Design of Popular Science Knowledge Sharing Platform Based on Distance Learning

Wang Peng[1], Sheng Jing[2], Chen Guosheng[3], Jiang Gending[4], Wang Hui[5, *]

[1]School of Computer and Information Engineering, Central South University of Forestry and Technology, Changsha, China

[2]School of Computer and Information Engineering, Yongzhou Vocational and Technical College, Yongzhou, China

[3]School of Business, Hunan Institute of Technology, Hengyang, China

[4]School of Economics and Management, Hunan Institute of Communications Engineering, Hengyang, China

[5]School of Electrical and Information Engineering, Hunan University of Communications Engineering, Hengyang, China

Email address:

chenguosheng04@163.com (Chen Guosheng), 140708@qq.com (Wang Hui)

[*]Corresponding author

Abstract: Traditional popular science knowledge sharing platform, because the data update in the sharing platform is not timely, there are malicious advertisements in the platform, and the number of users in the sharing platform is limited. Once the number of users is higher than the set value of the platform, the situation of being stuck and unable to get into the platform will occur, which fails to meet people's expectations for distance learning. Therefore, in order to facilitate more learners to carry out distance learning on the Internet platform, learners will not be restricted by age, identity and region through distance learning, and further explore its daily work flow by designing the structure of scientific knowledge sharing platform for distance learning. This paper divides the popular science knowledge sharing platform based on distance learning into two aspects: platform structure and platform workflow. The structure design of knowledge sharing platform includes resource library module, resource operation service module, external connection and output of data resources. Finally, in order to maintain the operation of the popular science knowledge sharing platform based on distance learning, each module has its own unique functions. This paper designs a simple and efficient distance learning scientific knowledge sharing platform with process task management as the core, process instance management, process privacy management, process responsibility management and other functions.

Keywords: Distance Learning, Internet, Resource Data, Knowledge Sharing Platform, Workflow Management

1. Introduction

At present, the Internet has settled in thousands of households. Not only can they transmit information through pictures and text, but they can also use video to spread information. On the one hand, the form of video playback is real-time, and it will not cause some unnecessary misunderstandings to some readers; the way can increase the viewer's understanding of the video content to a certain extent, so online video has become an indispensable learning method in the field of distance learning education [1].

This new approach to distance learning has relieved learners of the stress and trouble of learning life, and has successfully lifted the limitations of the learner's identity. Distance learning will not limit the age and identity of the learner, nor will it cause the learner to lose learning opportunities due to regional barriers, reduce the pressure and trouble of the study life for the learner, and also successfully reach the limitations of the learner's identity. It is therefore very popular [2]. In the context of the above research, this paper designed a new science knowledge sharing platform based on the structure and operation workflow of the distance learning science knowledge sharing platform, and verified the effectiveness of the platform through experiments [3].

2. Structure Design of Popular Science Knowledge Sharing Platform Based on Distance Learning

The traditional popular science knowledge sharing platform is composed of self-built infrastructure. Because its server occupies a lot of memory, when the shared platform carries more than the set number of users, it will freeze and automatically exit the platform. Some illegal personnel will use platform vulnerabilities to steal shared resources in the platform, and cannot guarantee the intellectual property rights of the shared platform resources [4]. In order to improve this problem, this paper designs a new popular science knowledge sharing platform based on distance learning. The platform structure is composed of resource infrastructure module, resource operation service block and resource access output [5].

The external resources and built-in resources of the database constitute the resource infrastructure module. The core of the resource infrastructure module designed in this paper is the cloud computing resource processing method. It can logically classify all the entered data on the popular science knowledge sharing platform [6]. There is a logic layer and presentation layer in the resource infrastructure block. The advantage of the cloud computing resource processing mode is that it can identify and analyze the data, quickly determine the data type, use the least space and good time to analyze the corresponding data and finally classify the storage [7].

The logical layer of the resource infrastructure module is composed of many different sub-layer modules. Each sub-layer module has a unique function to facilitate learners' distance learning. After a lot of data investigation, all knowledge resources are related and there is no hierarchical relationship [8], so all sub-layers are in a cooperative relationship with each other in order to form a complete resource infrastructure block. The task of the presentation layer is to extract and express resources by accepting remote call signals from learners [9].

The resource operation service module is the main module of the popular science knowledge sharing platform that regulates distance learning. Its main task is to monitor the internal operation of the knowledge sharing platform in real time to prevent outsiders from stealing knowledge resources. Scheduling instructions and handling some learners' opinions on this knowledge sharing platform. The resource operation service module is mainly composed of a service application layer, a security layer and a data layer. The security layer is to ensure that the knowledge sharing platform is in a safe environment during the distance learning process [10].
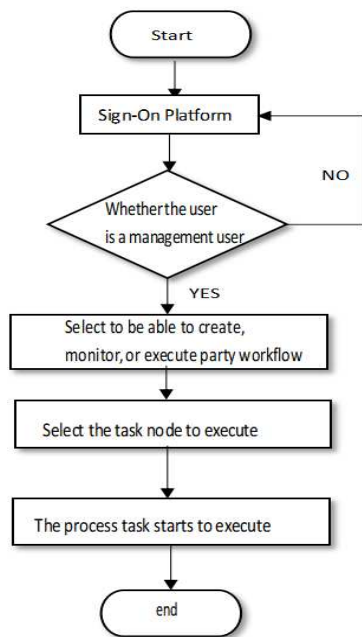
The security layer provides a secure information interaction environment for the browser and the knowledge sharing platform. The popular science knowledge sharing platform detects whether the remote learning browser environment is safe through the application layer, and the browser detects whether the data resources inside the sharing platform are safe through the application layer. The service application layer mainly provides learners with subscription and query services for some paid resources in the distance learning process [11]. At the same time, when the new functions of the popular science knowledge sharing platform for distance learning are updated, the service application layer will conduct surveys according to the learning tendencies of different learners, make reasonable feedback, and realize the research and development of new functions. The data layer of the popular science knowledge sharing platform based on distance learning has an outstanding improvement over the data layer of the traditional sharing platform by increasing the verification of data resources. The data layer of the resource application service block also validates the collected learning resource data, prevents some information that does not have scientific recognition from entering the formal sharing platform, disrupts the learning cognition of distance learners, and increases the distance learning-based popular science knowledge sharing Platform reliability [12].

The resource access module refers to collecting learning resources in different aspects through multiple channels, and then based on the distance learning popular science knowledge sharing platform, the resources are legally accessed into the sharing platform, broaden the domain of the knowledge sharing platform and absorb the resource infrastructure block [13]. Compared with the traditional science knowledge sharing platform, the sharing platform in this article sets up an additional resource access terminal. This resource access terminal is to ensure the real-time and high efficiency of the shared platform resources. If the application layer collects better learning resources, in this as resources enter the shared platform, the original resources are destroyed through the resource access end [14].
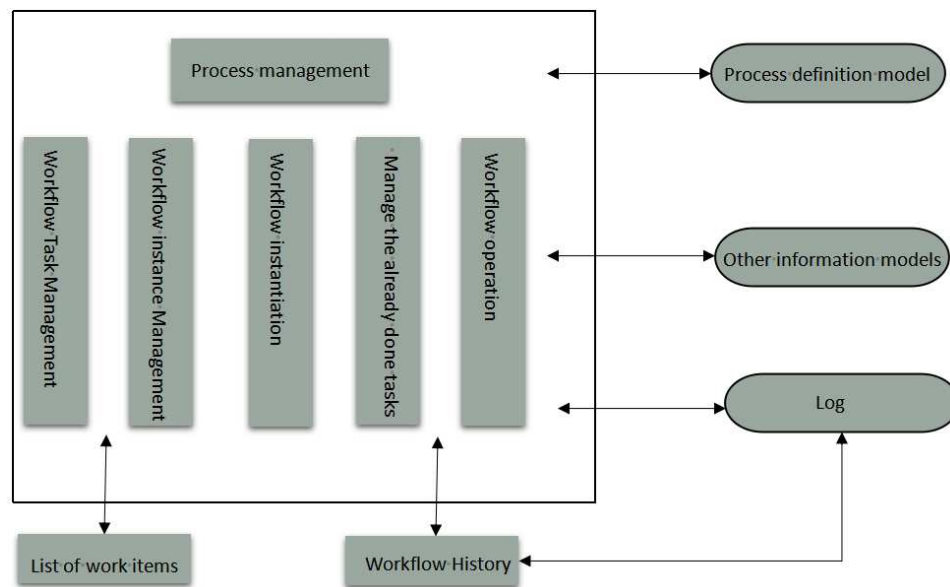
3. Workflow Design of Science Knowledge Sharing Platform Based on Distance Learning

The significance of the knowledge sharing platform is to provide a learning path for some learners who cannot visit the site due to regional and other reasons [15]. Since the traditional knowledge sharing platform uses the recording and broadcasting method to operate, the learning data within the platform may change due to time. Changes occur, which will cause some misunderstandings for learners, so the workflow of the popular science knowledge sharing platform based on distance learning researched and designed in this paper is to build a complete knowledge sharing platform by task management, authority management, instance management and responsibility management. work process. A complete process task execution process diagram is as follows:

Figure 1. *Work flow chart of the popular science knowledge sharing platform based on distance learning.*

In order to improve the problem that distance learning cannot monitor the user status in real time, the process task management of the knowledge sharing platform in this article will enter the task points of this learning in advance before the user starts learning, and these task points will regularly remind the learner to complete Learning tasks, through the recording function, facilitate users to review and summarize. Enhance the platform's sensitivity to keywords. Once keywords appear, you can quickly lock in the direction of resources and reduce the running time of the distance learning knowledge sharing platform. The task management process of the popular science knowledge sharing platform based on distance learning has special working components of its own structure. Special work components can assist the internal staff of the popular science knowledge sharing platform to maintain the platform. Traditional shared platform programmers and distance learning users, platform managers cannot orderly cooperate, but through the task management process designed in this article, these three aspects can collaborate with each other to create a stable running source learning science knowledge sharing platform. The internal levels of task management are as follows:

Figure 2. *Internal hierarchical structure of task management.*

Because of the rapid development of the Internet, data is very likely to be lost and stolen during transmission, and it is related to knowledge resources, and it cannot be simplified. Therefore, the knowledge sharing platform designed in this article adds rights management steps during work, so as to better protect user privacy. The resource records browsed by the user on the popular learning knowledge sharing platform based on distance learning can be set to be visible by themselves, or can be set to be visible to everyone, and any browsing record can also be deleted. This article uses the control model to set a unique logo for each resource that the user has viewed, so that the authority management of the resource is confidential. The marked resources on the popular

science knowledge sharing platform are as if they are locked. Unless the system is automatically released, the attributes cannot be changed. After completing the above operations, if the sharing platform receives the user's command, the popular science knowledge sharing platform based on distance learning will create a process instance that matches the command.

The remote learning science knowledge sharing platform will not only deliver the user's instructions, but also provide the user with the resources that the user wants, and the platform will automatically execute this instance command. Detection, if there is a risk, it will immediately terminate the user's learning on this platform. The command detection

methods adopted by traditional popular science knowledge sharing platforms are Jbpm4, Osworkflow, and Shark. The processing results of these detection command methods are similar, but the Jbpm4 command detection method takes up a lot of memory space, and it will consume a lot of resources and time when running; the Osworkflow command detection method does not support the transaction management mechanism, which results in the platform of this structure being selective for learning resources and not satisfying the learner's satisfaction; the Shark command detection method meets the XPDL specification and is encountered when the knowledge sharing platform is running Failure, need to query the failure statement step by step, wasting a lot of time. Therefore, this article uses Activiti5 as the command detection method because the Activiti5 command detection method can be recognized for multiple data languages and can be identified by the process definition tool. Its advantage is that the adaptation rate with the distance learning science knowledge sharing platform is as high as 95%. In addition, it also has good continuity, and has the ability to connect with resources in various fields of the outside world. If new vocabulary appears in the resource field, the Activiti5 command detection method will actively enter the resource. The Activiti5 command detection method increases the visualization capability of the popular science-based knowledge sharing platform based on propaganda and learning, and alleviates sudden system crashes when the knowledge sharing platform carries too many people. This is not only a simplification of the sharing platform itself, but also a relief to the work of internal developers. The comparison table of specific types of detection methods and functions is as follows:

Table 1. Comparison of the functions of the four user command detection methods.

name	Jbpm4	Activiti5	Osworkflow	Shark
Database persistence	Hibemate	Does not comply with JPA specifications	Use built-in plugins	DODS
Process definition language	BPEL, XPDL	BPMA2 jpDL	Use xml format	Comply with XPDL specification
Support database	Support most databases	Support most databases	Support most databases	Support most databases
Process definition tool	Eclipse graphical plug-in and web designer	Eclipse graphical plug-in and web process designer	Manually write xml	JAWE tool
Open source	Open source	Open source	Open source	Open source
Application deployment	Embedded or standalone deployment	Embedded or standalone deployment	Collection with applications	Embedded
Expand	Scalable	Scalable	Super expandability	Relatively easy to expand
Monitor content	Process definition/instance creation	Various log information of task progress and execution status process, statistical analysis of process data	Part of the process information, complex processes require custom supervision methods	Process definition, instance creation
Transaction management mechanism	JAT-based transaction management mechanism	MyBatis thing management mechanism	Does not support transaction management mechanism	Using JUtm's transaction management mechanism

The task of the responsibility management process is to control the various structural modules of the knowledge sharing platform based on distance learning. Reasonably find the task of each structural block at the fastest speed. The clear responsibility relationship between such structural blocks is very important. If the power and responsibility relationship is not clear, it will lead to users on the popular learning knowledge sharing platform based on distance learning. The resource output speed is slow, and the learning efficiency decreases. Therefore, the path of the internal workflow of the knowledge sharing platform is clear, which can improve the efficiency of the user's task completion and also save the internal memory of the knowledge sharing platform.

4. Experimental Research

4.1. Experimental Purpose

In order to verify the operation effect of the distance learning-based popular science knowledge sharing platform designed and researched in this paper, the experiment is compared with the traditional knowledge sharing platform. In order to ensure the authenticity and scientificity of the experiment, the final evaluation results of this paper integrate the results of the platform user experience perception survey and the computer background calculation of the two factors of the utilization rate of the two platforms within a certain period of time.

4.2. Experimental Process

The specific experiment operation and experiment result analysis of this article are as follows:

(1) Before the experiment, the staff separately tests whether the distance learning popular science knowledge sharing platform and the traditional knowledge sharing platform are smooth, and if there is a failure, repair the loophole in time to avoid affecting the final test results. After the preparation of the experiment is completed, 100 users are randomly selected according to the usage data of the most popular knowledge science learning platform at the moment, and communication is conducted to determine the experience user of the final experiment;

(2) After selecting experimental users, each group will have 10 people to experience the popular science knowledge sharing platform, which will be divided into 10 groups. Each user is required to use the two

platforms for one hour each, and fill in the platform test satisfaction and opinions immediately after use. After the completion of the last one, two staff members will conduct statistics on the spot as part of the final experimental results;

(3) At the same time as the experience of 100 randomly selected test users, calculate the login status of the learning users of the two remote platforms at the same time, and the online learning time is used as another part of the final experimental results;

(4) The on-site staff will randomly select the test results of 100 testers and the test results of computer background statistics to calculate the final score of this experiment

at a ratio of 6 to 4.

4.3. Analysis of Experimental Results

The experimental results in this paper are scientific, combining not only the experience of the learners, but also the public's use of the two different ways of learning knowledge sharing platforms to avoid accidental results. The testers selected for the experiment in this paper are those with learning ability and learning ideas, which avoids the personal test results of zero evaluation and maintains the authenticity of the experimental results. The specific experimental result statistics table is as follows:

Table 2. Two distance learning knowledge sharing platform user test satisfaction questionnaire.

user	Traditional science knowledge sharing platform	Knowledge sharing platform based on distance learning
First group	ordinary	satisfaction
Second Group	Not bad	satisfaction
The third group	Bad review	satisfaction
Fourth group	Bad review	satisfaction
Group 5	good	satisfaction

The statistical experiment result table is as follows:

Table 3. Experimental results.

Type\User	Traditional science knowledge sharing platform	Knowledge sharing platform based on distance learning
Highly praised	64 people	99 people
Number of bad reviews	30 people	1 person
Platform usage rate calculated by computer background	30%	80%

Observing the user experience results of the distance learning popular science knowledge sharing platform and the traditional popular science knowledge sharing platform by comparing the table data, it can be clearly observed that the distance learning popular science knowledge sharing platform designed and studied in this paper has a higher utilization rate than the traditional popular science knowledge sharing platform., And the satisfaction rate is as high as 98%, and the negative evaluation rate is 1%.

The reason for the above results is that the distance learning knowledge sharing platform designed in this paper has a unique resource operation module structure, in which the service application layer and the security layer coordinate with each other, logically collect knowledge resources and processing resources, providing a safe and stable Popular distance learning knowledge sharing platform. In addition, the security layer is a safe data circulation station of two knowledge sharing platforms, which reduces the interference rate of bad information to learners to a certain extent, and creates a safe learning environment for the popular science knowledge sharing platform based on distance learning; on the other hand It is because the work flow of the popular science knowledge sharing platform based on distance learning is properly connected, and the unified management of the control and scheduling of various resources will not occur.

5. Conclusion

Through scientific experiments in this paper, it is further determined that the distance learning-based popular science knowledge sharing platform designed in this paper has a better user experience than the traditional popular science knowledge sharing platform, and learners believe that distance learning-based popular science knowledge sharing platform can be better Absorb knowledge to improve learning efficiency. It is believed that with the continuous upgrading of the Internet, the distance learning method will become the mainstream of the current learning method, and the popular science knowledge sharing platform based on distance learning will be more convenient for the public's learning life with the development of technology.

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Biography

Wang Peng (1986-), born in Hengyang, Hunan Province, Master candidate of School of Computer and Information Engineering, Central South University of Forestry and Technology, research direction: Agricultural Information Engineering.

Sheng Jing (1982-), female, from Lingling, Hunan, Associate Professor and Master of Information Engineering, Yongzhou Vocational and Technical College, research direction: digital media and virtual reality.

Chen Guosheng (1965-), male, born in Changning, Hunan Province, second level professor and doctor of School of Economics and Management, Hunan University of Technology, his research direction is regional economy and tourism management.

Jiang Gen Ding (1999-), MALE, BORN IN ShaoYANG, Hunan PROVINCE, Bachelor DEGREE, Assistant PROFESSOR, School of Economics and Management, Hunan Institute of Communications Engineering, research direction is marketing.

Wang Hui (1983-), born in Changning, Hunan Province, Associate professor and master of the School of Electrical and Information Engineering, Hunan University of Communications Engineering. His research direction is information engineering and entrepreneurship education.