

Relationship Between Big Data and Teaching Evaluation

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Abstract. The current teaching quality evaluation system has been difficult to adapt to the class in era of big data. Due to the limited amount of information, the limited data sources, the current teaching evaluation is more of the result-based evaluation and empirical evaluation. Teaching evaluation of supervision is not only to distinguish the different teaching levels of teachers, more important is to understand the situation of teaching and learning, so as to develop personalized program to better achieve the training objectives. This requires that teaching evaluation is a formative evaluation. Network teaching will be the substitute for modern classroom teaching. Through the reflection on the teaching quality evaluation system, it points out the problems of the teaching quality evaluation system, analyzes the reasons and puts forward the suggestions to solve the problems. Construction of teaching quality data monitoring platform and improving the teaching supervision of data literacy is an effective way to make the teaching supervision from the "experience" to "data type". It can be predicted that Web school will be a substitute for classroom teaching.

Introduction

Big data is the data set that the size of the data, structural forms and processing technology beyond the conventional software tool capacity. Human history has entered the era of big data. 2011 is the first year of the world's big data; the first putting forward the era of big data arrival is global renowned consulting firm McKinsey. 2012 United Nations White Paper "Big Data for Development: Challenges and Opportunities" pointed out that the era of big data has come, it will have a profound impact on various fields of society. Why the big data is regarded as a new era? According to the analysis of Mr. Zipei Xu[1], Technological change has brought about social changes, Hierarchy-based social control means will no longer apply.

Maier Schoen Berg Victor[2], University of Oxford, stress that The essence of big data is the three major changes that subvert our concept of thinking: ①not a random sample, but all the data; ②not the exact measurement, but the general direction; ③not a causal relationship, but a correlation. We should be based on big data thinking to analyze and apply big data.

2013 is the first year of China's big data; 2015 can be called the first year of China's education big data. Education big data, the big data of the education field, is the data set that is generated by the whole process of educational activities and the collection of all the great potential value that according to the need of Education and can be used for the development of education. It includes: educational decision-making data, student demographic data, family background data, academic level data, learning process data and so on. Educators need to have a further understanding of the relationship between big data and teaching evaluation.

Evaluation and Model of Classroom Teaching Organization of the Text

Concept of Classroom Teaching Evaluation

Teaching is a kind of special talent training activity which is composed of teachers' teaching and students' learning. The classroom is the scene of teaching activities, is the main place for teachers "preaching, tuition, answering", is the main channel for students to acquire information, study knowledge and form ability. Classroom teaching is the process of bilateral activities combining the teaching of teachers with learning of students, which has clear objectives, planned, organized and step-by-step teaching and learning. From the teaching object, the classroom teaching is the opposite of "individual teaching", also known as "class teaching system". Classroom teaching itself is a rich and complete system. A class cannot do without six elements: hours, classroom, teachers, students, content and methods. These six elements constitute a hexahedron, is a cube, as shown in Figure 1.

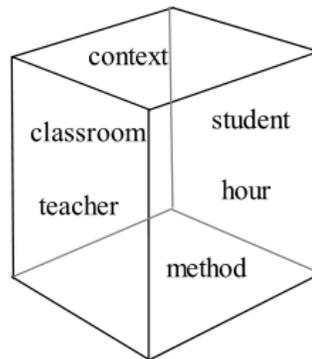


Figure 1. Six Elements of Classroom.

Evaluation is the process of the subject to the object's the process and the quality of activity of making an objective measurement and value judgment. Teaching evaluation is a kind of universal education phenomenon. Its scope is very wide, including the evaluation of teaching purpose, evaluation of curriculum, evaluation of teaching materials, evaluation of teaching methods, evaluation of teaching environment, evaluation of teaching management, evaluation of teachers' work, students' evaluation and so on.

Classroom teaching evaluation refers to the process of measuring and evaluating the activities and effects of classroom teaching according to the teaching objectives and tasks.

Evolution of Classroom Teaching Mode

Through the study of human teaching mode, we will find that the classroom teaching experienced "private school" → "public school" → "Web school" the three evolution. The private school was founded in 600 BC by Xiahui Liu (720 BC-621 BC). The public school is to provide public education places for poor people's children initially, but in eighteenth Century gradually developed into elite schools, tuition had become very expensive. Czech educator Comenius (1592-1670) published "Great Didactic of Comenius" (1632), marked the creation of the classroom teaching system.

Web school is the proposition of this paper. Web school is the teaching mode of the students' online learning, teachers' online instruction or offline communication. At present, there are some teaching modes with the characteristics of the Web school: Flipped Classroom, Massive Open Online Course (MOOC), Small Private Open Online Courses (SPOOC), Khan Academy, Micro Learning Resource [3], WeChat Resource. These new curriculum teaching mode will promote the school classroom teaching mode from the closed to the half open mixed type or completely the open socialization course teaching. Massive Open Online Course, Small Private Open Online Courses and Khan Academy are socialization learning of completely dependent on the network, are the self-organization-based of the depth cooperation, open teaching. Flipped Classroom, Micro Learning Resource and WeChat Resource construct a half open hybrid teaching system. The center of traditional pattern of classroom teaching is teachers, teaching materials, classroom, paying attention

to impart knowledge and classroom atmosphere; the center of the new teaching model is the student, problem, activity, emphasis on interaction, personalized learning and ability training. For the flipped classroom, it is not only the order of the teaching and learning process, but also the evaluation mechanism of the final effect. It can be predicted that Web school will be substitute for classroom teaching.

The survey results show that[4]: high grade college students truancy rate is higher than the low grade, 78% students truancy records; students have the desire and demand of Web learning is strong, 92% of the students learning materials through Internet access after class; students most concerned with exam content, grading and so on learning resources, and hope to improve the examination results through online learning; college students love entertainment, interactive, participatory learning methods, such as micro class according to the knowledge points of teaching design, similar to the game over the stage-based teaching level clearance type, Connect online classes via mobile phones, to achieve teaching discussion and interaction between teachers and students etc..

At present, the closed classroom is generally used for academic education, open network is mostly used for non academic education; semi open mixed "classroom + network" is in the transition period of education and teaching reform. Classroom teaching has a fixed time and place, but the flexibility is poor, cannot meet the needs of personality; network teaching flexibility is strong, but the necessary supervision and protection is not enough.. The teaching model of O2O (Online to Offline), which is the line under the hybrid teaching mode, which is using online teaching advantages, and strengthen the face-to-face classroom interaction, a new teaching mode of imparting knowledge and exploration. From the development trend of the education law and the new generation of information and communication technology, it can be predicted that one day, whether in the field of academic education or non degree education, Web school will replace the leading position of classroom teaching.

Big Data Leads to the Transformation of Classroom Teaching

What Changes Big Data Bring in Classroom Teaching?

Big data teaching has brought the following 3 changes for the classroom teaching: ①The changes in teaching environment. Big data improves classroom teaching mode, helps education to individuation. Big data make it possible for personalized education, make the classroom have the transformation form "one to many" to "one to one" transformation and more respect for the diversity of students by Flipped Classroom, MOOC, Micro Learning Resource. Through capturing the micro behaviors of students in the classroom, Big data can help teachers understand the students to grasp the degree of knowledge and interest, and then reflect on whether the teaching to meet the needs of students. ②The changes of teaching resources. Big data make learning style various. The construction of "learning resources network" and "learning navigation network" help us achieve that online guidance, advanced typical online reports, online channels of solve the problem when learning and discussing. Big data increase predictive judgment, which let the information from suspicious to credible and help teaching early warning management. Big data technology can also predict the development tendency of the students' thinking and behaviors, help teachers effectively prevent students' bad behavior in the classroom teaching. ③The changes of teaching evaluation. Big data enrich teaching evaluation system and help to promote the comprehensive development. The application of big data makes data and information of different levels (including individual level, the whole teaching process behavior level, content level, environmental level) in the whole teaching process be organized effectively the teachers and students. Based on the comprehensive big data and analysis of related evaluation model, we can pay more attention to the process of teaching and learning, and provide the basis for hierarchical teaching and the realization of individual development. With the help of big data, it is possible to enrich the teaching evaluation system by relying on diverse evaluation objects and scientific evaluation methods.

Table 1. Higher Education Data Provides Opportunities for Three Types of Users.

User	Opportunity	User	Opportunity	User	Opportunity
Teacher	Help students	Student	Learning feedback	Administrator	Standardize academic
	Improved teaching		Customize the learning process		Resource allocation
	Example feedback		Plan learning activities		Support current

In short, big data can change the existing management, teaching, learning, academic work and help to solve the challenges of higher education. Table 1 presents an overview of the opportunities offered by the Big Data for Higher Education for three types of users: teachers, students, and education administrators.

Why is the Big Data Leading to Real Change in Classroom Teaching?

Practice has proved that no practical application of knowledge there is no real meaning of learning, there is no real sense of education. The key to change in classroom instruction is to allow each student to learn in a manner and rhythm that suits him, so that each student can make progress on the original foundation.

The existing class teaching system makes each teacher had to face dozens of students at the same time to carry out teaching. In the limited teaching time and space, the teacher is very difficult to be individualized. In the era of big data, teachers are entirely possible to digitize the entire learning process of students, including teaching materials (knowledge points) and learning activities. Which can achieve the analysis of each student's learning data, and ten achieve real individualized teaching.

From the teacher point of view, the accumulation and use of teaching experience still is human bounded rationality. In the era of big data, the solution of teaching problem, that is teaching decision, will shift from the limited rationality of human being, from the teaching experience that exists in the teacher's mind, to the data analysis which depends on the massive teaching case. The role of teachers will convert from the classroom "starring" to "director."

From the students point of view, with the digitization of teaching materials and teaching activities, student learning process will gradually be digitized, and for its data analysis, will provide evidence for development of students. Therefore, the basis of the development of each student will change from limited rational judgment of teachers to their own learning process data analysis. The role of students will turn to "leading players" from "audience".

Reflection on the Teaching Quality Evaluation of Teaching System

What are the Problems of Teaching Quality Teaching Evaluation System?

Teaching evaluation is a kind of value judgment process to teaching quality. If education is seen as a service, the teacher's teaching is the service behavior to promote the development of students and make them cheerful. From the classroom point of view, the curriculum is educational products, teachers are service providers, students are service recipients, and teaching evaluation is the quality of education services. The composition of educational service quality includes classroom teaching quality, practical teaching quality, logistic service quality and environmental service quality. The quality of classroom teaching consists of the quality of teaching and learning. The current teaching quality evaluation system does not meet the requirements of the big data age.

The problems of teaching quality evaluation system are as follows: ①The objectivity of the evaluation results is insufficient, and the domestic evaluation process is influenced by subjective factors. ②The purpose of evaluation is to be rejected by teachers, and the result evaluation is to judge the good and bad of teachers. ③The indicators of teaching evaluation are single and lack of diversity. ④The "experience" teaching supervision of the situation is highlighted. Teaching supervisors are basically based on experience and intuition to carry out the work of teaching supervision.

What are the Reasons of the Problem?

①**Lack of independent third-party institutions involved.** Most of the evaluation work in foreign countries is in the charge of a special third-party agencies, the evaluation results are often more objective and more scientific. Domestic, in the evaluation process, the teacher tends to please students, reduce the requirements. The way that participating in online teaching evaluation linked to their score, which increased students' constraints; students usually put their first impression as the reference, evaluation results are often anamorphic. Supervisory aspects of the subjective factors also exist, such as impressions, emotions, acquaintances, age, standards and other factors affecting the scale of strictness. ②**Purpose of teaching evaluation affects the function of teaching evaluation.** Directly sending out questionnaires to students is difficult to improve the work of teachers. Student survey is a summative evaluation; the purpose is to distinguish between teachers who have received praise from students and teachers who were criticized by students. For the difference between formative evaluation and summative evaluation, the United States Bernard Boolean made a vividly analogy: "formative evaluation as a year to the hospital physical examination, summative evaluation as an autopsy. ③**There is a lack of maneuverability in the multiple evaluation index models.** When different subjects or courses of different characteristics use the same index model, there will be greatly influences on the evaluation results. One point difference of scoring will lead to two conclusions. ④**Two phenomena that "experience" supervision leads to:** First, there is the tendency of "evaluation" instead of "supervision". Both of them are not the same in the function and content of the work. Second, there is a phenomenon that pays attention to the intendance but ignore guidance. Evaluation is one of the important means of supervising work, and its main function is to value judgment and diagnostic analysis of teaching. Supervision, based on the evaluation, carry out supervision and guidance. In teaching practice should not only focus on supervision of the supervisory functions, but also stressed that supervision of the advisory, guidance and training functions. The most important of supervision is not proof and results, but construction and improvement. Empirical evaluation has been difficult to adapt to the new era. We should identify the laws and characteristics of teaching activities through big data technology.

How to Solve the Problem?

①**Let big data technology play the role of third-party evaluation.** The big data technology makes it possible to realize the comprehensive evaluation model including supervision evaluation, student's evaluation, peer evaluation and courses evaluation. ②**The evaluation subjects should participate in the whole teaching process.** Out of the cycle of the results of the evaluation, the pursuit of the process of teaching evaluation, with the evaluation of the effect of the classroom is more convenient for teachers on the spot guidance. ③**Based on the big data technology to improve the evaluation system.** During the managing process of evaluating teaching results, more related tools, for example, the data mining technology, shall be considered to dig out more implicit messages about evaluation characteristics such as the course nature, student grades, teacher ages, class sizes and so forth, so as to find out the inherent relation and be applied for the correction of the teaching evaluation system. ④**Constructing big data monitoring platform for teaching quality is an effective way to overcome the "experience" teaching supervision.** With the aid of the platform, the large data association analysis of teaching can be carried out, and the teaching evaluation is changed from fuzzy macro to quantitative precision, from semester to continuous normality, from random to comprehensive coverage, from post evaluation to the evaluation in the happening matter. To carry out comprehensive evaluation of classroom teaching quality, to achieve a positive incentive, negative discipline, precision supervision. Through the evaluation make teachers reverence classroom, select quality classroom, model classroom. Evaluation also can be used as an important basis for the teaching level, including teacher's promotion of the title, the selection of favorite teachers.

Summary

Nowadays, college student, almost everyone has a cell phone, is a network terminals; also is a data source of big data. "Yesterday's college students, the classroom is their world; today's college students, the world is their classroom." The current teaching quality evaluation system has been difficult to adapt to the changes in the classroom. Because of the scale of the information and the limited data sources, the existing teaching evaluation is more the result evaluation and the empirical evaluation. Teaching evaluation is not only to distinguish the different levels of teaching teachers, more important is to understand the situation of teaching and learning, and then develop personalized improvement programs to better achieve the training objectives. This requires teaching evaluation is a comprehensive, comprehensive formative evaluation. Teaching evaluation should let the data speak. It is an effective way to make teaching supervision from "experiential" to "data-based" by constructing the platform of teaching data quality monitoring and improving the "data literacy" of teaching supervision.

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