

The Design of Computer Aided System in Chinese and American Mother Tongue Teaching

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Abstract: Language plays an important role in human communication. Mother tongue as the first language occupies a very important position in the education system of various countries. With the rapid development of the world, mother tongue education is not only the use of language, but also the main task is to cultivate students' basic qualities, develop their intelligence, and develop their abilities. This article aims to study the design of computer-aided systems in Chinese and American mother tongue teaching. Based on the analysis of the difficulties in the development of mother tongue education, the comparison of mother tongue teaching between China and the United States, and the performance requirements of the system, the computer-aided system for Chinese and American mother tongue teaching is carried out. Designed and tested the performance of the system. The test results show that the system can still maintain a better response time despite the continuous increase in concurrent access to the system.

1. Introduction

With the development of society, the trend of globalization and diversification will become increasingly obvious and will eventually become an irreplaceable development model in the world. In the process of globalization, it provides us with growth opportunities and promotes rapid economic growth and cultural diversification [1-2]. At the same time, competition at home and abroad is becoming increasingly fierce, the requirements for human resources are becoming more stringent, and the various skills possessed need to be more comprehensive [3-4].

In recent years, the rapid development of computer networks and information technology has gradually penetrated into people's daily life, study, work, communication, and other aspects, causing major changes in the original way of doing things [5-6]. People are beginning to pay more attention to the latest real-time information exchange, and the transmission of information through the network can simply meet people's needs. Therefore, the network naturally plays a necessary and important role in the information transmission of mother tongue education [7-8]. Today, online education is growing at an unstoppable rate across the world, thanks to the large benefits of sharing educational resources, teaching flexibility, and diversified teaching methods. Therefore, online education is one of the most popular teaching methods today, and the education support system has

become a suitable education support assistant [9-10]. Therefore, education is no longer restricted by time and space, and can provide students with personalized education and a high-quality and efficient learning environment.

On the basis of consulting a large number of relevant references, this paper combines the plight of mother tongue education development, the comparison of mother tongue teaching between China and the United States and the performance requirements of the system, and designs a computer-assisted system for mother tongue teaching in China and the United States. The system mainly includes four functions. The modules are system login module, system management module, teacher kinetic energy module, and student function module. In addition, this article also designs the automatic answering algorithm of the system. Finally, the performance of the system is tested to verify whether it meets the requirements of this article.

2. Design of Computer Aided System in Chinese and American Mother Tongue Teaching

2.1 The Dilemma of the Development of Mother Tongue Education

2.1.1 Distinguish mother tongue education and language learning

One of the difficulties in teaching the mother tongue in our country is to equate it with language learning. Mother tongue is lifelong, and language learning is gradual. Mother tongue acquisition is multichannel, ambiguous, and open, but language learning is limited. Native language acquisition is natural and hazy, and language acquisition is conscious and clear [11-12]. A cognitive misunderstanding of school education is to equate language learning with mother tongue learning, believing that language learning can replace mother tongue learning, to achieve the purpose of language application. In fact, language is only a part of our mother tongue. Language learning is a common method and a standard learning method for communication applications. Therefore, we hope that only one language course will be familiar with the mother tongue. This is a serious problem of mother tongue and language learning, and misunderstanding is an unscientific conclusion.

2.1.2 Lack of Proper Native Language Evaluation and Incentive Mechanism

As an important way of evaluating our mother tongue curriculum, the college entrance examination plays an important role in our country's basic education. However, it is clearly unrealistic and difficult to truly distinguish between learning the mother tongue and learning Chinese through school education. The entrance examination of Chinese universities mainly focuses on the knowledge points of memory, reading, and writing, and attaches great importance to the main line of knowledge. Listening and language tests are limited to standard tests and are not included in the formal system of assessment. There is a contradiction between the literacy evaluation system and the curriculum standard system. The scoring system does not have specific listening and speaking standards, and the college entrance examination does not include personal listening and speaking scores. There is no corresponding grading for the investigation of cognitive memory, reading, and writing, and no detailed evaluation feedback on learning results. There is also a "multimodal" phenomenon, for example, when considering writing, written test scores do not meet the specific requirements of the curriculum standards. Under this double standard, students can only do, according to the requirements of the college entrance examination standards, unable to develop their creativity and complete basic literacy.

2.1.3 The Guiding Role of Public Opinion

In addition to school education, the role of media leadership is one of the most important factors affecting mother tongue learning. In social life, the media penetrates all aspects of life. For example, movies and TV series, mobile phones and print ads, commercial stores, radio, newspapers, magazines, public welfare videos, etc., are unknowingly absorbed by people and integrated into their mother tongue system.

2.1.4 Ignore the Humanistic Characteristics of Mother Tongue Education

The development of the mother tongue is the foundation of national development, the chain of cultural prosperity and economic development, the foundation of national development, an indispensable tool of foreign exchange, and an important way to enter and exit the country. At the same time, deepening the cultural identity of the mother tongue is conducive to promoting the unity and friendship of the people, is conducive to cultivating the people's pride, and will become a bridge and bond that supports the country, the country and the people. For individuals, it promotes the healthy development of the individual's body and mind, and helps cultivate a correct outlook on life and values. This is not only the advantage of mother tongue education, but also the most direct manifestation of mother tongue education's emphasis on organicity and humanity.

In recent years, our mother tongue education has been continuously improved, and the national mother tongue level has been greatly improved. Not only that, Chinese is also recognized in many countries in the world. Compared with developed countries, our mother tongue education level still has a long way to go.

2.2 Comparison of Mother Tongue Teaching between China and the United States

2.2.1 Pay Attention to the Unity of Instrumentality and Humanity of Native Language Courses

As the symbolic language of the country, the mother tongue also has its own existence and development. Therefore, to pay full attention to the function of mother tongue teaching is to emphasize the power of personal language abilities and tools. Biology also means enabling learners to master language skills. People use mother tongue teaching to cultivate the spiritual world of learners. This allows learners to master language skills and cultivate an independent and traditional human touch, to learn how to deal with others and learn new things. Go to social life with correct values, outlook on life, and good feelings. As we all know, mother tongue teaching is indispensable in every country and country in the world, so mother tongue teaching is also the best way to inspire and cultivate children's feelings towards the motherland.

2.2.2 Compared with China, American Mother Tongue Teaching pays more Attention to Openness

In American native language education, students recognize that people in classrooms and workplaces in the 21st century have a clear cultural background, and people with different experiences and backgrounds need to work and learn together. In order to fully prepare for the university, future vocational training and life in the technological society, students need to have the ability to collect, understand, evaluate, create, and report information and ideas. Possibility of new research ability to analyze and create a large number of printed and unprinted manuscripts in the form of new and old media. Curriculum views like this are inevitably open and dynamic.

Similarly, teaching Chinese in our country also reflects an open mind. The purpose of Chinese

teaching is to improve the abilities of all students in all aspects, so that they can adapt to the needs of future study, life and work, and keep up with their own development. At the same time, the integrated teaching of Chinese and the communication between other disciplines will inevitably require an open concept of Chinese discipline. However, the Chinese course template is pure oral practice, there is no prescribed practice method, and the content is blank.

2.2.3 Compared with China, Mother Tongue Teaching in the United States has more Specific and Practical Requirements for Students' Ability Development

The latest standards of Chinese and American school textbooks also have some common points in the requirements for student skill development. Both focus on students' reading comprehension, writing skills, oral communication skills, and information integration skills. However, in addition to the above-mentioned core technologies, the curriculum design concept of Sino-American School also attaches great importance to training students' literacy, comprehension, research ability, and multimedia skills. At the same time, school teachers must also prepare for school, future vocational training, and life in a technological society. Learners must have the ability to acquire, understand, evaluate, create, and report news and ideas, as well as new research skills to deal with and answer questions. And has the ability to classify and write a large number of printed and unprinted manuscripts in new and old media. Although all these technologies are managed by "standards", they cannot be regarded as independent technical components.

2.3 System Performance Requirements

2.3.1 Scalability

In order to meet the needs of users for the expansion of the system and the scope of use, the system needs to be constructed from the aspects of functional design, system structure, and management objectives. The system needs to be flexibly expanded to adapt to basic software and hardware development and management upgrades. Research the load balancing mechanism and scalability of the system's software and hardware platforms.

2.3.2 Ease of Operation

The system provides a convenient and intuitive graphical user interface, beautiful and practical interface design, and most importantly, taking into account convenient operations, easy learning, customer habits, and key operating functions.

2.3.3 Security

The security system is usually multi-level and has multilevel protection measures, including system backup, application authorization, firewall, and other protection measures to avoid the leakage of sensitive information or sensitive data, such as debugging the use of system hardware devices. The overall planning of the network at all levels is also a crucial software. A relatively independent security management mechanism is introduced to ensure internal security and processing security, and to avoid unauthorized access to the outside of the system.

3. Experiment

3.1 System Login Module

The user interface is the only way for users to log in. Once the username and password are

entered correctly, the user can log in. If you do not understand this system, you need to enter the basic information in advance. When registering, the user must enter the correct user name and password to log in to the system. Otherwise, you will see the "Enter the correct username or password" message. The user registration flowchart is shown in Figure 1.

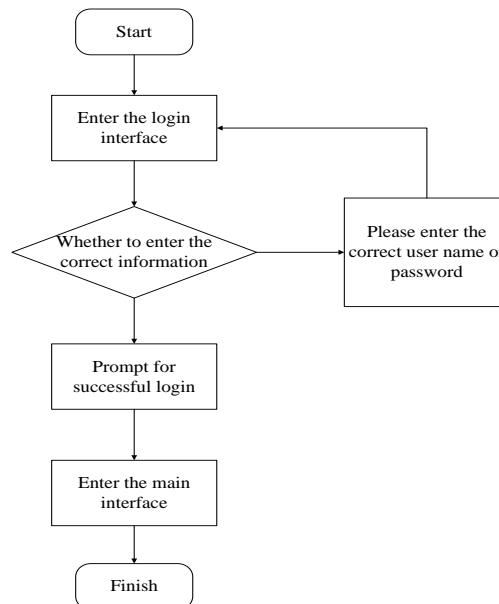


Figure 1: Login system process

3.2 System Management Terminal Module

The system management part contains several subsystems, which mainly integrate the management functions of various basic system information. Among them, user information management is a basic system management subsystem. This article describes the process of mainly using the user management module to realize the module function. User management is mainly carried out after the system administrator logs in. The system administrator adds other users, assigns role permissions, changes passwords, and prepares passwords for other users. Other users can only change the password. Therefore, the following describes the implementation of the entire user management module from the perspective of the system administrator. After the system administrator logs in to the system, please add other users first. The system administrator can group them or add them individually. The plug-in package is imported into the system through Excel data. Excel data has only three fields: teacher ID, password, and role ID, or student study number, password, and role ID. These were added individually by manual input. In the process of adding, the system will verify. If the username already exists in the database, it will return the information to the user and ask them to add it again. If it does not exist, the addition is successful.

3.3 Teacher's Kinetic Energy Module

The teacher-side module mainly operates as a mother-tongue teacher and is the main user of the mother-tongue teaching system. It mainly completes various educational resources, completes students' online behavior and online response control functions. The data management process is mainly based on the Chinese teacher uploading various teaching resources to the server and online management according to their own mother tongue teaching needs. Teaching videos, PPT lesson plans, teaching audio files, text and flash teaching animations, various materials and resource files, etc. inevitably involve the management process of online teaching in the mother tongue. Native

speakers will upload the content of the materials according to the course and store them in a specific place on the server. The system provides space for each user to store their personal data files, personal data can be shared for their own education and training, and the directory structure of the personal data area can be edited as required.

3.4 Student Function Module

Learners can view the course content organized by the teacher and click the link of the specified content title to learn the corresponding teaching content. The default teaching page contains: Course management list: including study group setting, student achievement display, classroom learning, activity statistics. Learning activities: add corresponding learning content and activities to the teaching content. Relevant information allows users to quickly enter the course content of the corresponding category. To learn a course, you can directly click on the course link that you want to enter into the desktop course list.

3.5 Design of Automatic Answering Algorithm

The automatic answering system puts high demands on the information retrieval model in order to quickly respond to user questions. Not only has high requirements for precision and recall, but for the convenience of users, it also reduces the time for secondary recovery. You also need to sort the search results by point. The vector space model determines whether there is a match by calculating the correlation value between the document and the query string, and suggests a suitable box for the partial match.

$$\cos(d_j, q) = \frac{\vec{d}_j \cdot \vec{q}}{|\vec{d}_j| \times |\vec{q}|} \quad (1)$$

$$\cos(d_j, q) = \frac{\sum_{i=1}^r w_{i,j} \times w_{i,q}}{\sqrt{\sum_{i=1}^r w_{i,j}^2} \times \sqrt{\sum_{i=1}^r w_{i,q}^2}} \quad (2)$$

In the formula, $|\vec{d}_j|, |\vec{q}|$ is the modulus of the document and query string vector.

4. Discussion

Table 1: API stress test

	Minimum system response time	Average system response time	Maximum system response time	Measured effect
5000	120	232	498	good
10000	219	312	568	good
15000	454	565	1210	good
20000	975	1300	1642	good
25000	1566	2009	2763	good
50000	2153	2631	3133	good
100000	3097	4031	4985	good

The system uses Apache Jmeter as the test tool, and the core of the test system is the 64-bit Chrome 44.0.2403.157 browser. When users use the system, if the system response time is too long, the user experience will be poor. Under normal circumstances, the system user's tolerance for system response time is within 5 seconds. For this reason, the system uses response time to control

the system performance and can simultaneously access the system by simulating the number of users of different sizes and evaluating the system performance.

API gateway is the system output gateway and system transfer station. Reply directly to the user. Here select the API gateway to control the system performance. Use Jmeter to test the performance of the API gateway and fully understand the system-wide performance.

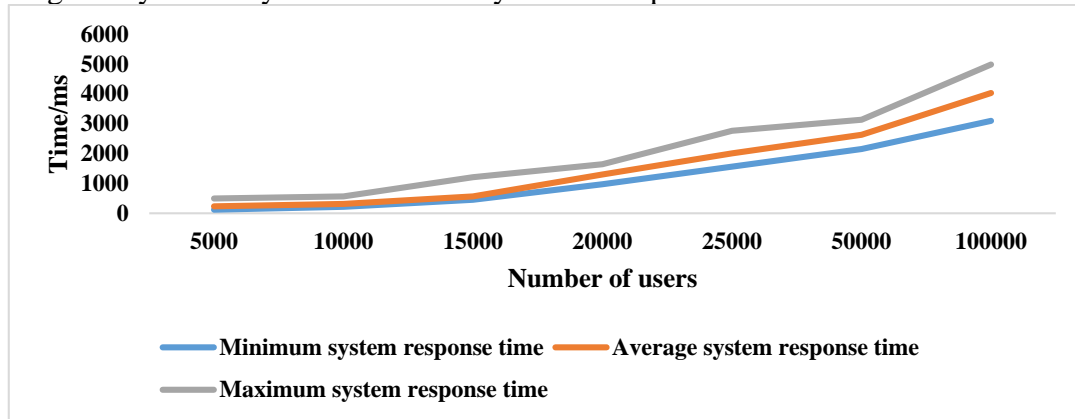


Figure 2: API stress test

The test results in Table 1 and Figure 2 show that although the number of simultaneous access to the system continues to increase, the system can still maintain a better response time.

5. Conclusions

With the rapid development of Internet technology, mobile Internet technology, and multimedia technology, increasingly schools pay more attention to the auxiliary role of the Internet in mother tongue teaching, and improve the efficiency of mother tongue teaching through computer teaching aid systems, stimulate students' interest, and provide more for classroom teaching.

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