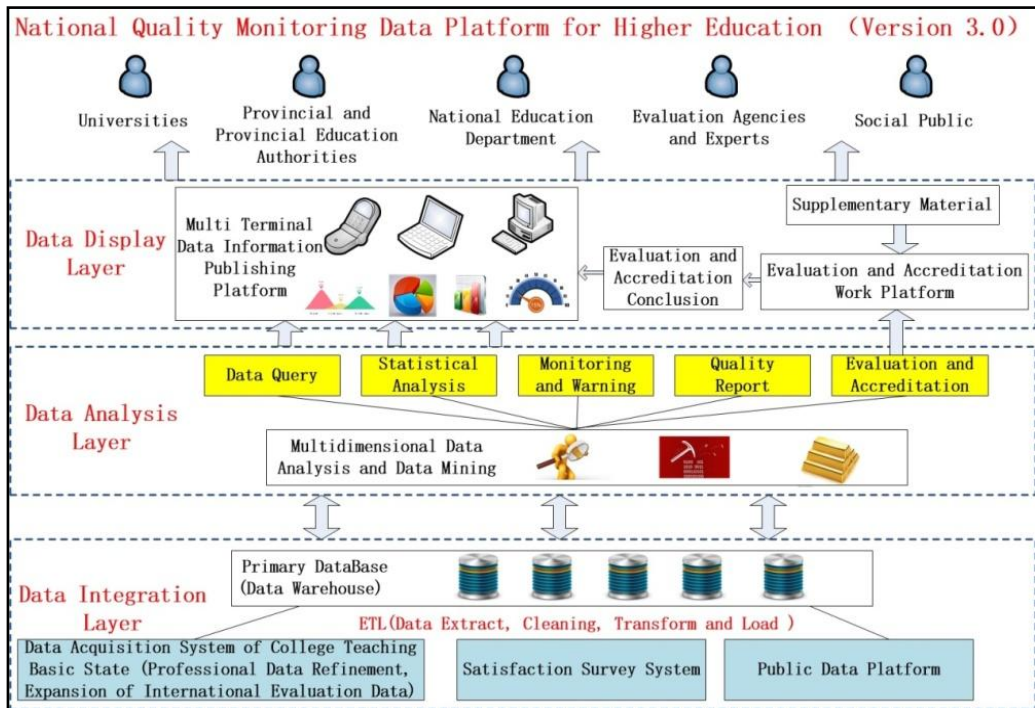


Figure 1. The framework of National Data Platform for Regular Quality Monitoring in Higher Education

The data integration layer includes the data collection system from HEIs and the survey system of satisfaction which collects the feedback from the graduated students and the employers. In addition, the Platform is also connected with the national public data such as economy, industry, population and scientific research, in order to check it from another angle outside the educational system. The data analysis layer cleans and extracts the data which was collected from the data integration layer, and forms a unified main database. According to the requirements of the users, the Platform could conduct specialized data analysis and data mining, which is the “heart” of the whole platform. The data display layer can send and display data to all kinds of users through PCs, IPads, intelligent mobile phones and other internet terminals. The data and quality monitoring reports could be published through public information releasing platform so as to meet the needs of governmental management, HEIs’ quality assurance and public information enquiry. And the data also help the quality assurance activities conducted by HEEC, especially institutional evaluation and program accreditation.

The Applications of the Platform

“To collect is to serve”. “Serve” is the keyword of the Platform applications. The Platform conducts data collecting and monitoring, but eventually the results and reports could be used by the governments, HEIs and the society. Now the Platform can provide 6 kinds of services including: institutional evaluation service, program accreditation service, quality reports, regular quality monitoring, decision making support and satisfaction survey. It now plays an important role in the national quality assurance in higher education.

Institutional Evaluation Support

Providing “Data Analysis Report” for institutional evaluation is an innovation in the new round of HEIs institutional evaluation. From the year 2009, the Platform has formed more than 400 reports for institutional evaluation. This helped to improve the reliability and validity of the work.

Program Accreditation Support

HEEC has conducted program accreditation with full coverage of major disciplines, such as the program accreditation in engineering, teacher education, medicine, agriculture and so on. The platform provides “Data Analysis Report” for each program accreditation.

Series of Quality Reports

Based on the massive data from the national data platform, HEEC has developed and issued series of quality reports for 5 years. We have published National Quality Report on Higher Education, National Quality Report on Engineering Education, National Quality Monitoring Report on undergraduate Education of Newly-built HEIs, National Quality Report on undergraduate teaching and Performance report on eligibility evaluation of newly-built HEIs. This provides the public and HEIs with the authoritative information about the higher education quality.

Regular Quality Monitor

By annual teaching status data collecting, the platform conducts data analyzing and research. It monitors the education quality and serves all levels of higher education: nation-wide, each province, different industries, colleges, universities, departments and even courses. This helps the users to gradually form the quality responsibility and the quality assurance culture in HEIs.

Decision Making Support

The national data platform can carry out data comparison and analysis according to the industry, region, and type and so on. It can conduct early prediction and support governmental decision making by data analysis and comparison. It has promoted the modernization of the system of higher education governance.

Satisfaction Survey

The stakeholder's satisfaction is an important index to measure the quality of higher education. The platform has the online satisfaction survey functions. It could conduct investigation of students, graduates and employers and provide the results to the HEIs. The results could help the HEIs to improve their development strategy and provide reference for higher education policy makers, labor market managers and related researchers. In 2016, HEEC conducted 100,000 copies of undergraduate satisfaction survey, 30,000 copies of graduate and 8,000 copies of employers.

The Influences of the Platform

Nationwide full-scale data has been collected in the National Data Platform for Regular Quality Monitoring in Higher Education. HEEC conducts regular quality monitoring based on the data and evidence, thus supporting the periodic institutional evaluation and program accreditation, which significantly improves the reliability and validity of evaluation and accreditation. Based on the data platform, HEEC annually publishes series of national quality reports on higher education. The achievement of the data platform above is not only an important milestone of quality assurance in China, but also a creative endeavor in the international quality assurance activities.

The platform's functions and contributions have already got the public and governmental acknowledgement. The program of the Platform design got the governmental Prize of Teaching Achievement Award. More and more institutions and provincial governments have ordered data analysis report. With the development of the Platform, the international influence of the Platform is expanding. Some international experts gave the comments: "The Platform can collect vast amount of data and produce data report for each institution in evaluation and also help to form the national quality report. It is very impressive", "The practice of regular quality monitoring and quality report releasing based on the Platform data is advanced in the world. This gives a solution and good practice example for all the big countries to conduct the quality assurance work". It can be said that this work of the Platform has opened a new way for nationwide quality assurance work in higher education.

The National Data Platform for Regular Quality Monitoring in Higher Education the important practice of using information technology to ensure the quality on nation-wide scale in the late 10 years of HEEC. Through collecting, analysis and application, HEEC formulates serial data analysis and quality reports. These reports facilitate the national quality assurance work such as institutional evaluations and program accreditations. The annual collection of data makes it possible for regular quality monitoring for all the HEIs. Now the National Data Platform for Regular Quality Monitoring in Higher Education works well. We wish through further work to explore more useful functions to higher education quality assurance, such as artificial intelligence, to make it provide more comprehensive and efficient services.