Research on the Complex Construction and Community Education Function of Smart Cloud Platform

Xiaofei An

Department of Art, Faculty of Science and Technology Changzhou Open University, Changzhou, 213000, Jiangsu, China

Keywords: Smart cloud platform; Complex construction; Community education

Abstract: With the rapid development of new technologies, community education is facing unprecedented development opportunities. Community education is an important part of building a learning society and a lifelong education system in China. In order to strengthen the popularization and application of distance education and digital learning methods in community education and carry out digital community education, this paper focuses on cloud computing and discusses the comprehensive construction and community education functions of smart cloud platform. This paper expounds the application prospect of digital community "cloud service" based on smart cloud platform, and points out the problems existing in the construction of complex and community education and learning resources. At last, the construction path of distance open learning resources to promote the development of community education is given. In addition, this paper puts forward a "learning on the cloud" mode by means of new information technology, cross-regional cooperation and immersion learning, in order to create a more convenient learning environment for learners and provide more convenient educational services for the general public.

1. Introduction

Because the social activities of community residents are mainly completed in the community, community life directly affects people's ideas and social behaviors [1]. Community education originated in developed countries in the world, and community universities in the United States and open universities in Britain are successful community education practices. It rose with the reform and opening up in China, and has gone through a rapid development path from being a supplement to school education to gradually expanding education to improve the quality of community members in all aspects [2]. Community education is an important part of lifelong education system and an important way to build a learning society, and learning resources are the premise of community education and learning activities, which has become the core factor affecting the development of community education [3]. In recent years, some achievements have been made in the construction of digital community and intelligent community in China, which has realized the collection, processing, transmission and sharing of all kinds of information in the community, and built a relatively advanced digital and intelligent system engineering of digital community [4]. However, in the process of rapid development, the digital community has also encountered many problems. It is of great significance to build a public service cloud platform for community education and form a community education website group with unified management, unified deployment and unified standards for building a learning society and vigorously developing community education.

With the continuous development of society and times, new educational forms such as adult continuing education and full-time technical education have emerged. Corresponding to the needs of these educational forms, the intelligent community-based education has become an inevitable trend of development [5]. Under the background of the rapid development of digital technology, how to make full use of the massive cloud resources and digital technology in community education or continuing education to provide educational services that meet the needs of community residents has become a problem for educators to think about [6]. Nowadays, digital community, as the development mode of urban modernization, is gradually transforming into the direction of

digitalization, networking and intelligence. Community education is an open school for all community residents. Traditional learning methods are limited by the problems of single educational audience, different levels of students and uneven resource allocation, which can no longer meet the learning needs and cultural construction requirements of community residents [7]. In recent years, the rise of cloud computing has had a great impact on education. Applying the concept of cloud computing to education and teaching is the only way in the information age [8]. The role of cloud computing varies from country to country. Cloud education derived from cloud computing and China's city-centered broadband development model have created the necessary material conditions for the establishment, perfection and development of a learning society. Based on this, this paper studies and discusses the comprehensive construction of smart cloud platform and the function of community education.

2. Application prospect of "cloud service" in digital community based on smart cloud platform

Digital community based on cloud services, across regions and departments, integrates community resources, and builds a virtual network community, which enables users to change from desktop application as the core to WEB service as the core, and provide users with diverse cloud services on demand [9]. The smart community education on the cloud computing platform has a high utilization efficiency for resources, and can schedule resources according to the real-time load. In the basic structure of cloud computing model, the core part is the server "cloud" composed of multiple computers. It gathers resources to form a large data storage and processing center. At the same time, various configuration tools in the server support software management, data collection and processing on the "cloud" side. According to the data request submitted by the user client, the server processes the data and returns the retrieval result. Large-scale processing of educational resources under cloud computing conditions can transfer users' information security issues to the data center, so that information can be safely delivered to the data center of the cloud platform for processing according to the security mechanism, thus improving the control and management security of resource information. The conceptual model of cloud computing is shown in Figure 1.

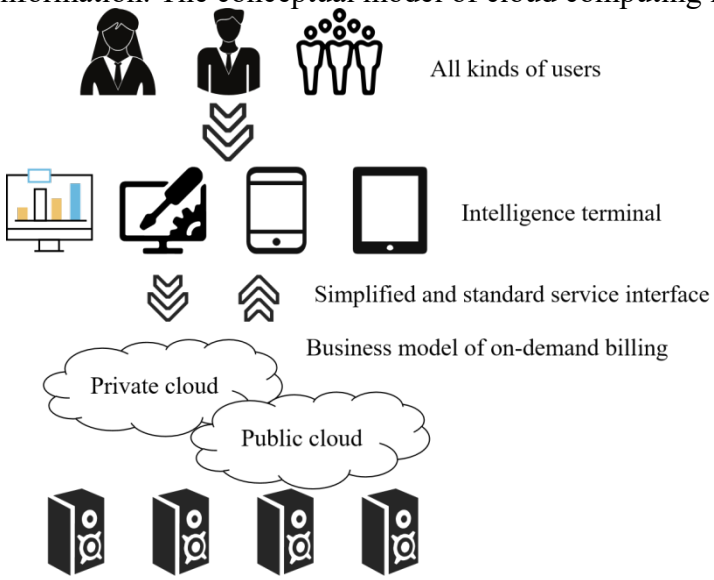

Figure 1 Conceptual model of cloud computing

Using cloud sharing technology, the resources of a better community can be shared with other communities at a small cost. After the cloud sharing platform is built, there is no need for other communities to build it again, avoiding repeated construction and late investment. From the perspective of application prospect, the digital community "cloud service" based on smart cloud platform mainly has the following aspects: (1) Resource "cloud". (2) Community public service "cloud". (3) Digital library and cultural community "cloud". (4) IOT monitoring "cloud".

3. Problems existing in the construction of complex and the construction of learning resources for community education

In recent years, with the introduction of computer technology, community education is developing towards modernization, informationization and sharing [10]. However, the current smart community education network system generally has the shortcomings of being closed and decentralized. The total amount of data resources in the system is small and the sharing is low, and the way for community residents to obtain educational resources is single. Community service is centered on service organizations, and users can get corresponding services from various organizations, which is not convenient for users, but also difficult to meet the individualized and diversified needs of the growing community residents. At the same time, the development of digital community is also restricted by the lack of unified technical standards, repeated development and competition, and the lagging service model of the industry. In community education, resource construction is the most critical link. At present, there are the following problems in community education resources: the coverage is narrow; Uneven distribution of resources; There is a lack of unified leadership, unified planning and unified standards in resource construction, and the learning resources of community education vary from place to place, with uneven quality, different learning results and not obvious learning effect. At the same time, the construction of community digital platform and resources is lack of standardization, the heterogeneous and repeated construction of resources is serious, the interoperability between different resource pool systems is lacking, and the phenomenon of information islands is serious.

At present, some websites do not hesitate to invest a lot of money to produce and introduce all kinds of digital learning resources. With the increase of website content and the number of visitors, the cost of building online learning platform and renting private line bandwidth is increasing, and the investment of websites is increasing and the burden is getting heavier and heavier. On the whole, these websites have high repetition rate, low utilization rate and serious waste of funds, which restricts the development of community education in the province. In addition, although cloud education provides a large number of educational resources to choose from, and the popularity of broadband and smart phones can also provide conditions for people to obtain these resources, it is not easy to extract the content that best meets the needs of the audience from the vast amount of information as a teaching material to meet the needs of people with different learning purposes and motivations. The development of community education in China must rely on two platforms, one is the digital information network platform, and the other is the physical community education network platform, both of which are indispensable. At the same time, community education has the characteristics of "many people, wide range, many kinds of occupations and irregular study time", which brings unprecedented challenges to community management.

4. Smart community education network system with cloud computing

Cloud computing is a network technology that relies on the public participation mode of the Internet, which can store a large number of dynamic and virtualized computing resources. Cloud computing in a broad sense refers to the service delivery and use mode, and refers to obtaining the required services through the network in an on-demand and easy-to-expand way. This service can be related to IT, software and Internet, or any other service, and it has unique functions such as super-scale, virtualization, reliability and security. The smart community education network system with cloud computing can make full use of the stock advantages of resources to develop and integrate community resources, accelerate the construction process of community education resources and meet the learning needs of community residents at different levels. Users can efficiently and uniformly manage the resources of the cloud data center through a unified cloud platform, understand their real-time status, and flexibly control and allocate them. At the same time, building resource sharing on the cloud service platform can make use of the collaborative working ability of cloud computing to provide software and resource services in a centralized way, and further realize the transformation, compatibility and effective integration of heterogeneous,

distributed and autonomous resources. In this way, the information sharing among communities becomes closer and more effective, and the problems of redundant construction and insufficient information resources sharing are solved. The structure of smart community education network system based on cloud computing is shown in Figure 2.

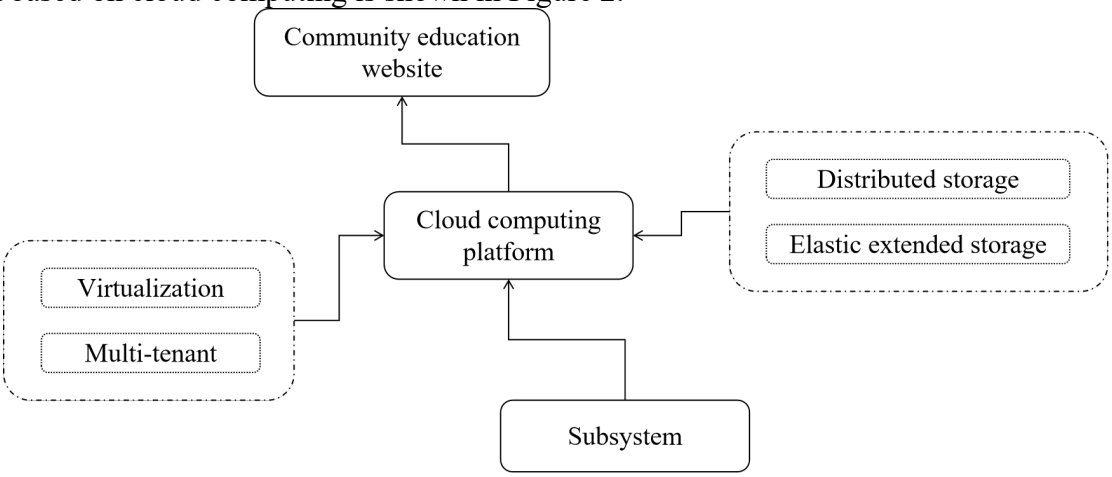

Figure 2 Structure diagram of smart community education network system based on cloud computing

The cloud computing platform integrates the resource information in the community education system, uses storage technologies such as distributed storage and flexible expansion to store the resource information, integrates the resources through integrated processing, and connects the community education website with the community education subsystem, thus providing an efficient and efficient education resource network platform with massive resources for community residents. With the integration of community basic data for many years, the data scale will increase geometrically. The goal of using massive data storage and processing technology is to process larger data with lower cost. Build a highly reliable and scalable mass data storage system through different ways of data partition, maintaining data consistency and availability, realizing load balancing and fault-tolerant mechanism.

5. The construction path of distance open learning resources to promote the development of community education

5.1. Intensify publicity and expand publicity channels

The focus of online education is different from the traditional education mode. It is a new education form based on online education funds and centered on students. This form of education is characterized by open educational resources, diverse educational forms, flexible teaching place and time, and faster and more efficient interaction between teachers and students, and students. Introducing this form of education into smart community education is conducive to the formation of a "lifelong learning" community environment. Different from the traditional education model, cloud education is actually a university without walls. What learners need is not necessarily formal classroom teaching, but more appropriate face-to-face tutoring. The construction of regional community education resources cloud sharing platform requires breaking the disadvantages of the existing system and integrating various service functions into one service interface. Technically, the government is required to establish a different management mechanism and a horizontal communication mechanism on the basis of vertical compartmentalization. Digital learning resources are the basis for the development and sustainable development of community education. The construction of digital learning resources has a large investment and obvious timeliness. Therefore, only by carrying out targeted construction according to the needs can the maximum benefit be exerted in the application. In the initial stage of opening up educational resources in communities of various countries, resources are often idle. At this time, it is necessary to broaden the publicity channels and increase publicity efforts. In addition to using some traditional media, we can also use

new media such as online media, mobile phone media and digital TV to do a good job in publicity and promotion, and build a publicity mechanism led by the government, with extensive participation of educational institutions and community organizations and positive response from all walks of life. Resource construction should always adhere to the demand-oriented, project-oriented, and build a systematic series of community education products, all of which are put into application through the teaching platform.

5.2. Promote the co-construction of all members of the resource community and create high-quality new resources with regional characteristics

The cloud platform focuses on the community management service center, providing users and managers with a variety of application services such as community property services, government services, business services, financial services and information services. Promoting cloud education in the community is to take root in the "cloud" educational resources, satisfy the people's yearning for a better life, create necessary conditions for young people to update their knowledge and continue their studies, and create necessary conditions for the elderly to exert their afterheat and make the sunset redder. Relying on intelligent learning environment and digital technology platform, relying on multilateral cooperation and creating educational landscape to enrich the content of community education courses. By promoting the practice and exploration of immersion learning in the field of citizens' lifelong learning, we can improve the service means of lifelong learning, so as to meet the diverse educational needs of citizens in various directions. The platform-based construction mode can not only build a general platform, but also provide a unified, standardized and standard "cloud service" for various business systems, and can significantly reduce the development and upgrade costs, thus realizing its own sustainable development. The construction of cloud platform must seek benefits from scale, and only by achieving "large-scale and wide coverage" can we achieve "high quality and low cost". The construction of smart community education network system in cloud computing environment can provide an efficient, fast and open network education resource platform for the majority of community residents, which is of great significance in improving the quality of life and personal quality of residents. As one of the characteristics of community education, regionality will inevitably involve local regional culture. Compared with other disciplines and common sense resources, regional learning resources are more unique and unique, and the characteristic regional courses in this area should be independently developed by the local authorities, and the others are irreplaceable. Therefore, we can vigorously promote the co-construction of resource communities and create high-quality new resources with regional characteristics.

6. Conclusions

Community is the main living area for people to engage in social activities. As an inevitable product of the development of society and times, community education can improve residents' personal quality, work efficiency and quality of life. Digitalization of community education is a new form of community education in modern information society, which is characterized by using digital tools as media and means and making full use of digital resources for learning. Strengthening the practical exploration and application research of modern information technology in community education is the key to further improve the quality of community education services and the basic idea for future development. The community education system based on cloud computing is a learning mode that uses the most advanced modern cloud computing technology to manage and allocate resources in a unified way on the cloud computing platform and provide them to community users in the form of services. Focusing on cloud computing, this paper discusses the complex construction and community education function of smart cloud platform. This paper expounds the application prospect of digital community "cloud service" based on smart cloud platform, and points out the problems existing in the construction of complex and community education and learning resources. At last, the construction path of distance open learning resources to promote the development of community education is given. Introducing cloud computing

technology and building a smart community cloud platform can provide a platform for community residents to fully communicate, help community residents to obtain educational resources quickly and efficiently, and form a "lifelong learning" community environment. However, due to cloud security, unified coordination of departments, funds and other issues, it will take some time to fully implement the construction of community smart cloud platform.

References

[1] Peng Yuanming, Bai Heng, Chen Ying. Community education "cloud learning" model [J]. China Adult Education, 2020(22):4.

[2] Yuan Liang. Community Education Digital Learning Resource Cloud Classroom Practice Research [J]. Computer and Telecommunications, 2020(7):3.

[3] Wang Z, Wan Y, Liang H. The Impact of Cloud Computing-Based Big Data Platform on IE Education[J]. Wireless Communications and Mobile Computing, 2022, 2022(1):1-13.

[4] Jing L, Bo Z, Tian Q, et al. Network education platform in flipped classroom based on improved cloud computing and support vector machine[J]. Journal of Intelligent and Fuzzy Systems, 2020, 39(99):1-11.

[5] Lamberti F, Margaria T, Chan H. Guest Editorial: Special Section on Computing Education & Learning Technologies[J]. IEEE Transactions on Emerging Topics in Computing, 2018, 6(1):5-6.

[6] Ashtari S, Eydgahi A. Student Perceptions of Cloud Applications Effectiveness in Higher Education[J]. Journal of Computational Science, 2017, 23(1):173-180.

[7] Al-Samarraie H, Saeed N. A scoping review of cloud computing tools for collaborative learning: Opportunities and challenges to the blended-learning environment[J]. Computers & Education, 2018, 124(9):77-91.

[8] Verma P, Sood S K, Kalra S. Smart computing based student performance evaluation framework for engineering education[J]. Computer Applications in Engineering Education, 2017, 25(6):977-991.

[9] Shi Q. Optimization analysis of physical fitness training for aerobics athletes based on cloud computing education platform[J]. Revista de la Facultad de Ingenieria, 2017, 32(9):485-491.

[10] Ali M B, Wood-Harper T, Mohamad M. Benefits and Challenges of Cloud Computing Adoption and Usage in Higher Education[J]. International Journal of Enterprise Information Systems, 2018, 14(4):64-77.