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Application of Cloud Computing Technology to Construct China-ASEAN Folklore, Sports and Cultural Education Resource Management Platform

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Abstract With the development of Internet technology, cloud computing provides a new way to integrate sports and cultural resources. China-ASEAN folk sports and cultural resources are rich but scattered, and an effective management platform is needed to promote educational exchange and inheritance. This study constructs a China-ASEAN folklore sports culture education resource management platform based on cloud computing technology, which aims at integrating regional folklore sports culture resources and enhancing the teaching effect. The platform is constructed through the four-layer architecture of cloud computing, and the design of five functional modules, namely, administrator module, teacher's world, physical education teaching, physical education learning and student's world, is completed. The experimental results show that: compared with the traditional platform, the resource management efficiency of this platform is increased by more than 45%; in the teaching application, the average score of the students who mastered the folklore sports culture using this platform is increased to 76.03, which is significantly higher than that of the traditional teaching class, which is 69.83; the questionnaire survey shows that 91.95% of the teachers and 90.46% of the students think that this platform can increase the interest in learning sports culture. . The study proves that the resource management platform for folklore sports culture education based on cloud computing technology can effectively improve the utilization rate of resources and the quality of teaching, and provides a new way to promote the inheritance and development of China-ASEAN folklore sports culture.

Index Terms Cloud computing technology, China-ASEAN, folklore sports culture, educational resources, management platform, teaching application

I. Introduction

ASEAN countries are important countries along China's “Belt and Road” construction, including Vietnam, Laos, Sukhumvit, Myanmar, Thailand, Malaysia, Indonesia, the Philippines, Singapore and Brunei. Doing a good job in the work of people-to-people communication can help realize the three goals of the international community: community of interests, community of responsibility and community of destiny [1]. People-to-people communication focuses on mutual understanding and mutual respect of culture, including history, language, religion, customs and other social life of folk cognition and exchange, in which folk sports and cultural exchanges are one of the important aspects of the work of China and ASEAN in recent years of people-to-people communication [2]-[4]. Folk sports as a culture closely related to customs and religion, with folk activities and sports as the form of expression, regulating the people's behavior, language and psychology, is the most vital and dynamic means and ways to inherit the national culture [5]. And folk sports culture is a series of cultural phenomena formed in the process of inheritance, dissemination and development of folk sports [6]. Therefore, the promotion of folk sports and cultural exchanges can promote China-ASEAN cultural exchanges.

The history of cultural exchanges between China and Southeast Asia is more than 2,000 years, and in the process of long-term exchanges, China and ASEAN have formed some common and similar cultures, but due to the differences in politics, economy, culture, etc., as well as the impact of epidemics, there are some practical dilemmas in the cultural exchanges of folklore sports [7]-[9]. The living nature of folk sports has a low degree of adaptability to museums in terms of space and carrier, while ethnic sports, as an important part of physical education resources, have prominent storage expansion problems in digital platforms such as the ASEAN Cultural Network, in which the service framework is difficult to meet the needs of effective teaching and all-round dynamic presentation [10], [11].

Therefore, the necessity of constructing a China-ASEAN folk sports culture education resource management platform is embodied, which not only enriches the physical education resources, but also protects and inherits the folk sports culture.

With the rapid development of the Internet and information technology, cloud computing has gradually become a hot topic in all walks of life, especially in the field of education, cloud computing technology has brought revolutionary changes to educational resource management. Traditional educational resource management platforms are usually based on physical servers and local storage devices, which face many challenges, such as resource hotspots that are difficult to meet the demand and data management difficulties [12]. The emergence of cloud computing provides a brand new solution to solve these problems. First of all, cloud computing provides highly scalable storage and computing capabilities as well as efficient data processing and management functions for educational resource management, unifies and manages a large number of teaching and learning resources in educational institutions, achieves resource sharing and connectivity, and provides customized educational services for teachers and students [13]-[16]. It is these advantages that provide a reference for cloud computing to build a resource management platform for China-ASEAN folklore sports and culture education.

China and ASEAN countries have a long history of cultural exchanges, and folk sports, as an important part of traditional culture, carry rich historical and cultural connotations. With the in-depth development of China-ASEAN relations, exchanges and cooperation between the two sides in the field of folklore sports and culture have become increasingly close. However, at present, China-ASEAN folklore sports and cultural resources show a fragmented distribution state, lack of systematic integration and effective management, resulting in low utilization of related educational resources and limited teaching effect. Traditional sports and cultural education resource management methods have problems such as difficulty in resource sharing, slow updating speed, poor interactivity, etc., which are difficult to meet the needs of modern sports education. Cloud computing technology, as a new generation of information technology, provides a new technical path to solve the above problems by virtue of its powerful data processing capability, resource sharing capability and flexible scalability. Cloud computing is able to realize on-demand service of computing resources through resource virtualization and dynamic allocation, which significantly improves resource utilization and reduces management costs at the same time. Applying cloud computing technology to folklore sports and culture education resource management not only realizes centralized storage and efficient sharing of resources, but also promotes interaction and communication between teachers and students and improves teaching quality. Based on the four-layer architecture of cloud computing technology, this study constructs the China-ASEAN Folklore Physical Education and Culture Education Resource Management Platform, which includes five functional modules: administrator module, teacher's world, physical education teaching, physical education learning and student's world. Through this platform, efficient collection, storage, intelligent retrieval and online education of folklore sports culture resources can be realized, and a digital bridge can be built for the inheritance and development of China-ASEAN folklore sports culture. This study firstly analyzes the system structure of cloud computing technology and clarifies its application value in educational resource management; secondly, it designs the functional architecture of the educational resource management platform for sports culture in detail, including the specific functions and interrelationships of each module; subsequently, it verifies the advantages of the platform based on cloud computing technology compared with the traditional platform in terms of response time, resource load and management effect through comparative experiments; finally, the Finally, the platform is applied to actual teaching, and its practical value in improving the quality of physical culture teaching is evaluated by comparing the teaching effect and user satisfaction. The innovation of this study is to combine advanced cloud computing technology with China-ASEAN folklore sports and culture education, which breaks the limitations of traditional educational resource management and provides a new model for regional sports and culture exchange and cooperation. The research results can provide theoretical basis and practical reference for promoting the digital protection, inheritance and innovative development of China-ASEAN folk sports culture, and provide reference for the construction of educational resource management platforms in similar fields.

II. Cloud computing architecture

Cloud computing technology [17]-[19] is an online computing model based on the Internet, which is able to share various types of software, information, etc. of the network for the users through the devices accessing the network. In a narrow sense, cloud computing technology is a model of infrastructure interaction. The network that collects all kinds of resources is called “cloud” structure, and service providers build large-scale computing and data centers on the cloud to provide scientific computing, data storage and other services to external users according to the billing or free of charge, such as Amazon's data warehouse. In a broad sense, cloud computing technology also includes other arbitrary services related to IT, software, and networks. Service providers and resource providers establish server clusters on the cloud to provide hardware rental, online services, etc. for external users, typically

such as Google online applications. Cloud computing technology architecture is shown in Fig. 1, which is divided into four layers as follows.

(1) SOA building layer

Fully known as service-oriented architecture, this layer is a component model. It uses service interfaces to realize the interaction of resources and users independently of each other, i.e., the underlying infrastructure or operating platform is transparent to the upper layer services. This low-coupling interface can improve the flexibility of the platform, even if the service structure or hardware facilities change, the interface can still be used. SOA building layer through the interface can be realized through the registration of the interface, find, access and other services.

(2) Management middleware

This part is mainly divided into 4 main modules. Among them, the user management part mainly realizes the management of user information, environment configuration and billing and other functions. The task management part mainly accomplishes image deployment and task scheduling related functions. Resource management is responsible for monitoring the resources, fault monitoring and so on. And security management is responsible for identifying identities, granting permissions and other types of integrated protection. This level plays the role of the top and bottom in the whole.

(3) Resource Pool

Cloud computing uses mature virtualization technology for encapsulating resources. The main function of the resource pool layer is to ignore the heterogeneity of the actual resources, the process of virtualization of various types of resources, and ultimately, the cloud platform will be the underlying physical resources abstracted into the form of computing, storage, network and other resource pools. For the various types of needs put forward by the user, through the mapping mechanism of the above middleware for its allocation of reasonable virtualization resources, to achieve the function of on-demand services.

(4) Physical Resource Layer

This layer is used to integrate physical resources, which contains various hardware infrastructures distributed in the network, such as servers, storage, network facilities and so on.

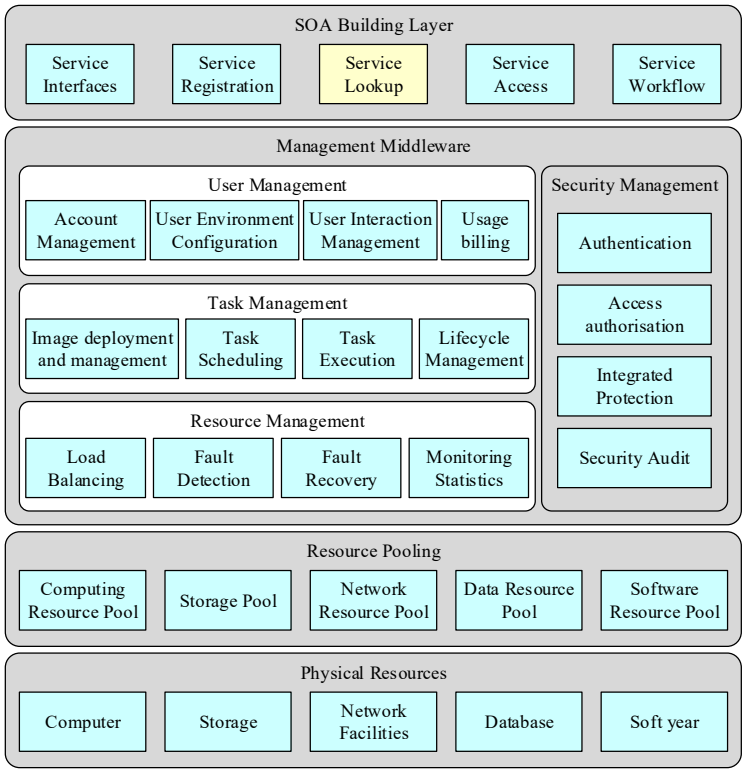

Figure 1: Cloud computing technology architecture

III. Establishment of a resource management platform for physical culture and education

This section proposes the construction of a China-ASEAN folklore sports and culture education resource management platform based on cloud computing technology in order to integrate regional folklore sports and culture resources and promote the development of sports and culture education. The sports culture education resource

management platform is based on the fact that the current development of existing university sports websites and the construction of related sports culture resources cannot meet the needs of current school sports teaching work.

The overall functional structure of the physical culture education resource management platform based on cloud computing technology is shown in Figure 2, including five parts: administrator module, teacher's world, physical education teaching, physical education learning and student's world.

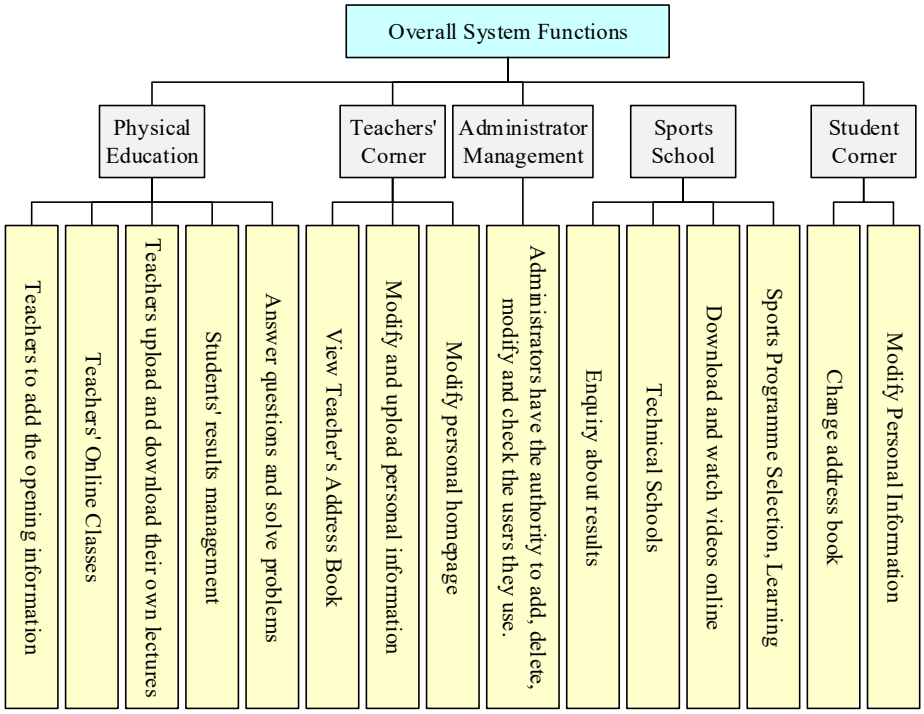

Figure 2: Platform overall functional framework

(1) Administrator Module

The administrator controls and manages the information resources of China-ASEAN Folklore Sports Culture for the physical education teachers and students participating in the whole platform. The overall situation of physical education teachers and students is managed on the platform, and the specific situation of teachers and students involved in physical education is grasped in a timely manner, so that the further development of physical education teaching program has a certain guiding effect. The function of personnel management is that when the administrator logs into the platform, he/she can manage all the users using the platform, including adding new users, deleting users, modifying user information and querying users.

(2) Teachers' Corner

The Teacher's Corner is a platform for PE teachers to design and arrange PE classroom teaching, carry out the teaching of China-ASEAN Folklore and Sports Culture as well as the management of PE teaching, and it is also a platform for teachers to interact with students before and after PE teaching. It is also a platform for teachers to interact with students before and after PE teaching. By describing relevant information about PE teachers, it can enable students to understand more about China-ASEAN folklore and sports culture. The Teachers' World can also promote business exchanges among physical education teachers, including sharing teaching tips and experiences, mutual learning and improvement, etc., so that physical education teachers can continue to innovate their teaching ideas in teaching, according to the specific conditions of individual students, so that they can teach according to their aptitude and treat them differently.

(3) Physical education

Physical education teaching is mainly for physical education teachers to open the course information, student performance management, Q&A, online explanation and a series of functions. Among them, the courses mainly focus on China-ASEAN folk sports, including a variety of sports, such as China-ASEAN Dragon Boat, China-ASEAN Wushu, rattan ball and other sports that are currently of great interest to students. Students can grasp the content of this semester's sports courses at a glance through the information provided, and watch related resource videos to understand the origin of sports culture. In addition, through the online explanation function, the distance between teachers and students is shortened, so that the school physical education classroom has been well extended in

after-school training, and physical education teachers can provide students with more and more abundant electronic information or multimedia libraries related to China-ASEAN folk sports related to sports competitions, physical exercise and sports health care, etc. Through the online explanation function, the distance between teachers and students is shortened, so that the school physical education classroom can be extended after-school training.

(4) Sports Learning

During the learning process of China-ASEAN sports culture, students choose the sports programs according to their interests. Viewing the related learning resources online through the network is very helpful for consolidating and reviewing to improve the sports culture and sports skills, and it can also guide students how to carry out extracurricular physical exercise. Through the online guidance of teachers and online correction of practice tasks, it can promote students' motivation to learn and encourage them to participate in China-ASEAN folklore sports, thus laying a solid foundation for lifelong sports learning. Therefore, the sports learning is mainly set up for a series of functions such as students' sports program selection, results inquiry, network online test, checking related resources, information submission of homework, online teacher guidance, online teaching correction status inquiry and so on.

(5) Student Corner

The Student Corner unifies the management of all students' basic information. After logging into the platform, students can change their address book and related learning information according to their needs. In the Student Zone, students can personalize their personal information, create groups of related sports, use it as a platform to introduce their favorite sports, and communicate with classmates and teachers about their knowledge of sports or sports network resources, so that students do not only stay in the sports classroom to communicate and learn, but also extend and expand the sports classroom. Students can not only keep abreast of their exams through the results management section, but also appeal to teachers in case of doubt.

IV. Testing of the educational resource management platform for folklore, sport and culture

In order to verify the effectiveness of the folk sports and cultural resource management platform based on cloud computing technology, it is tested in comparison with the traditional online management platform. A cluster scenario of Web applications is simulated, and its performance is evaluated by response time and resource load indicators. The resource allocation cycle set in this paper is 3 minutes, and the upper and lower load thresholds for dynamic scaling are set at 70% for the upper limit and 30% for the lower limit.

Figure 3 shows the results of comparing the average response time between the traditional platform and the platform in this paper. As can be seen from the figure, in the initial stage, the difference between the traditional platform and this paper's platform is not significant because the load threshold is in the normal range (greater than the lower limit value and less than the upper limit value in the interval). However, when the load is greater than the upper limit, the cloud computing resource allocation is initiated to obtain new resources from the resource pool to join the cluster, which shares the pressure and thus reduces the load and effectively ensures the average response time to guarantee the quality of service. On the other hand, traditional platforms have a gradual increase in response time due to the increasing load, which directly affects the user experience and reduces the quality of service.

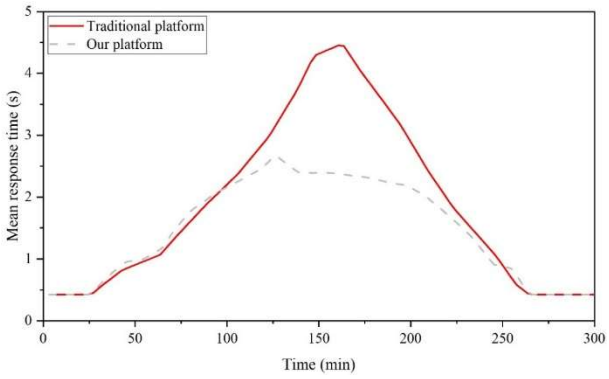

Figure 3: Mean response time comparison results

Fig. 4 shows the results of resource load comparison between the traditional platform and this paper's platform. From the figure, it can be seen that in the initial state, since the load is less than the lower limit (30%), this paper's platform will shrink the cluster size by recycling resources to increase the load of the cluster and thus improve the resource utilization. Traditional platforms, on the other hand, have a low overall resource utilization rate because

the load is always at a low level. As the load increases, the platform is the first to reach the upper load threshold (70%). From the resource pool to obtain new resources to expand the cluster size to share the pressure, when the load returns to the normal range (greater than the lower limit, less than the upper limit), the cluster stops expanding, as the load continues to increase, the load again exceeds the upper limit (70%), the expansion of resources and start again, this process has been repeated so that the figure opens the cloud computing resource allocation situation appears jagged fluctuations. The traditional platform, as the load increases, the resource load continues to increase until it reaches the limit, and all the services appear to be fake dead and unresponsive. Subsequently, as the load decreases, when the load is less than the lower limit (30%), the resource recovery policy is activated in this paper to maintain the resource load of the cluster by recovering the resources to improve the resource utilization. This process can also be seen in the figure as the load continues to decrease with jagged fluctuations. In contrast, the resource load of the traditional platform continues to decrease and the resource utilization also decreases. It can be seen that the platform in this paper not only improves resource utilization significantly compared with the traditional platform, but also ensures a good user experience.

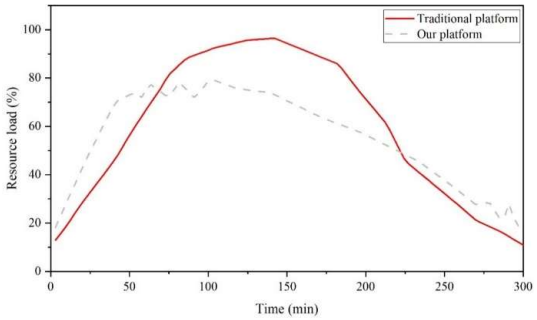

Figure 4: Resource load comparison results

This subsection verifies the operation effect of the folk sports and culture resource management platform based on cloud computing technology, and the experimental environment and parameters are unified and standardized in order to guarantee the reasonableness and effectiveness of the experimental testing effect.

Compare and contrast the running effect of the traditional platform and the sports culture education resource management platform based on cloud computing technology and record it. The platform's resource management of folk sports and culture education is divided into four aspects: resource collection, resource storage, intelligent retrieval and online education. The experimental results of the management effect of the traditional platform and this paper's platform on China-ASEAN folklore sports and culture education resources are shown in Figs. 5 and 6, respectively.

Observing the two figures, it can be seen that during the experimental process, the four core folklore sports culture management items in the platform are tested respectively, and the management effect on the core items is recorded. Observing the detection results, it can be seen that relative to the traditional management platform, the detection curve of the physical culture education resource management platform based on cloud computing technology proposed in this paper can reach more than 90% for folklore sports and culture resource collection, resource storage, intelligent retrieval, and online education, but the highest value of the detection results of the traditional platform can only reach 45%, which proves that the physical culture education resource management platform based on cloud computing technology is is significantly better than the four detection curves of the traditional method and fully meets the research requirements.

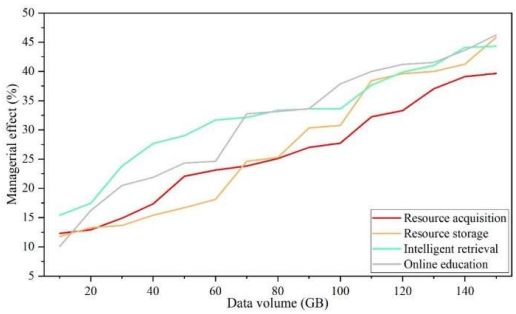

Figure 5: Traditional platform management effect results

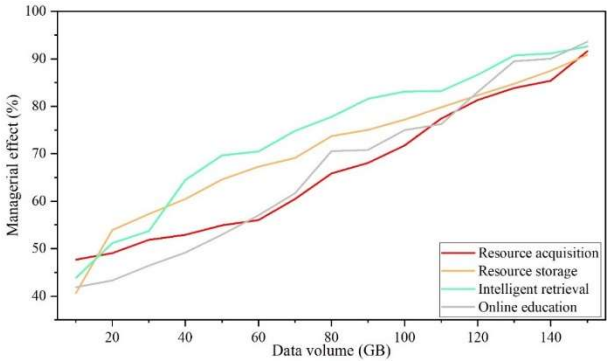

Figure 6: Our platform management effect results

V. Application of the resource management platform to the teaching of physical culture

In this section, a total of 60 students in Physical Education 1 and 2 classes in the class of 2023 of a sports academy college were used as research subjects. Before teaching, a test of mastery of China-ASEAN folklore and sports culture was conducted, with a full score of 100 points, and students in the two classes had the same level of mastery of China-ASEAN folklore and sports culture. The two classes were taught with the same content, but in different ways: class 1 was taught in a traditional mode with a variety of contents, and class 2 was taught with the help of the platform of this paper. The teaching period is from March 7 to June 7, 2024, and the mastery of China-ASEAN folklore and sports culture of the two classes is compared at the end of the teaching.

Figure 7 shows the changes in the mastery level of China-ASEAN folk sports culture before and after the teaching of the two classes. From the data in the figure, it can be seen that the average scores of Class 1 and Class 2 on the mastery of China-ASEAN folklore sports culture before teaching were 63.03 and 63 respectively, and there was only a 1-point difference in the total scores of the two classes. And the significance index before teaching P=0.971>0.05, that is to say, there is no significant difference between the two classes of students' mastery of China-ASEAN folklore sports culture before teaching. At the end of teaching, the mean scores of Class 1 and Class 2 increased to 69.83 and 76.03, respectively, and the use of this paper's platform was more effective in promoting the mastery of China-ASEAN folklore sports culture. After teaching, the indicator of significance between the two classes, P=0.005, is less than 0.05, which is a significant difference. In conclusion, it shows that using this paper's platform has a significant effect on students' mastery of China-ASEAN folklore sports culture.

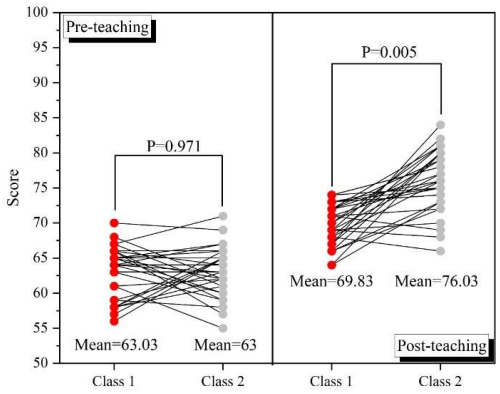

Figure 7: Changes in the degree of mastery of folk sports culture

In this study, 80 university physical education teachers and 300 students from the above mentioned physical education colleges were selected as survey respondents, of which the teachers included full-time teachers and external teachers, and the students covered different grades and majors. The survey was conducted anonymously using random sampling method, and 80 valid questionnaires (teachers) and 300 questionnaires (students) were recovered, with a valid recovery rate of 100%. The content of the questionnaire is mainly the satisfaction evaluation of the platform of this paper, which is investigated in six aspects, namely, improving the interest in physical culture learning, promoting the independent learning of physical culture, expanding the resources of physical culture learning, strengthening the interaction between teachers and students, improving the learning effect, and being superior to the traditional classroom. At the same time, the researcher also selected 10 teachers and 20 students

to conduct semi-structured interviews, each of which lasted 20-30 minutes, mainly asking them about their specific experience of using the platform in this paper, problems encountered, and suggestions for improvement. The interviews were transcribed by audio recording and analyzed by thematic coding.

Table 1 shows the results of the survey on teachers' and students' satisfaction evaluation of this paper's platform. The results of the questionnaire showed that most of the teachers and students believed that the online platform had a positive effect on physical education teaching and learning. For example, 91.95% of the teachers as well as 90.46 of the students believed that the platform of this paper could improve the interest in physical culture learning. However, there are still some teachers (11.23%) and students (11.75%) who indicated that the learning of folk sports and culture under this platform is not as effective as in the traditional classroom.

The interview results further revealed that teachers and students generally believed that the platform of this paper could provide rich learning resources of folklore sports culture and promote independent and personalized learning, but it still needs to be strengthened in terms of teacher-student interaction and learning feedback. Some teachers reflected that online teaching increased workload and lacked corresponding support and incentives. Students, on the other hand, said that online learning requires strong self-discipline and time management skills, and it is sometimes difficult to maintain learning motivation. Interviewees suggested optimizing the interactive functions of the platform, strengthening the monitoring and feedback of the learning process, improving the teaching management and support services, and promoting the organic integration of online education and classroom teaching.

Table 1: The recognition of the platform is evaluated

Evaluation dimension	Teacher recognition (%)	Student recognition (%)
Improve your interest in learning	91.95	90.46
Promote autonomous learning	88.98	94.68
Extended learning resources	90.49	96.19
Strengthen the interaction between teachers and students	89.77	90.03
Improve learning effect	92.62	93.48
Better than the master class	88.77	88.25

VI. Conclusion

This study constructs a China-ASEAN folklore sports culture education resource management platform based on cloud computing technology, and draws the following conclusions through experimental verification and teaching application:

Cloud computing technology provides an effective solution for folklore sports culture education resource management. The test results of the platform show that compared with the traditional platform, this platform achieves more than 90% management effect in all four aspects of resource collection, storage, intelligent retrieval and online education, while the traditional platform is only 45% at the highest.

The platform based on cloud computing technology has better performance. When the load exceeds the 70% threshold, the platform effectively guarantees the service quality through the dynamic resource allocation mechanism, so that the average response time is maintained at a stable level; while the traditional platform continues to climb with the increase of load.

The platform significantly improves the teaching effect. Comparative experiments found that the student classes taught with this platform improved their mastery of China-ASEAN folklore and sports culture from an average of 63 points before teaching to 76.03 points, which is better than the 69.83 points of the traditional teaching classes.

The user satisfaction survey shows that 88.77% of teachers and 88.25% of students think that this platform is better than the traditional classroom, and 92.62% of teachers and 93.48% of students think that the platform can improve the learning effect.

In summary, the China-ASEAN Folklore Sports and Culture Education Resource Management Platform based on cloud computing technology is technologically advanced and practical, providing an innovative model for promoting regional sports and culture exchange and cooperation.

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References

[1] Caiyun, Q. (2019). Thematic Session on People-to-People Connectivity. In Routledge Handbook of the Belt and Road (pp. 403-407). Routledge.

[2] Fornalé, E. (2018). ASEAN people-to-people connectivity: the role of the mutual recognition regime. European Journal of East Asian Studies, 17(1), 31-54.

[3] SOMBOON, V. (2019). CONNECTIVITY AND HUMAN SECURITY IN MAINLAND ASEAN AND CHINA: A CONCEPTUAL. China's Rise In Mainland Asean: New Dynamics And Changing Landscape, 7.

[4] Tian, Z. (2025). Comparative study on the Connotation of Traditional Sports Culture China-ASEAN Nationals. Frontiers in Humanities and Social Sciences, 5(1), 34-38.

[5] Yin, W., & Fang, Y. (2023). Concepts and Origins of Ethnic Sports, Folk Sports, and Traditional Sports. Frontiers in Sport Research, 5(8).

[6] Zhang, J. (2017). Folk sports culture heritage and development prospects. In 2016 National Convention on Sports Science of China (p. 01025). EDP Sciences.

[7] Li, N. (2013). Research on Integration Development Modes of China-ASEAN National Sports Cultures. International Journal of Computer Science Issues (IJCSI), 10(2), 248.

[8] Shuto, M. (2018). Patterns and views of China's public diplomacy in ASEAN countries: Focusing on Confucius Institutes. Journal of Contemporary East Asia Studies, 7(2), 124-148.

[9] Wang, C., Mohamed, N., & Hashim, G. R. (2023). China-Malaysia Cultural Exchanges under the Belt and Road Initiative: Literature Review from 2018 to 2023. International Journal of Advanced Research in Economics and Finance, 5(3), 26-36.

[10] Zhang, Z. L., Zhang, M. Y., & Li, N. (2015, May). China-ASEAN community sports construction of cooperation. In Sports Engineering and Computer Science: Proceedings of the International Conference on Sport Science and Computer Science (SSCS 2014), Singapore, 16-17 September 2014 (Vol. 1, p. 203). CRC Press.

[11] Chudam, W. (2024). The development of an indicator model for administrative management of faculty of physical education Thailand national sport university the road to a sport learning organization in ASEAN. Edelweiss Applied Science and Technology, 8(4), 542-552.

[12] Zhu, L., Zhuang, L., & Li, C. (2024). Digital teaching resource management system for higher education. Engineering Reports, 6(12), e13008.

[13] Sun, N., Li, Y., Ma, L., Chen, W., & Cynthia, D. (2019). Research on cloud computing in the resource sharing system of university library services. Evolutionary Intelligence, 12, 377-384.

[14] Wang, C., & Wang, D. (2023). Managing the integration of teaching resources for college physical education using intelligent edge-cloud computing. Journal of Cloud Computing, 12(1), 82.

[15] Li, W., & Li, W. (2024). Innovation of dynamic management model for teaching resources of business administration in cloud computing environment. Journal of Computational Methods in Sciences and Engineering, 14727978251318994.

[16] Bramhe, M., & Pimple, J. (2025). Optimizing Learning Environments: A Critical Review of Unified Cloud-Based Platforms for Educational Resource Management. Cloud Computing for Smart Education and Collaborative Learning, 173-187.

[17] Tantan Liu. (2025). A Secure Storage Method for Enterprise Financial Data Based on Cloud Computing Technology. Computer Informatization and Mechanical System,8(2),67-70.

[18] Jiaxing Wei. (2024). The Role of Cloud Computing Technology in Environmental Protection. International Journal of Management Science Research,7(4),

[19] Zhou Shengtao. (2024). Research on the Application of Big Data and Cloud Computing Technology in Smart Campus. Journal of Electronic Research and Application,8(5),6-11.