

Research on Collaborative Service of Distance Education Database based on Fuzzy Clustering

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Abstract: Clustering is one of the most basic cognitive activities of human beings. Only through appropriate clustering can things be easily studied and the internal laws of things can be grasped by human beings. In the process of cooperative school-running mode and cooperative development of regional distance education integration, the construction of cooperative school-running mode of regional distance education integration system and the formulation of system cooperative development strategy play a very important role in institutional guarantee. Generally speaking, regional distance education integration system cooperative school-running mode and system coordinated development strategy. The system covers distance education teaching, learning, examination, educational management and other aspects, involving a large number of data information, a wide variety, strong relevance, complex organizational form. All the applications of the system are developed on the Web. The interaction between users and the system is completed through the Web. The system uses the combination of Java Server Pages (JSP) and Servlet to access data information in the Web.

1. Introduction

Clustering is a basic cognitive activity of human beings [1]. Clustering is to divide things into multiple classes or clusters according to certain attributes of things, so that the similarity of things in the same class is as large as possible, and the similarity of things between different classes is as small as possible [2]. Cluster analysis is to study and process the classification of a given object by mathematical methods. The remote education cooperation and coordinated development of regional integration, is the necessity of the coordinated development of regional economic integration and social culture derivatives, but also the inevitable social and cultural phenomenon of regional economic integration brings effect, remote education refers to the area of different entities, combine to form larger distance education culture status, or process for the development of social culture, It is the distance education entities in the region in order to eliminate all the obstacles of running schools in different places between each other, integrate their own high-quality education resources, promote the exchange and interaction of educational elements in the region, and realize the development of differences, complementary development, advantage development, characteristic development, balanced development and coordinated development. A new system or mechanism of distance education cooperation and coordinated development can be jointly established for sustainable development [3].

The core and foundation of constructing distance education system is to establish an organic shared database. The distance education database system generally adopts distributed database storage when the demand for education is greatly increased. Due to the geographical distribution and considering the needs of data security and data distribution, each autonomous distributed database is connected with each other to ensure the mutual access of data between databases, eliminate the abnormal sharing of data in the database and realize data sharing.

2. Construction strategy of regional integrated distance Education Public Platform system

2.1. Regional integration distance education specialty complementary mode and specialty intercommunication strategy

In geographically separated regions, educational resources are generally unbalanced. Distance education through regional integration can complement resources to a certain extent and realize the balance of educational resources. This requires the help of distance education, Distance education is an educational method of teaching and learning with the help of technical media and certain methods, and it breaks through the limitations of time and space to carry out knowledge imparting and learning activities [6].

It is generally believed that distance education has gone through three generations: early distance education is correspondence education, which has great limitations, and practical courses cannot be taught by correspondence method; With the rise of radio and TELEVISION technology, distance education has developed into radio and television education, information carrier and means have changed, the speed of information transmission is accelerated, but like correspondence education, the way of information exchange is still one-way delivery, not two-way interaction; With the development of information technology and network technology, modern distance education based on information and network technology comes into being, namely, using computer network and multimedia technology to carry out teaching activities in the digital signal environment, which is called "modern distance education" [7]. The process of student authority identification is shown in Figure 1.

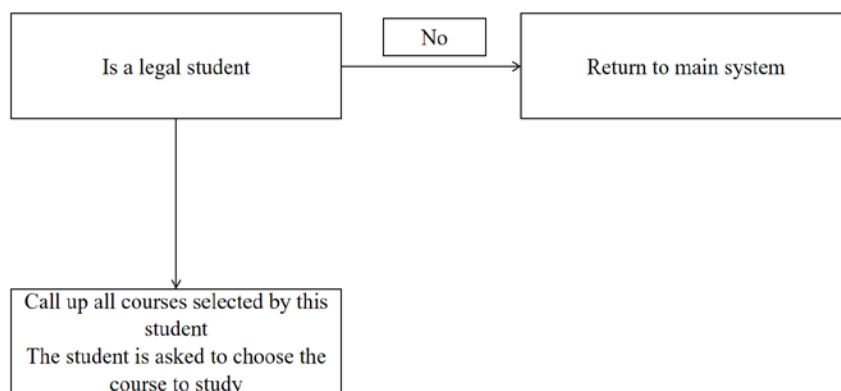


Figure 1 Process of student authority identification

2.2. Construction of regional distance education specialty system

The construction of regional Open University is conducive to the macroscopic coordination of regional distance education market, resources, policies, teaching platforms, technologies and services, and the construction of an integrated distance education system cooperation mode, that is, "overall planning, integration of resources; Strip combination, systematic school running; Universal participation, lifelong learning; Run schools at different levels and administer them at different levels; "Mutual cooperation and common service" in the construction of regional distance education professional system, the formation of its core competitiveness is closely related to the formation of the core competitiveness of regional industrial cluster development, and shows a positive correlation [8].

Regional distance education technology platform of public service, in order to establish the Internet emerging industries such as agriculture, industry, logistics and services development forms form, all the region on the basis of intelligent industry provides training services, the development of matching with this will further strengthen the function of regional social service culture of the Open University, In particular, this public platform of distance education and teaching is connected with various regional industrial platforms, which creates conditions for regional Open Universities to use various modern Internet industrial platforms to build distance education and teaching practice

bases based on "Internet + Advanced Industry" [9]. It is the long-term development task and trend of distance education platform to bring the latest scientific and technological achievements into the application of distance education information service platform. From the perspective of the development trend of distance education technology, the future development of information service platform should pay more attention to the cooperation between various media. Through the application of new technology, the technical characteristics and advantages of information service platform in realizing human-computer and interpersonal communication and interaction should be more prominent. The way course registration can be achieved is shown in Figure 2.

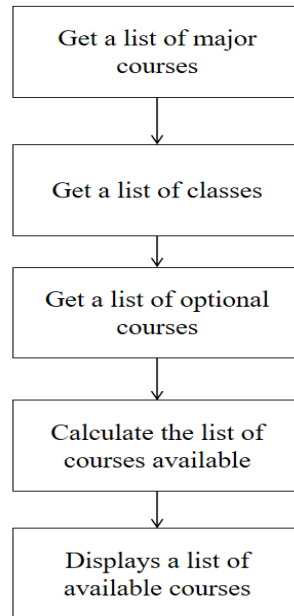


Figure 2 How course registration can be implemented

3. Construction strategy of regional compatible distance education public platform system

3.1. Regional integration of distance education curriculum selection model and learning interaction strategy

According to the law of unbalanced development of regional economy and education: in the same region, where the economy is developed, education is inevitably developed; Where economic development lags behind, its educational development must lag behind. In a place, the development of economy and education is always proportional to each other. As a result, the more developed the region's economy is, the more talents are in demand, the more channels and amounts of educational funds are invested, and the more developed the education is. The more backward the economy, the more backward the economy, talent demand is weak, less investment in education, education is more backward, resulting in the unbalanced economic development of various places in the region [10].

The aggregation effect of economic development exists in every region, which is the universal characteristic of the economic activity of this region. In the cluster economic development areas, the Open University needs to cultivate application-oriented talents in the fields of industrial science and technology, intelligent manufacturing, industrial skills, social service, green agriculture, ecological industry, picking agriculture, e-commerce service, circular agriculture, rural tourism, garden economy, and agricultural experience. We believe that the technical compatibility of the network platform can indeed help reduce the Internet use cost of regional distance education cooperation and collaborative development between open Universities, and effectively reduce the cross-regional and cross-school learning marginal utility cost of distance learners. Therefore, taking measures to realize the technical compatibility of regional Open University's distance education network platform will help it form an integrated distance education teaching and learning technology support service system and mode.

3.2. Construction of regional distance Education credit banking system

We believe that there are eight key factors for establishing credit banking system of regional distance education: One is to establish regional credit bank system of digital remote elective course resource platform, to create a region of the Open University course taking resources supermarket, learners can through this curriculum resources platform system, choose the Open University courses, and elective system according to its rules, process rules, after registration, certification, and login, and take the standardized curriculum resources, After completing the required learning, practice and examination process, and learning the course content, they will receive their credits. To build a regional distance education community, open universities around the world should take the initiative to promote project design, promotion, implementation, evaluation and acceptance based on tradition, reality and the future under the overall planning of the government. At present, with the rapid development of artificial intelligence, big data and cloud computing based distributed Internet distance education resource construction has the possibility, a kind of can be distributed in different regions of distance learners to provide convenient and effective teaching resources of the large storage capacity and supercomputing learning support services gradually formed a new remote education mode. Remote learners all over the world can access the big data cloud resource library center through different network terminals and obtain necessary learning resources. Credit bank construction region, is a kind of beneficial to distance learners at all times, everywhere, everyone in distance learning courses and convenient platform model, it faces the area all the social members, services in the area of the citizens' lifelong learning, distance higher education of all types and at all levels to promote area between form, form of communication and cohesion, In order to realize the certification, accumulation and conversion of qualifications, achievements and credits of course learning, to further broaden the distance education as the main body, in the form of open learning for the whole people lifelong learning channel, to build a convenient regional learners independent learning of talent growth overpass.

4. Conclusions

With the rapid development of knowledge economy, the market elements are more and more active, and the demand for talents is more and more common, which makes it possible for regional distance education to break through the administrative barriers of time and space separation. Moreover, due to the emergence of various manufacturing technologies and the flowering of industrial cluster bases, the structural shortage of applied talents has created opportunities for the development and integration of regional distance education. In order to maximize the quality and level of regional distance education and its teaching and learning public support services, form a distance education public support service system that can cover any corner of the three places, and cultivate a large number of knowledge, industry, skill and innovative application-oriented talents urgently needed by various industries in the region. With the rapid development of computer technology and network technology, distance education system has become an important means of education development, and has been widely valued. However, in view of the existing problems of system instability, data incompleteness and system portability of some distance education systems, the research and development of distance education system using middleware technology is carried out under the funding of key project of Tianjin Science and Technology Commission.

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