Application of Cloud Computing Data in Northeast Folk Art Education

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Abstract. As an important part of traditional culture, northeast folk art reflects the cultural characteristics of different nationalities and integrates rich emotions into it. The combination of modern environmental art design and folk art provides designers with new ideas to improve the efficiency and quality of environmental art design. Based on the clear meaning and content of cloud computing data on folk art, this paper discusses the development process of folk art education, analyzes the contact points between folk art and modern environmental art design, and analyzes its application mode from the innovation, form, modeling mode and region of folk art, so as to improve the application level of folk art in modern environmental art design.

Keywords: Northeast folk art · Folk culture · Cloud computing

1 Introduction

Today's world is in the rapid development of the information age, information technology, digitization has become the trend of the times. In the protection of folk art resources, the traditional way of information collection, recording and preservation has been unable to meet the requirements of a large number of high-quality and efficient protection. Therefore, the transformation from traditional protection mode to modern and digital mode is also the general trend of the development of the times [1].

Folk art is a classification in the field of art. The word "folk" is different from that of the royal court and aristocrats. The scope of "folk art" is very wide, and there are many "unique skills". Elephant skin shadow play, folk paper cutting, embroidery and weaving, dragon dance and lion dance are all very famous folk arts and cultural treasures of our Chinese nation.

2 The Meaning and Development of Traditional Folk Art

Rooted in social life, traditional folk art is a form of literature and art created by the general public. People inject emotion into their works to beautify the living environment and record folk customs. It is the inspiration source in daily art design. Folk art is not only the artistic language and cultural symbol, but also the inheritance of Chinese traditional

culture. It contains the plain ideological connotation of people's working life, so it is deeply loved by the people.

With the advancement of globalization, modern art work has been exposed to different cultures from the perspective of globalization, which widens the vision of designers and promotes the development of art to a certain extent. The form of expression of folk art is complex and diverse, and its aesthetic value should break through the limitations of a few representative works. Because of its profound cultural connotation, folk art should shoulder the mission of inheriting Chinese excellent traditional culture. The regional economy, humanities and art reflected in folk art can be reflected in folk art. Folk art in the new era to seek further development, should be combined with other technologies, to find a breakthrough. In the process of environmental art design, folk art factors are added to improve the level of environmental art design.

3 Cloud Computing

The development of cloud computing has made great technological breakthroughs. From the earliest research and development of Google and Amazon to more and more researchers participating in cloud computing research, cloud computing has always been the focus of attention [2]. Cloud computing manages all the network, computing, storage and other resources through the distributed technology. Users can use these services reasonably by purchasing the resources they need. Compared with the traditional enterprises to build these infrastructure, it has significant advantages. Therefore, cloud computing turns resources into services to provide users with massive data processing and storage functions, which is more and more in line with the future development trend. In cloud computing, platform is service, software is service and infrastructure is service. Users only need to use the corresponding basic services according to their needs, and do not need to care about the underlying implementation. At the same time, cloud computing researchers provide database as a service, storage as a service, network as a service, etc. according to the corresponding service requirements.

3.1 Cloud Computing Data Center

Cloud computing is a computing method based on the Internet. Through this way, the software and hardware resources and information shared on the Internet can be provided to computer terminals and other devices on demand. As the infrastructure of supporting cloud computing services, the research of resource allocation and scheduling in data center becomes very important. Next, this section will introduce the evolution process of data center, the technical background of high virtualization of cloud data center and the characteristics of network resources of cloud data center.

3.2 Network Function Virtualization

Middle boxes, also known as network functions (NFS), are ubiquitous in cloud data centers. The data shows that the number of intermediate devices in cloud computing is equivalent to the number of routers and switches. These intermediate devices can

perform various deep packet processing functions on the data streams passing through them, such as firewall, IDS, WAN optimization or HTP caching, etc. Not only that, the boundaries between intermediate devices and routers and switches are increasingly blurred, and more and more functions of intermediate devices are integrated into routers and switches. Although intermediate devices have become an indispensable part of the current network, they are often vendor specific hardware devices, which are not only expensive, but also require customized deployment and maintenance. What's worse, it is almost impossible to add new network functions to existing intermediate devices, which makes it difficult for service providers to deploy new services. In most cases, service providers have to purchase new hardware to introduce new network functions.

Calculation of ETT:

Suppose a certain time t, for a certain transmission line e_{ij}, we need to predict the time required for the k + 1 unit task in the task queue to transmit in e_{ij}, and the data volume of the transmission task packet is M. We can obtain the bandwidth (e_{ij}) available on the line e_{ij} at time t by using the assolo algorithm proposed in references. Then, the estimated transmission time ETT of the k + 1 unit task on line e_{ij} can be obtained by the following formula at time t:

$$ETT(e_{ij}) = M /Bandwidth(e_{ij}) \tag{1}$$

Assuming that node a and its descendant node b are connected by n transmission lines, which are $e_0, e_1, \cdots, e_{n-1}$ respectively, the estimated transmission time of the k + 1 unit task from node a to node b is $ATT_{a->b}$:

$$ETT_{a->b} = ETT(e_0) + ETT(e_1) + \cdots + ETT(e_{n-1}) \tag{2}$$

First, we solve a simple two-layer tree structure model, as shown in Fig. 1.

P_0

e_{01} e_{02} e_{03}

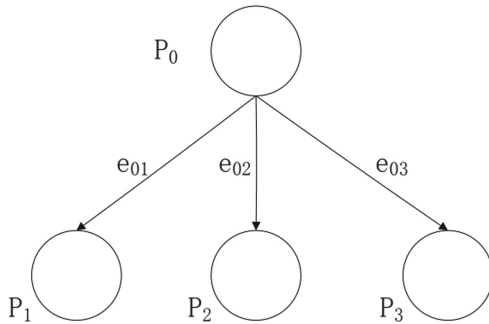P_1 P_2 P_3

Fig. 1. Tree structure of the second floor

4   Function Design of ICH Cloud Storage Platform

4.1   Manage the Upload And Addition of Folk Art Resources (Hereinafter Referred to as Resources)

The upload function of folk art resources. The uploaded folk art resources are saved according to the classification and rules. When uploading resource files, the file access

mode is automatically established according to the file type and category. For some resource files that may depend on the display of the client environment, relevant processing (such as video) is carried out when uploading the file, so as to adapt to the display needs of all possible display platforms [3].

When uploading the files, try to save them in the original format to ensure the effective value of folk art resources. When uploading files, the following methods are proposed:

Using FTP software to upload, the system directly establishes FTP users and allocates the usage directory. After uploading using FTP, the user obtains the upload file address and adds corresponding resource information in the system resource adding function module.

Use flash control or other controls to upload files directly in the system, and file related resource information can also be added at the same time. However, the maximum single upload file of the flash upload control is 1 GB (multiple files less than 1G can be uploaded at the same time, but the total file size is greater than 1 G), and this upload control does not support breakpoint continuous transmission.

Self developed upload controls, while the upload process to achieve file format conversion, into smaller files, but this method can be said to be the core technology of popular video websites, its development costs may be large, beyond the budget, and conversion file format, will not be able to upload files in the original format.

4.2 Format Conversion of Resource File

For more common file formats, such as word processing files, pictures, audio and so on, there are basically no client-side display problems, but there may be some problems for video files. Therefore, it is necessary to convert the formats of some problems after the display of different places, so as to make them more general as possible.

Client conversion, before uploading the file, the file can be directly uploaded by using the client.

In the process of uploading, the file is uploaded at the same time. This method has higher development cost and higher requirements on the server.

After uploading, it is difficult to develop a system service to run the conversion format in the background at a specified time. After uploading, it will be converted manually. After conversion, due to different file formats and additions, it may be necessary to maintain resource management information again (see Fig. 2).

4.3 Auditing, Editing and Sharing of New Resources

In order to better select the value and security of resources, it is necessary to review the newly added resources, which will be displayed in the front desk after passing the audit [4]. At the same time, the value level of resources can be set, corresponding to the security management system, so as to realize the authority control of resource modification and deletion [5].

The deletion and modification of resource files correspond to the security management system, and the operation level of resources is set. Registered users can share their uploaded resources to other users for viewing, which is divided into full sharing and password access (see Fig. 2 and Fig. 3).
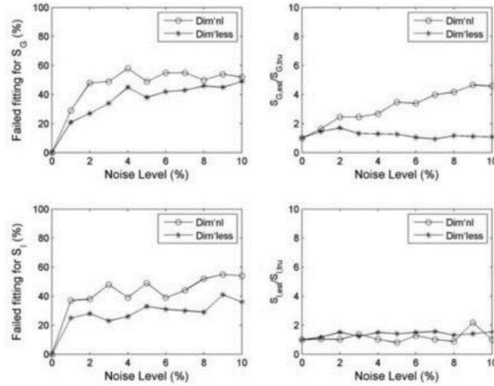
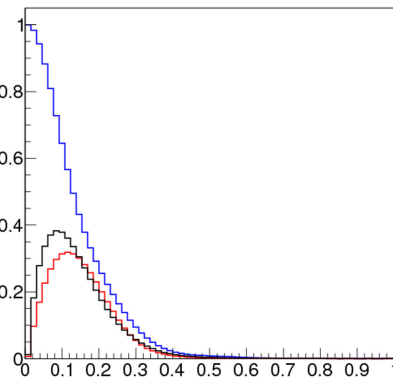**Fig. 2.** Simulation for Format conversion of resource file

Fig. 3. Simulation for sharing of new resources

5 The Role of Northeast Folk Art in the Development and Utilization of Art Education in Primary and Secondary Schools

5.1 Improving the Comprehensive Quality of Primary and Secondary School Students

The organic integration of Northeast Folk Art into art education plays an important role in promoting the comprehensive quality and personality of primary and secondary school students [6]. "New curriculum standard" requires art education in primary and secondary schools to cultivate modern citizens with humanistic spirit, aesthetic taste and art literacy [7]. Due to the distinct artistic and regional characteristics of Northeast Folk Art, which contains the civilization and wisdom of ethnic minorities accumulated in the long history, the application of these humanistic spirit and cultural connotation in art education in primary and secondary schools can guide primary and secondary school students to establish a correct outlook on life, values and world outlook, and cultivate aesthetic

emotion and attitude, Promote the continuous improvement of primary and secondary school students' personality. The northeast national folk art is an important part of China's traditional culture. Learning it can make young people understand different national cultures, deepen their understanding and feelings of the local national folk art, and then make primary and secondary school students understand the broad and profound Chinese civilization in an all-round and multi angle, guide them to continue to learn and explore, and cultivate their broad vision and mind [8].

5.2   Enhance the Aesthetic Ability and Appreciation Ability

National folk art is an art form gradually formed by the working people of all ethnic groups in the process of production practice, which has certain characteristics of natural environment and national development [9]. It has a unique nature and artistic charm, and contains a series of factors such as the mode of production, life attitude, value orientation and religious belief of its nation in the long process of development. The folk arts in different regions have their own characteristics. The northeast is rough and bold, such as shaman clothes, puppets, birch bark crafts, etc., with simple shapes and broad lines; the northwest is bold and passionate, such as shadow play, murals, peasant paintings, etc., with simple shapes, gorgeous colors, enthusiasm and appeal; the central region is moderate and peaceful, such as Zhuxian Town prints, Yellow River Chengni inkstone, Bianjing lanterns, etc., The southwest area is gentle and mysterious, such as Miao silverware, Dai bamboo basket, embroidery, etc., with complex production process, changeable shape, stable color and vitality. In Northeast China, folk arts of different nationalities also have their own artistic characteristics [10]. For example, Ewenki and Oroqen people migrate and hunt all the year round, so their Birch Bark products are small in size and many in variety; Daur people's agriculture and animal husbandry are relatively developed, and their life style is relatively stable, so their Birch Bark products are large in size and few in variety. Most of the Ewenki's hats are decorated with antlers, while most of the Manchu's hats are decorated with feathers and birds. All of these have an important role in promoting the expansion and improvement of students' aesthetic ability and art literacy. It can make students self-study and recognize the shape, color, composition, production technology and cultural connotation of ethnic folk art in other areas, and improve teenagers' art appreciation ability [11].

6   Enhance the Spirit of Innovation and Exploration

Art teachers in primary and secondary schools should have a positive spirit of innovation and exploration. "New curriculum standard" points out in the curriculum design idea that we should strengthen the comprehensiveness and exploration of the curriculum, and give teachers more space while ensuring the stipulation, "so that teachers' teaching activities are flexible, more active and creative." As the fine arts discipline has great flexibility, practicality, innovation and humanity, teachers need to have the spirit of innovation and exploration, in order to cultivate students' innovative thinking and innovation ability in the teaching process [12]. The spirit of innovation and exploration is the prerequisite for the development of curriculum resources, including the development and utilization

of school-based curriculum, internal and external curriculum resources and information resources, which requires primary and secondary school art teachers to actively participate in the research of northeast national folk art, Collect, sort out, summarize and summarize the contents and forms that are in line with the development and utilization in primary and secondary school art education, and apply them in art teaching activities in an innovative way to enrich the teaching contents and methods. With the joint efforts of schools, teachers, parents, students and the community, we have developed a variety of school-based curriculum with the characteristics of local folk art, so as to promote the continuous development of art education in primary and secondary schools [13].

6.1   Enrich the Content of Art Teaching in Primary and Secondary Schools

Enrich the basis of art teaching content in primary and secondary schools, so that students can boldly express their feelings and understanding through modeling performance activities. The field of "design and application" emphasizes on training art skills and mastering art materials and tools, showing innovative thinking and creativity, and reflecting the functionality of art works [14]. The field of "appreciation and comment" enables students to feel artistic charm, express their aesthetic feelings, and cultivate positive attitude and values of life through art learning activities. The field of "synthesis and exploration" enables students to master other comprehensive knowledge through the study of art knowledge and skills, and learn to apply them in study and life, so as to cultivate students' comprehensive exploration ability and innovative practice ability. From the historical origin to the natural environment of growth, from the content of art form to religious belief and totem worship, from aesthetic emotion to national spirit and culture, from production process to craft skills, northeast national folk art can be fully developed and utilized in the art education of primary and secondary schools in this region, so as to enrich the art teaching content, So that the four learning areas can be further improved and in-depth research [15].

6.2   Improving the Teaching Methods of Fine Arts in Primary and Secondary Schools

Folk art contains special artistic features and cultural connotations. When it is developed and utilized in art education in primary and secondary schools, flexible and appropriate teaching methods should be adopted to organize teaching activities. First, guide the students to study the national folk art independently. Heuristic teaching is used to stimulate students' interest in learning, encourage students to actively participate in national folk art activities, enhance students' ability of autonomous learning and inquiry learning, and correct their learning attitude towards national folk art. Second, because the northeast national folk art is gradually produced in people's production and labor, most of the works condense the hardworking and wisdom of the working people, and need to cooperate with each other and constantly explore and study. Therefore, the use of cooperative learning teaching methods and learning methods will be more conducive to the study and exploration of national folk art, but also cultivate students' team spirit. Third, the use of vivid and interesting teaching methods for pre class introduction and teaching activities, to create a national folk art learning situation, such as games, visits, interviews,

movies, videos, etc., can stimulate students' innovative thinking and imagination, express aesthetic feelings. Fourth, we should strengthen the development and utilization of curriculum resources and information resources of national folk art both inside and outside the school, and actively research and develop school-based curriculum. It is necessary to carry out interdisciplinary exploration, break through the closed state between the original disciplines, improve students' comprehensive exploration ability in the process of comprehensive learning, so that students' art learning is not constrained by textbooks. The development of school-based curriculum needs the joint efforts of schools, teachers, students and communities, which will help students deepen their understanding of local folk art in the process of curriculum research and development. This way is more research and development, cooperative, exploratory and independent.

6.3 Improving the Evaluation of Art Teaching in Primary and Secondary Schools

Art teaching evaluation, teaching goal and teaching behavior constitute a complete teaching activity. Teaching evaluation plays an important role in teaching activities [16]. Due to the particularity of art discipline, its teaching evaluation is more flexible and rich. On the one hand, it can promote the effective use of national folk art in teaching activities and improve the evaluation methods. On the other hand, it can also improve the teaching level of primary and secondary school art teachers and enhance students' learning ability. The northeast national folk art has unique characteristics in shape, line, color, artistic symbol and aesthetic emotion. The national history and culture it contains is also an important part of Chinese civilization [17]. Therefore, when evaluating the teaching of northeast national folk art, we should fully consider its richness, diversity, aesthetics, practicality and humanity. We should not only evaluate the students' homework from various angles, but also involve and pay attention to the students' learning attitude, learning ability, emotion and values of national folk art. In the process of evaluation, various evaluation methods, such as individual, group and so on, are encouraged, such as student self-evaluation, mutual evaluation, teacher evaluation and discussion. Evaluation results can be scores, grades or comments, or the combination of comments and grades.

7 Conclusion

Folk art is an important part of Chinese traditional culture. Its rich and colorful content and diversified forms provide inexhaustible creative inspiration for modern environmental art design. The rich cultural connotation of traditional folk art is still applicable to modern environmental design. The process of integration should not only stay on the surface form, but also pay attention to its internal traditional spiritual and cultural connotation. Modern environmental art design absorbs the essence of form, form, pattern and color from folk art. Modern environmental designers should combine the aesthetic tendency of contemporary people, the integration of tradition and modernity, create new vitality, create excellent art works that conform to the progress of the times, add new artistic charm to modern environmental art design, and promote the development of traditional folk art.

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