

# A Study on Using Computer-Assisted Language Learning to Shape a Real Environment for Learning Chinese as a Foreign Language

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**Abstract.** With the development of technology, more and more technologies are being applied to the teaching of essential Chinese. This study will investigate whether technology can be applied in the process of teaching Chinese as a foreign language, creating a Chinese learning environment through Computer-Assisted Language Learning (CALL), etc. to assist learners in better learning Chinese. CALL can provide learners with a more immersive learning environment through virtual reality, artificial intelligence, online classrooms, and other means. Instead of a teacher-centered classroom centered on students, the focus is on cultivating their language abilities, not just for paper-based dumb Chinese, striving to focus on vocabulary, sentence grammar and cultural aspects to assist learners in better learning Chinese. Multiple studies have also shown that the use of technology to create a Chinese learning environment is beneficial for Chinese learners to learn Chinese. At the same time, this learning method is beneficial for reducing learners' pressure and enhancing their interest. In addition, learning Chinese in such a language environment which is more beneficial for learners to deepen their impression of the content they are learning, understand Chinese culture, better use Chinese for communication, and enhance their Chinese language proficiency.

**Keywords:** CALL; teaching Chinese as a foreign language; Chinese language environment.

## 1. Introduction

Compared with the traditional teacher-centered classroom, the current Chinese language learning classroom pays more attention to creating a better language learning environment for learners, enabling them to fully participate in the class. Nowadays, the classroom advocates student-centeredness, emphasizes student interest and initiative, attaches importance to student classroom participation, and cultivates learners' language proficiency.

Language environment, also known as context, includes both linguistic and non-linguistic factors, referring to the situation in which people are speaking. The concept of "context" was first proposed by the British linguist Malinowski, who divided it into two categories: "situational context" and "cultural context"[1]. A positive language learning environment can promote students' language input and output. The most ideal language learning environment is, of course, to go to the target language country for language study. However, due to factors such as financial resources, visa limitations, and learning goals, only a small number of learners will specifically go abroad for language learning.

Nowadays, with the rapid development of technology-assisted teaching, many classrooms of Chinese as a foreign language are also heavily utilizing technology, committed to creating a Chinese language environment for learners and assisting them in better learning Chinese from various aspects. As Carol Chapper pointed out when referring to reading and listening aids in computer-aided language teaching applications, choosing to use such aids can lead to deeper psychological processing, thereby promoting language learning [2]. Therefore, many beneficial attempts are being made to study the impact of technology on the creation of learners' language environment and their language acquisition, in order to help learners better engage in language learning.

According to Krashen's second language acquisition theory, understandable language input is a necessary and sufficient condition and determining factor for the occurrence of second language

acquisition [3]. The focus of research on teaching Chinese as a foreign language has always been on how to provide learners with understandable input through input and interaction in specific Chinese learning environments, thereby improving their language proficiency. Now, teaching technology can provide learners with a large amount of learning materials. Can these Chinese language learning materials be processed through technology to provide learners with an appropriate Chinese language learning environment, thereby providing them with understandable input? How can technology be used to provide learners with a better learning environment? This is the issue that this article will study.

## **2. Current Status of Research on Chinese As a Foreign Language**

With the development of the times, the teaching system of Chinese as a foreign language is becoming more and more perfect. In order to ensure the quality of teaching Chinese as a foreign language, many scholars, linguists, and educators are actively engaged in the study of Chinese as a foreign language. The research on Chinese as a foreign language mainly focuses on the following aspects.

### **2.1. Curriculum Design and Textbook Development**

Research on curriculum design and textbook development aims to provide the most suitable courses and textbooks for learners of different levels, cultures, and ages to achieve the best teaching results, and help learners to efficiently and effectively cultivate their Chinese language learning abilities.

Textbooks, as the core material of a course, are the foundation of classroom language input [4,5]. There are also many studies attempting to explore what kind of textbooks can bring better learning outcomes to learners. Some of these textbooks focus on grammar learning, others emphasize communication skills, and others advocate for integrating culture into textbooks, enabling learners to have a deeper understanding of Chinese culture while learning Chinese. Chan Suet Fong, Dorothy DeWitt, and Chin Hai Leng conducted research and analysis on cultural and cross-cultural factors in Chinese language textbooks for public higher education institutions in Malaysia. They believe that in order for learners to better learn Chinese and cope with various complex social environments, the design of textbooks and modules must include cultural and cross-cultural elements as well as relevant teaching strategies [6]. It can be seen that this study believes that it is necessary to incorporate Chinese culture into Chinese language textbooks. Because Chinese is not only a language, it also carries Chinese culture, including history, tradition, art, literature, philosophy, and so on. Most foreign and Chinese teachers hope that by teaching Chinese, students can come into contact with and understand China's history and culture, as well as its values and ideological system. Integrating teaching Chinese culture can not only help students better master Chinese, but also help them better understand Chinese culture and the Chinese people, and enhance their interest in learning Chinese.

In addition, when textbooks are used by teachers to design teaching, it can also affect the transmission of their classroom content [6]. Therefore, it is evident that textbooks and classroom design complement each other, and excellent textbooks also require appropriate use by teachers. Through careful classroom design, better results can be achieved. At the same time, good classroom design also relies on the assistance of excellent textbooks.

### **2.2. Teaching Methods and Strategies**

Research on teaching methods and strategies are not only applicable to teaching Chinese as a foreign language, but also to most second language teaching methods, such as the grammar-translation method, direct method, listening method, situation method, etc. These teaching methods have been continuously developed in practical application, emphasizing language skill training and practical application and aiming to help students improve their language communication and cross-cultural communication abilities. Nowadays, Chinese language teaching classrooms mostly adopt the form of comprehensive courses rather than using a single teaching method, which makes Chinese language classrooms more flexible and rigid.

Facing different students and their different learning situations and goals, teachers of Chinese as a foreign language will also adopt different teaching strategies. Some studies suggest that teaching strategies should be emphasized in the teaching of intermediate writing in Chinese as a foreign language, which is reflected in the teaching process of Chinese writing courses. Writing teaching mainly includes five stages: classroom introduction, classroom practice, sample reading, essay arrangement, essay correction, and commentary [7]. With the development of the times, learning strategies are constantly evolving through innovation and improvement. Both Chinese language teachers and learners are constantly exploring more suitable learning strategies to assist learners in better learning Chinese.

In addition, with the development of information technology, some new teaching methods and strategies have emerged in the field of teaching Chinese as a foreign language, such as multimedia teaching, online teaching, intelligent teaching, etc. These teaching methods and strategies focus on the personalized needs and learning experiences of language learners, aiming to improve their learning efficiency and outcomes. The use of technology to assist teaching has become a hot topic in teaching Chinese as a foreign language. It has unlimited potential to help Chinese learners improve their Chinese proficiency in various aspects.

### **2.3. Assessment and Examination**

Research on Chinese language assessment and examination is an indispensable part of learning Chinese as a second language in order to test learners' Chinese language proficiency. Therefore, a large number of scholars have studied how to more effectively evaluate the learning outcomes of Chinese as a foreign language through tests, in order to grasp students' learning progress and develop subsequent teaching plans.

For teachers of Chinese as a foreign language, evaluation and examination are important methods and means for studying the effectiveness of teaching Chinese as a foreign language. For learners, assessment and testing can help them understand their Chinese proficiency and better develop learning plans.

In terms of writing proficiency, the Hanyu Shuiping Kaoshi (HSK) exam tests and evaluates different levels of writing proficiency. The first stage starts with HSK Level 3, requiring students to complete over 600 words of narrative and simple practical writing within two hours, with a focus on language structure training; In the second stage, taking the intermediate level of HSK as a reference, students are required to complete a proposition essay of at least 800 words within two hours, covering narrative, expository, argumentative, and common applied writing styles. Emphasis is placed on comprehensive training in both stylistic and linguistic forms; In the third stage, there is a transition towards advanced writing in professional and academic fields, requiring students to complete a thesis of at least 800 words and a thesis of 3000 to 5000 words (academic year thesis, graduation thesis) within two academic hours. The main focus of this stage is on how to express themselves in a proper way [7]. Such assessments will help learners and Chinese language teachers master their level of Chinese language learning, thereby facilitating the development of future learning plans.

### **2.4. Technological Assistance in Teaching Chinese As a Foreign Language**

In recent years, with the advancement of technology, more and more research in the field of teaching Chinese as a foreign language has focused on technological assistance. Technological assistance has brought many conveniences to the teaching of Chinese as a foreign language, enabling it to be conducted across time and space. For learners, technological assistance in teaching can provide a more lively, interesting, and efficient learning experience, helping them to better grasp Chinese knowledge.

One emerging area in technological assistance for teaching Chinese as a foreign language is intelligent computer-assisted language learning (ICALL). Research has shown that ICALL can provide personalized feedback to learners, improve their grammar awareness and error correction

skills, and help them learn Chinese more effectively [8]. The development of technology can bring many conveniences to second language learning. By utilizing technology, learners can more conveniently learn Chinese and find suitable learning methods through its assistance.

### 3. Application of Technology in Learning Chinese as a Foreign Language

#### 3.1. The Influence on the Learning of Chinese Characters and Vocabulary

The learning of Chinese characters and vocabulary is crucial to the study of the Chinese language and is also a major challenge. The vast amount of vocabulary helps learners to better understand and utilize the Chinese language. Therefore, creating a language environment that is conducive to learners' learning and memorizing Chinese characters and vocabulary is of great importance. In the field of technology-assisted teaching, there have been more attempts to create a better learning environment for Chinese language learning.

The advancement of technology has led to the emergence of more and more online platforms or software for learning Chinese, providing learners with many authentic materials for learning Chinese. For example, CCTV International is used by native speakers to understand things around them and it also provides Chinese language learners with many Chinese videos, using standard Mandarin to introduce Chinese attractions and culture, and also providing learners with a lot of Chinese news... As Table 1 shows, this website is very popular. These videos contain rich and colorful images, with cameras leading learners to visit a certain scenery and using authentic Chinese language. Such videos not only help provide learners with materials to practice listening, it can also provide learners with a specific environment, learning specific vocabulary, and a good Chinese learning environment for Chinese learners. With the environment provided by these videos, teachers can use situational methods to combine technology with the classroom, organize students to engage in games or interactions, and consolidate specific vocabulary learned through immersive practice. This approach shifts the classroom from teacher-centered to student-centered, which is beneficial for improving learners' Chinese language proficiency. For students interested in language materials beyond classroom assignments, websites that provide authentic content with teaching real life can be particularly useful. Examples of such resources include news broadcasts at a slower pace or articles accompanied by vocabulary assistance and audio versions [2]. We know from Second Language Acquisition (SLA) research how beneficial this enhanced input is to the learning process, but these resources also promote learner autonomy, encouraging students to go beyond their course assignments [2].

**Table 1.** Related Data Program Schedule of CCTV International

Daily average page views	Daily average number of visitors	Daily clicks
18 million	5 million	200 million

In addition to using web pages to create a learning environment for learners, virtual reality technology can also be used to simulate specific environments and deepen learners' memory of specific vocabulary through the presentation of intuitive objects in front of them. Virtual reality has a certain degree of immersion, creating a new language learning environment for learners and allowing them to participate in language activities in the new environment. Through physical contact and other means, learners can have a deeper memory of language [9]. Virtual reality is often used in learning specific types of vocabulary or sentences. For example, when learning cooking, scenes related to cooking are provided for learners: there are pots, bowls, and vegetables in the kitchen (see Figure 1). When learning sports-related vocabulary, scenes related to sports events are provided, such as basketball courts, soccer fields, and running tracks in a gymnasium. When learning shopping-related vocabulary, scenes of supermarkets are provided. When learning animal-related vocabulary, scenes of zoos are provided, and so on. Multiple studies have shown that using virtual reality to provide a

language environment can allow learners to immerse themselves in learning Chinese and improve their language abilities. article *A Neural Network Kinesthetic Interactive Language Learning System in a Virtual Reality Environment* shows that a virtual reality kinesthetic language learning platform can improve second language vocabulary acquisition by utilizing the connection between the mind and body [9].



**Fig. 1** Learning environment built according to kitchen scenes [9]

### **3.2. The Influence of Sentence Formation and Grammar Learning on the Chinese Language**

Grammar learning is crucial in Chinese language acquisition, and a positive and supportive learning environment plays a significant role in developing the ability to learn Chinese grammar and construct sentences. It provides learners with ample opportunities to engage, reinforce, and apply their knowledge of Chinese grammar and sentence construction, encouraging active exploration and practical application of grammar knowledge to enhance their language proficiency. This environment also offers students the chance to make mistakes and receive corrections, stimulating their interest and motivation in grammar, thereby fostering proactive learning and application of grammar rules.

The learning environment can provide diverse resources and textbooks to meet the different learning needs of students. Through technology-assisted teaching, students can learn grammar knowledge in real or simulated contexts and learn how to better create Chinese sentences. The shaping of the environment by virtual reality is of great benefit to learners' grammar learning, and research has examined the effectiveness of teaching English oral skills in virtual classrooms compared to traditional face-to-face classrooms [10]. The researchers divided English learners into two groups, with the experimental group using virtual classrooms for oral English teaching, and the control group using traditional face-to-face teaching [10]. The results showed that students in virtual classrooms scored significantly higher on oral tests than students in traditional classrooms [10]. Moreover, students in virtual classrooms have achieved good results in various aspects of oral testing, including pronunciation, comprehension, grammar, fluency, and vocabulary. This indicates that with the assistance of virtual reality, learners have gained a better language learning environment, which has brought many positive impacts on grammar learning and other aspects.

The current online classroom is also committed to helping learners learn grammar and sentence structure by providing Chinese language context. As Table 2 shows, many Chinese grammar learning videos in MOOCs create relevant Chinese language context for learners through illustrations or videos, assisting their grammar learning [11]. Research has found that based on the content and usage characteristics of micro-videos, micro-videos in grammar MOOCs can be divided into two categories: scene-based micro-videos and text-based micro-videos. Both types of micro-videos play different roles in grammar MOOCs while complementing each other, providing support for learners in building linguistic knowledge [10]. The advantage of scene-based micro-videos lies in providing learners with reasonable and rich language scenarios, thereby offering sufficient scaffolding to help learners understand the meaning and usage of language points. On the other hand, the advantage of text-based

micro-videos is to provide assistance to learners in understanding the structure of language points and successfully completing grammar exercises [11]. So, these courses provided by MOOCs do indeed help learners improve the efficiency of grammar and sentence structure learning, enhancing their ability to use grammar and sentences appropriately in language communication according to the context.

**Table 2.** Statistical Table of the Number of Micro Videos Used in Various Links of Elementary Chinese Grammar MOOCs [11]

Course Name	The number of total usage	The number of import phase	The number of practice session
Beginner level -Beijing Language and Culture University	271	57	91
Crash Course -Beijing Language and Culture University	289	17	46
Beginner level - Shanghai International Studies University	148	16	31
Total	708	90	168

### 3.3. The Influence of Chinese Language Culture Learning

When teaching Chinese as a foreign language, it is also crucial to convey the cultural dimension of the language. In terms of the application of cultural communication techniques, cultural background is an important soil for the emergence of a country's language [12]. The work of cultural dissemination inevitably requires communicators to have a deep understanding of the cultural background of relevant languages [12]. Awareness of Chinese culture not only helps reduce misunderstandings and conflicts in language communication but also deepens foreign learners' understanding of China and increases their interest in learning the language. The language environment is one of the key factors influencing Chinese language culture learning. By understanding the language environment, cultural experiences, social circles, media, and social media, as well as language education, it is possible to gain a better understanding of local culture and lifestyle and improve language skills.

China has a history of over 5000 years and its traditional culture is extensive and profound. Many international students living in China are very interested in our traditional culture, but they are not very familiar with its etiquette and customs [13]. Therefore, it is necessary to create a learning environment that includes Chinese culture for Chinese learners. Nowadays, technology-assisted teaching integrates elements of Chinese culture into Chinese language learning tools, striving to create a learning environment for Chinese language learners through the characteristics of Chinese culture. For example, online teaching of Chinese as a foreign language provides opportunities for learners to learn Chinese with native speakers through video conferencing platforms such as Teams and Zoom. In foreign language teaching, teachers should try their best to create realistic scenes for students and create lifelike language learning scenes for them [9]. In the process of chatting with foreign teachers, learners can easily unconsciously learn about Chinese greeting culture, clothing culture, and authentic communication habits. Foreign teachers possess the cultural knowledge carried by the target language, which can provide students with authentic language examples and cultivate their language communication skills in specific cultural backgrounds [12]. So, using online learning platforms as a medium, learners have the opportunity to learn a language with foreign teachers. This way, in the language environment created by foreign teachers, Chinese learners can have a more comprehensive understanding of China's culture, customs, and social background, increase opportunities for cross-cultural communication, and enhance their own cultural literacy.

Of course, many online Chinese language learning platforms nowadays also attach great importance to the transmission of Chinese culture, such as the Chinese Education Network, which offers many interesting Chinese language courses. For example, the platform offers courses such as "Inheritor of Gansu Painted Pottery Art", "Why Insert a Hollow Reed for Making Belly Buns in the Desert", "Creative Design of Chinese Characters", and is equipped with interesting videos and audio, providing learners with a learning environment full of Chinese culture and opportunities for intercultural learning, including the study of customs, social hierarchies, beliefs, and taboos [14]. It also helps learners to recognize the diversity of lifestyles and sociocultural backgrounds in the target culture, as well as understand the relationship between themselves and the target community (similarities and significant differences) [15].

#### **4. Conclusion**

Technology has created an appropriate Chinese language learning environment for teaching Chinese as a foreign language. With the emergence of technologies such as virtual reality, artificial intelligence, online courses, and videos, learners can learn Chinese more intuitively. It also provides students with more opportunities to learn a language, making language learning more convenient and interesting, thereby improving the overall Chinese language proficiency of learners, enabling them to achieve the ability to use Chinese for communication, rather than just paper-based exam-taking skills and mute Chinese.

The creation of a Chinese language learning environment through technology can help learners improve their abilities in various aspects. By using technology to create specific language environments, learners can immerse themselves in learning specific vocabulary, use sentences in communication, learn grammar through imitation and error correction, and remember deeply. In addition, one can also have the opportunity to experience Chinese culture firsthand in a real environment and further understand Chinese society.

Although the use of technology to create a language environment varies depending on the financial situation in different regions, the degree to which it can be used also varies. For example, not all schools have the conditions to have and use virtual reality appropriately. But with the continuous development and innovation of technology-assisted teaching, the author believes that in the future, technology-assisted creation of a Chinese learning environment will be more convenient, personalized, and effective. Technology will also help more learners possess excellent language expression skills, and promote communication skills, and cross-cultural communication.

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