Research on the Construction of Teaching Quality Guarantee System in Application-Oriented Universities Under the Background of Informationization

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Abstract. With the deepening of education reform, it is an important measure to formulate and improve the teaching quality assurance system which is more suitable for application-oriented colleges and Universities under the background of informatization to alleviate the contradiction between the current social demand for application-oriented talents and the cultivation of talents in Colleges and universities. This paper mainly discusses the goal, basic structure and implementation focus of the construction of teaching quality assurance system in application-oriented universities, in order to make contributions to the reform and development of China's application-oriented universities.

Keywords: Application oriented universities · Teaching quality · Guarantee system

1 Introduction

In recent years, due to the increase in the number of Application-oriented Universities and the improvement of the quality requirements of enterprises for application-oriented talents, the teaching quality of application-oriented universities has attracted much attention. The teaching quality assurance system of undergraduate colleges is a kind of management system of internal supervision, and also a feedback promotion system that can improve the teaching quality. Therefore, how to build a qualified, appropriate and reasonable teaching quality barrier system of application-oriented universities is an urgent problem to be solved.

2 Research on Clustering Algorithm of Data Mining

Considering that the traditional data mining clustering algorithm can not meet the requirements of efficient and accurate mining clustering for massive data [1]. Therefore, the use of cloud computing database to store data and intelligent mining of these data has become a key research topic. In the research of data mining clustering algorithm based on cloud computing, firstly, the whiten weight of data mining clustering is determined, and then the data mining clustering based on cloud computing is realized.

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2.1 Introduction to Data Clustering

Data clustering is to divide data into multiple aggregation categories according to the inherent properties of data. The elements of each aggregation class have the same characteristics as much as possible, and the characteristics of different aggregation classes are different as much as possible. The purpose of cluster analysis is to analyze whether the data belong to their own independent groups. The members of the group are similar to each other and different from the members of other groups. It can analyze the collection of data objects, but different from classification analysis, the classification of clustering analysis is unknown. It groups data objects into multiple classes or clusters, and the objects in the same cluster have high similarity, and the objects in different clusters are quite different. In the practical application of clustering analysis, each data object in a cluster can be treated as a whole [2]. Cloud computing is a kind of distributed computing, which mainly refers to decomposing huge data processing programs into numerous small programs through the network "cloud", and then processing and analyzing the results through a system composed of multiple servers and returning them to users. Large scale data clustering algorithm based on cloud computing technology takes cloud computing technology as a container to carry large-scale data clustering computing.

2.2 Determine the Whitening Weight Function of Data Mining Clustering

As the most important index of data mining clustering algorithm based on cloud computing, whiten weight function of data mining clustering must be determined to ensure the accuracy of data mining clustering algorithm based on cloud computing. This paper uses this method to determine the whitening weight function of data mining clustering. Let the set of data mining clustering be i = 1,2,3,…n. The calculation formula of whitening weight function of data mining clustering is:

$$f(x) = (w.x) + c, w \in Rn, b \in R \tag{1}$$

$$dist(Z_p, C_j) = \sqrt{\sum_{k=1}^{N_d} (Z_p - C_j)^2 N_c N_k} \tag{2}$$

2.3 Realize Data Mining Clustering

According to the whiten weight function of data mining clustering, choose an index which can accurately evaluate the data mining clustering algorithm based on cloud computing. In the iterative process of data mining clustering, with the number of clustering centers decreasing, the position of each clustering center will change. We must use cloud computing technology to establish data mining clustering database, and store the location of clustering center in the form of integrated data in the database. The database built by cloud computing technology is the integration and management of massive data mining clustering, which transforms massive data mining clustering files of the same type into isomorphic database. Then, through the iterative process of data mining clustering, the coordinates of the remaining clustering can be very close to the real clustering

[3]. The data mining clustering algorithm based on cloud computing can maximize the data mining clustering coverage and realize the data mining clustering based on cloud computing.

3 Basic Structure of Teaching Quality Assurance System

3.1 Dynamic Teaching Goal Setting System

Application oriented universities need to cultivate high-quality talents more close to the needs of enterprises. Therefore, the dynamic teaching goal setting system should be based on the social survey, enterprise survey, school survey, student survey, previous graduates' return visit, relevant regulations of the Ministry of education and other information for comprehensive analysis, so that the formulation of teaching objectives and teaching programs can be closer to the "application" and "market-oriented" training of talents, and effectively improve the comprehensive quality of students.

3.2 Functional Teaching Quality Control System

There are many disciplines involved in application-oriented universities. If the "top leaders" such as the president and the director of education simply control and supervise the teaching quality, it is easy to lead to poor supervision effect. Therefore, it should be built on the basis of the special leadership of the school management and the subordinate functional teaching quality monitoring department. Functional departments can supervise all disciplines of the school, realize time effective teaching quality control activities, and improve the quality of personnel training.

3.3 Practical Educational Administration System

Almost all the application-oriented universities have the conventional educational administration system, but the educational administration system often only has the task of managing teaching activities and allocating teaching resources, and the supervision of teaching quality is mere formality, and the arrangement of related activities is more limited by personnel problems and superficial. Therefore, the practical educational administration management system should start from the management of teachers, through the standardized and scientific arrangement of teaching tasks, implement the normal supervision of teachers, and arrange the teaching quality from the guide of teaching tasks.

4 Implementation of Teaching Quality Assurance System

4.1 Establish a Normal Inspection System

Many colleges and universities often check the quality of teaching only at the end of the term, so there will be nearly five months of regulatory vacuum. Therefore, the teaching cycle should be divided, and each teaching cycle should be checked 3–4 times, and the

inspection objectives should be detailed and specific. Different inspection objectives should be set according to different majors, and the completion of teaching quality objectives of each major should be checked, and the positive notification should be made.

4.2 Establish a Comprehensive Listening System

The system of attending classes should not only arrange the periodic and fixed system of attending classes. For a given class time, teachers usually make targeted preparation, which will lead to unreliable results. Therefore, the management, teachers of the same subject and even interdisciplinary teachers should be arranged to attend classes from time to time within the specified time range. The purpose of teaching quality supervision can only be effectively guaranteed by the form of spot check, and the enthusiasm of teachers' work and students' learning can be improved from the side.

4.3 Strengthen the Internet Educational Administration System

The construction of Internet educational administration system has been popularized in Colleges and universities [4]. The Internet educational administration system can achieve the task of teaching objective evaluation, such as online student questionnaire survey, teachers' teaching completion score, students' knowledge mastery test, etc. through the addition of some auxiliary small programs, the construction progress of modern education quality assurance system can be promoted. Fourth, pay attention to teaching information feedback, obtain opinions and suggestions on teaching quality from teachers, students, enterprises, school leaders and other parties through special channels, form relevant records, and then make a comprehensive report to the management of teaching quality assurance system. Through information integration, the management can make

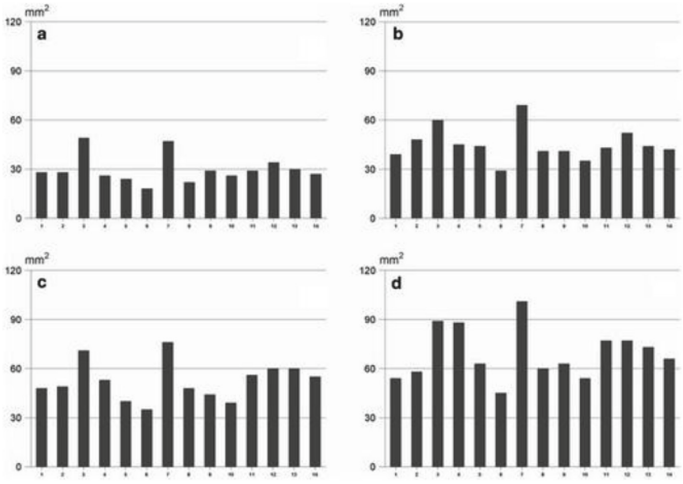

Fig. 1. Teaching simulation for listening system

a comprehensive analysis of related issues, and then revise the whole teaching quality assurance system (see Fig. 1 and Fig. 2).

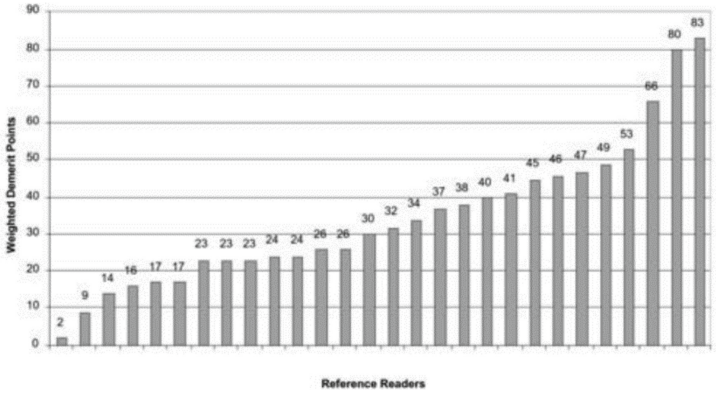

Fig. 2. Simulation for internet educational administration system

5 The Relationship Between the Transformation of Knowledge Production Mode and the Reform of Teaching Evaluation in Application Oriented Universities

5.1 Specific Performance

The traditional view of knowledge holds that knowledge is objective and separated from the subject. People can only discover, summarize and use knowledge. However, with the development of society and the popularization of higher education, the "advanced knowledge" that higher education adheres to has changed. This change is not only its own change, but also the change promoted by external forces. Due to the continuous expansion of social foundation and the rapid development of information technology, the number of knowledge producers is increasing, the knowledge resources are becoming more diversified, the spread speed of knowledge is accelerating, the radiation coverage is expanding, and so on. Knowledge is no longer a privileged product that only a few elites can have, and the social dispersive knowledge production system is formed [5–7]. Six science policy experts, including Michael gibbons, have distinguished two knowledge production models, one based on traditional disciplinary logic and the other characterized by application situation, multiple interaction, heterogeneity and interdisciplinary of knowledge structure, as well as emphasis on social accountability and self reflection, and put forward the theory of the transformation of knowledge production model from model 1 to model 2. The mode is not subversive and revolutionary, but a supplement to mode 1, which is derived from the traditional discipline structure of science and technology. The characteristic of the mode is "between the foundation and the application, and between the theory and the practice.". The mode creates a new organizational picture of knowledge production, and makes knowledge production develop to a new stage

with more open research mechanism, knowledge flowing at the boundary of disciplines and abundant human resources. University organization is closely related to knowledge production. The change of knowledge production mode is imperceptibly influencing the knowledge production and organizational activities of universities. The application-oriented undergraduate school is born under the background of knowledge transformation, and it is the specific performance of the transformation of knowledge production mode under the background of higher education structure adjustment. The emergence of application-oriented universities is to distinguish traditional research-oriented universities from higher vocational and technical universities, which is the inevitable mission of higher education entrusted by social development.

5.2 Main Differences

The biggest difference between application-oriented universities and research-oriented universities lies in the context, mode, carrier and function of imparting knowledge. Due to the change of the context of knowledge production, the orientation of teaching function, the content and method of specific teaching will also be adjusted according to the objectives. Education evaluation is an inherent part of systematic education reform, It is an indispensable part of any education reform, which is both meaningful and logical. However, in the practice of education reform, as evaluation is always the last link, its reform motivation often shows the problem of insufficient stamina, lagging behind the reform of other education links. The improvement of monitoring and evaluation can support the daily operation and strategic planning of education system. Therefore, it is of great significance to pay attention to the reform of education evaluation. The teaching evaluation system of application-oriented universities is directly related to the real knowledge production situation and social production and life. The transformation of Application-oriented Universities in China is entering a deep water area, and the reform of teaching evaluation can be used as a breakthrough for the transformation of application-oriented universities. Teaching evaluation is a process in which a school evaluates the effect of teaching work by using relevant evaluation means and methods according to teaching objectives and requirements. As one of the important internal guarantee measures to promote teaching quality, teaching evaluation is the focus of the development of application-oriented universities. Teaching evaluation is not only the technology and method of education internal quality assurance, but also a management tool at the school level. The key mechanism of teaching evaluation and feedback plays an important role in improving the school's improvement ability and tool effectiveness.

6 The Dilemma of Teaching Evaluation in Application Oriented Universities

6.1 Improving the Working Conditions of Teaching Secretaries

With the help of modern technical means to improve the level of teaching management. Such as timely updating the educational administration management system, providing more diverse means of upload and release, establishing direct contact between students

and teachers and the educational administration system, so that teachers and students can query the examination, class, score and other teaching arrangements by themselves through mobile app, computer and other modern means. The number of teaching secretaries in local undergraduate colleges should be adjusted according to the number of students and teachers. Instead of one teaching secretary in each college, the workload and difficulty of teaching secretaries should be considered [8–12]. As shown in Fig. 3. At the same time, the dissatisfaction caused by the comparison of teaching secretaries between secondary colleges should be avoided, so as to stabilize the healthy development and stability of teaching secretaries in the whole college.

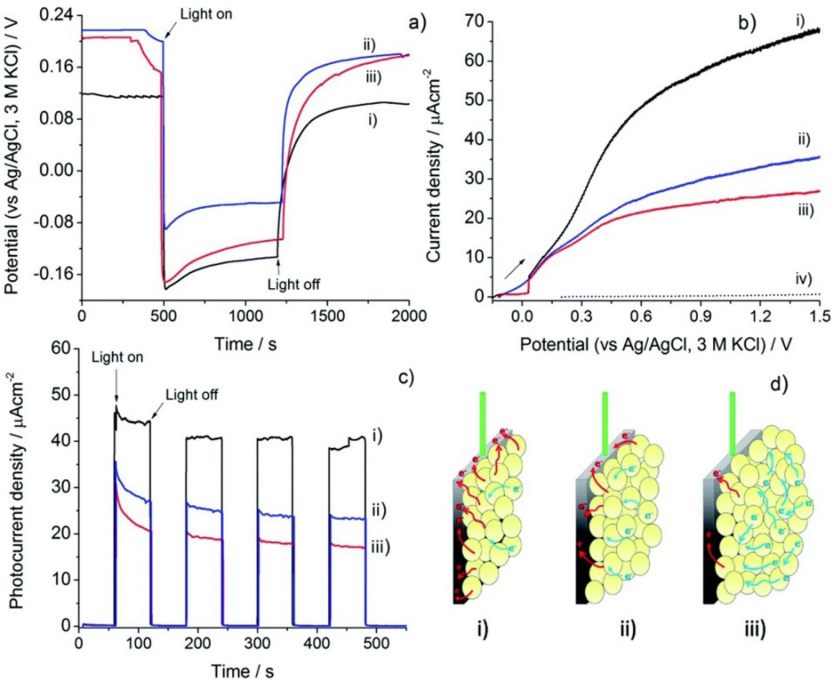

Fig. 3. Improving the working conditions of teaching secrets

6.2 Broaden the Career Development Path of Teaching Secretary

Local colleges and universities should realize the importance of teaching secretary position, reasonably plan the position of teaching secretary, and set up promotion ways. If you can compete with full-time teachers and evaluate professional titles, you can be promoted from professional title to intermediate and senior professional title after completing certain work. In addition, we should improve the salary system structure of teaching secretaries, improve the assessment mechanism, narrow the salary gap between teaching secretaries and full-time teachers, so that teaching secretaries can work in their own jobs, pay attention to the training and training of teaching secretaries, and local

universities should pay attention to the work of Teaching Secretaries, and give full play to their role in the process of carrying out teaching activities. We should provide more learning opportunities for teaching secretaries, create conditions for their further study and exercise platform, and let them feel the space for improvement and the value of existence. In addition, we should speed up the construction of relevant training mechanism and form a practical training plan as soon as possible [13]. Through temporary training, academic promotion, special training and other ways, we can constantly improve the teaching secretary's understanding of new knowledge, new ideas and the use of new technology, so as to expand their ideas and broaden their field, so as to better serve the teaching. In addition, the school should allocate enough funds to set up corresponding research and research projects for teaching secretary, strengthen innovation of new methods and ideas of teaching management, and help improve teaching management.

6.3 Lack of Social Accountability for Teaching Evaluation Results and Teachers' Self Reflection

Paying too much attention to the evaluation system, policies, theories and indicators will encounter many problems in the real situation, among which the neglect of social accountability of teaching evaluation and teachers' self reflection is a challenge [14, 15]. The transformation of application-oriented universities needs corresponding changes in the whole internal structure and operation form. However, at this stage, academic research ability is still the key standard to evaluate the teachers of application-oriented universities. Rigorous academic research requires peer review, academic exchanges and discussions are only in a concentrated and highly closed academic circle, lacking social accountability and self reflection. "Ivory tower" is the image of this situation, closed system brings professional extension and strong controllability, but also brings limitations, because the internal resources and influence are very unlimited, unable to break through the academic barriers. Social accountability requires first of all to make sure that the construction of applied knowledge files is a continuous and dynamic process, which needs constant adjustment and revision [16]. In this process, teachers are required to redefine the content they teach. The social feedback of applied knowledge is very strong, and the problems involved usually have certain social impact. From knowledge production, dissemination to teaching evaluation, every environmental responsibility permeates the self-discipline of social accountability teachers My reflection is another challenge, because teaching evaluation is mainly based on other evaluation, which leads to a lack of teachers' self-evaluation. Teachers think that self-evaluation and reflection are too subjective to reflect the real internal evaluation of learning evaluation [17, 18]. Another important reason for teachers' lack of self-evaluation is that they regard teaching as accountability rather than improvement. In the context of accountability, external teachers need to bear pressure, but in the context of improvement, teachers can better reflect and adjust for optimizing their knowledge structure and teaching ability.

7 Epilogue

The construction of teaching quality assurance system in application-oriented universities is not achieved overnight. The training goal of talents needs to be changed according

to the market demand, so the system also needs to be adjusted dynamically. To some extent, the teaching quality assurance system is more dependent on the particularity of the University, so it should be formulated according to the specialty, teaching and employment situation of the University.

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