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Research Article

Discussion on the Construction of Interactive Chinese Teaching Mode of Mobile App Application under the Internet Background

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Under the new situation of Chinese internationalization promotion and educational informatization, online learning of Chinese as a foreign language is the key to learning Chinese as a foreign language in the future. Today, people learning Chinese as a second language must learn Chinese quickly online. However, it is not the best thing to open a website for learning Chinese as a foreign language at present. Learning Chinese online may not meet the needs of students, and it is not uncommon for students to give up in the process of Chinese learning. Therefore, the article discusses the teaching methods of Chinese as a foreign language and the use of new media and analyzes the shortcomings of Chinese teaching. This paper demonstrates the possibility and scientificity of using mobile app to conduct online interactive teaching of Chinese as a foreign language from both theoretical and practical aspects, aiming to promote the development of online teaching of Chinese as a foreign language, and then promote the promotion of foreign language Chinese as a foreign language. The results of the survey show that 75%, 96.1%, and 96.2% of the students who have studied Chinese for three months, six months, and one year, respectively, have downloaded the app Chinese language-assisted teaching software to learn Chinese.

1. Introduction

The rapid development of China's international exchanges has put forward new requirements for the construction of teaching Chinese as a foreign language. This paper introduces several major changes in the implementation of Chinese language teaching, including the development strategy has changed from teaching Chinese as a foreign language to promoting Chinese to the world. The focus of work has shifted from "inviting foreigners" to learn Chinese to accelerating Chinese "export"; the promotion concept has shifted from professional Chinese teaching to popularizing and applying Chinese. It is necessary to make full use of the advantages of modern educational technology, combine information technology with general teaching of Chinese as a foreign language, explore the digital mode of Chinese teaching, promote communication training, and more effectively meet the personalized teaching. It is convenient for contemporary learners to adapt to their needs, put Chinese teaching in people's lives in a subtle way in a timely and appropriate manner, and promote the promotion of Chinese in the world. By inquiring relevant literature and browsing relevant online learning resources of Chinese as a foreign language, the study platform of two main online teaching methods of teaching Chinese as a foreign language is studied, and it is found that there are some problems that need to be improved. The root of the problem lies in the lack of interaction and lack of communication among students. Therefore, this paper takes the Chinese online interactive teaching method as the object to investigate and combines the new mobile media app with the Chinese interactive online teaching method to make up for the lack of teaching.

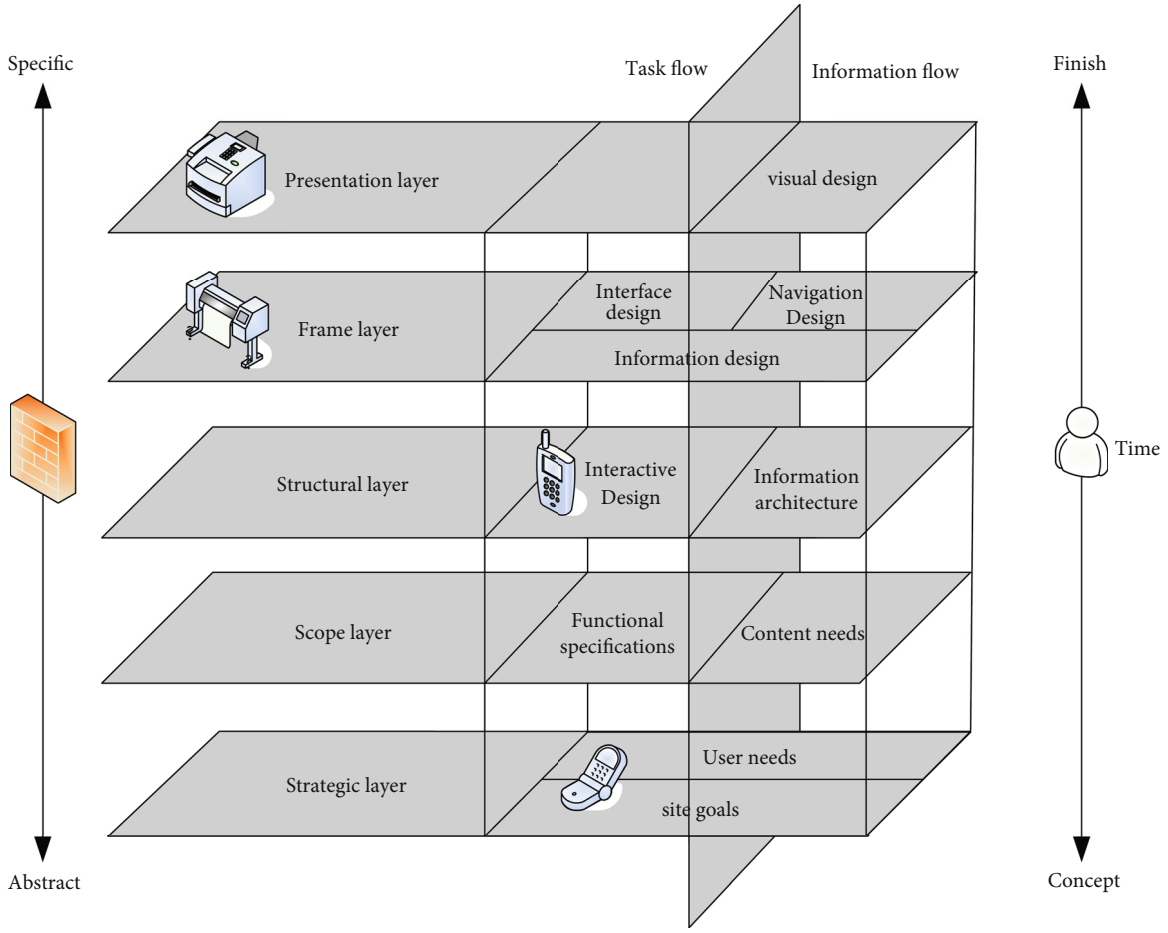

Figure 1: User experience element model.

This article combines teaching and learning into online teaching and strives to create a language teaching environment centered on "interaction," allowing students to participate in interactive learning and promoting the speed of Chinese to the world.

The article presents a mobile app-based study of learning Chinese as a foreign language, combining highly theoretical and practical interactive learning. This article examines the shortcomings of the two main teaching methods in modern online teaching of Chinese as a foreign language and expounds the importance of interactive teaching methods and the advantages of mobile applications. At the same time, it combines theories of pedagogy, psychology, second language editing, etc., combined with interactive teaching methods and mobile applications, to demonstrate the science and practice of online teaching Chinese as a foreign language. In order to better implement the theoretical construction of Chinese as a foreign language, the experiment starts from the practical significance, examines several scenarios of learning Chinese as a foreign language, and makes use of the shortcomings that have been found. Online learning of Chinese as a foreign language can successfully solve these problems through online interaction and various interactive mobile applications. Finally, when discussing the concept of learning in mobile application design and interactive learning, it reflects the combination of mobile application and interactive learning, using new media applications and interactive learning to enhance and promote Chinese online learning.

2. Related Work

Domestic and foreign experts have also conducted a lot of research on the construction of Chinese interactive learning teaching models. Fu and Fu believe that multimedia has a great positive impact on high school Chinese teaching, such as stimulating students' interest in learning, breaking through the difficulties of teaching content, and improving learning efficiency; it can also expand extracurricular knowledge points and broaden students' horizons [1]. Alvarez-Hamelin et al. consider the core decomposition of network models and internet graphs at the autonomous system (AS) level. Due to the specific architecture of the system, k -kernel analysis allows to characterize the network beyond the degree distribution and reveal structural properties and hierarchies [2]. Li et al. introduced the 5C architecture that is widely used to characterize industrial Internet systems. Then, the enabling technology research is carried out from various aspects such as industrial network, industrial intelligent sensing, cloud computing, big data, intelligent control,

Table 1: Smartphone user age group survey.

Project	Category	Proportion
Gender	Male	54.4%
	Female	45.6%
Age	Less than 18 years old	5.8%
	18-24 years old	43.3%
	25-29 years old	25.1%
	30-49 years old	24.2%
	Over 50 years old	1.6%

and security management [3]. Lin et al. gave a comprehensive overview of IoT from system architecture, enabling technologies, security, and privacy issues, and introduced the integration and application of fog/edge computing with the Internet [4]. Asghar believes that the Internet provides opportunities to acquire knowledge for crosscultural and individualized learning, to acquire theoretical knowledge, and to explore and apply knowledge. The Internet provides globally accessible knowledge and learning applications anytime, anywhere [5]. The system design and development of Lema *R*'s online teaching platform based on http://asp.net technology has been improved. Through the functional test of each functional module, it is proved that the basic functions of the designed online teaching platform can be realized [6]. However, due to the lack of relevant data and the methods used in these studies, there are some controversies, resulting in the relevant results not being recognized by the public.

3. Influencing Factors of Mobile App Interface

3.1. Structure Exploration of User Experience. Based on the subjectivity, richness, and dynamism of the PC-side user experience structure, the design of the smartphone app interface is very different from the user experience context. Therefore, the current user experience research is based on user experience from the perspectives of hierarchy, structure, process, measurement, design, etc., to provide a theoretical basis for the research experience level of smartphone app interface design.

A user experience measurement model refers to a structural model that describes user experience through evaluation and measurement. The user experience measurement model mainly measures the following: usability, functionality, satisfaction, consumer value, consumer demand, and other measurement models. The above measurement model is specially designed for smartphone app interface design and application experience, which helps to provide direction for the research related to app user experience in the process of interface design.

According to the "consumer-centered" design concept, it is necessary to consider all possible behaviors of consumers when using the product in product design and understand consumers' expectations of the product in all the processes of using the product. In order to meet the needs of users, the elements of user experience are summarized into five layers: presentation layer, framework layer, structure layer, scope layer, and strategy layer (as shown in Figure 1). The composition of these five layers is very clear. The five levels of user experience, design, and user needs are comprehensively described throughout the whole process of improving user experience [7].

The strategic level includes business goals and consumer needs to achieve user experience, and there must be a clear strategy. That is, what kind of products need to be designed, and which strategic goals need to be clear, and some products need to be presented by developers in multiple aspects. The scope layer consists of product features and product details. When consumers use this product, whether the product has a specific function, and whether the function can play a role in the product, these are the problems to be solved by the overlay. If the scope layer is defined, the designer can understand which functions are required by the product and which are not required by the product. There are more concepts inside the structural layer, but the structural layer begins to focus on the concrete elements that affect strategic issues and hierarchy coverage, and begins to move from abstract to concrete. What is made here may be the final form of a real product, but the structural layer is more general than the framing and presentation layers. The framework layer is responsible for how to optimize the product layout and maximize product design elements. The framework layer mainly completes the information design, so as to organize the interface design elements in an easy-to-understand manner, what functions are included in the interface, and how to better allow users to understand these functions. The presentation layer plays an important role in the user experience and is the last layer the user sees. When consumers try a product, the first thing they see is the product. The presentation layer is mainly to solve the visual presentation of the product, to better organize and group various elements of information, and to introduce its functions and content in the product, achieving the goals required for the first four levels and successfully meeting user expectations [8, 9].

3.2. User Factors. The mobile Internet enriches the user's operating context, and users can access the Internet anytime and anywhere. The use of smart phones shows significant fragmentation characteristics, which increases the stickiness and duration of mobile phone use to a certain extent. Users can not only use smart phones to learn more knowledge conveniently but also enrich people's daily life, expand people's network circle, and hobbies, and make the quality of life more efficient and colorful. The fragmentation of mobile phone use has increased the frequency and duration of users' use of smart phones, and the relationship between the public's life and smart phones has become increasingly close. Therefore, the number of smart phone apps will be on the rise in the future, and the richness, convenience, and interest of content will also be the main trends in the development of smart phone apps in the future [10].

As shown in Table 1, according to the mobile survey data report of China IT Research Center Bida Consulting, it can be seen that the users of smart phones are mainly

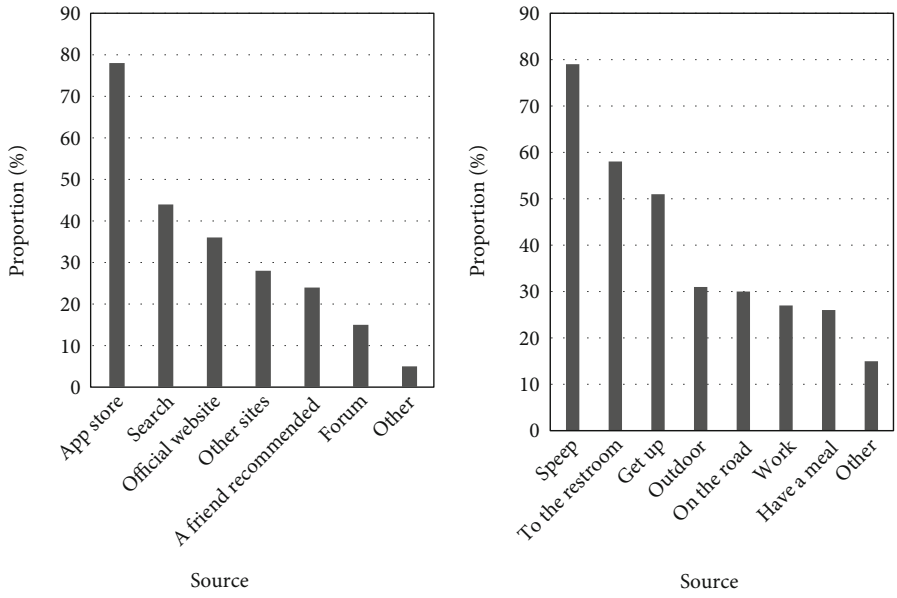

Figure 2: Survey of user download channels and usage scenarios.

concentrated in the group of users aged 18 to 30. The purchasing power of smartphones is on the decline. Different smartphone apps can be designed for users of this age group. In the process of designing smartphone app interfaces, the key element of the user needs to be taken into account [11, 12].

User survey data shows that the main channel for users to download app is through the application store, of which 44% and 36% of users download through search or official website. In addition, users can use smartphones anytime and anywhere, and the most frequently used places are before going to bed, when going to the toilet, before getting up, outdoor activities, on the way to and from get off work (school), and during meals, which are 79.0%, 58.0%, 51.0%, 31.0%, 30.0%, and 26.0%, respectively. The detailed data is shown in Figure 2 [13].

3.3. BAE Engine. The primary task of BAE is to unify terminal applications, further improve the terminal's ability to adapt to various services, facilitate the development of third-party application software, and better support business promotion and operation. It is based on a browser engine, facing the mobile Internet, across the terminal operating system, and it provides an integrated terminal resource access interface and third-party component expansion interface for applications, supports dynamic integration of various business capabilities, and supports multimedia, messages, device information, business capabilities, and other similar types. Therefore, it can not only provide a better user experience but also improve access to mobile terminals and network-side business platforms. Most importantly, for developers, applications developed in runtime environments on different platforms should only be run once, with a consistent user experience. Thanks to the support of the operating environment, the developed products are crossplatform. Currently, it supports mainstream mobile terminal intelligent operating systems, and its system architecture is shown in Figure 3 [14].

3.4. Use of JIL SDK. In addition, the JIL SDK will also have visual development, support for visual control editing, drag and drop, support for code templates, code snippets, image preview, editing, and cropping, and save enhanced security mechanisms. It is useful for functions such as shielding the differences displayed on terminals with different resolutions. Therefore, what developers develop can be displayed well on different terminals. Figure 4 shows the hierarchical object model diagram [15, 16].

The article systematically analyzes the emotional factors of mobile app interface from three levels of aesthetics, use, and reflection, but it is just a simple list and preliminary analysis, mainly to transform the emotional elements of the mobile app interface into emotional design, and to refine the emotional elements of the interface. The refinement mentioned here refers to the analysis and induction of the emotional factors of the mobile app interface and expressed by some representative and concise words. The main purpose is to prepare for the subsequent proposal of the emotional design principles of mobile app, and this is also a derivation process. These words describe each factor semantically in a progressive manner and refine the semantics of emotional factors in the mobile phone interface through three levels of vision, use, and reflection. For example, for the factors in the visual level, such as color, graphics, layout, text, and meaning, and semantic description, such as color can be described as coordination, bright, fresh, and so on. The layout can be described as rhythm, coordination, etc. In the end, many subitems can be refined, and the last subitem is changeable.

As for the emotional factors at the usage level of the mobile app interface, the same method can be used to find the relevant perceptual words to describe the same as the

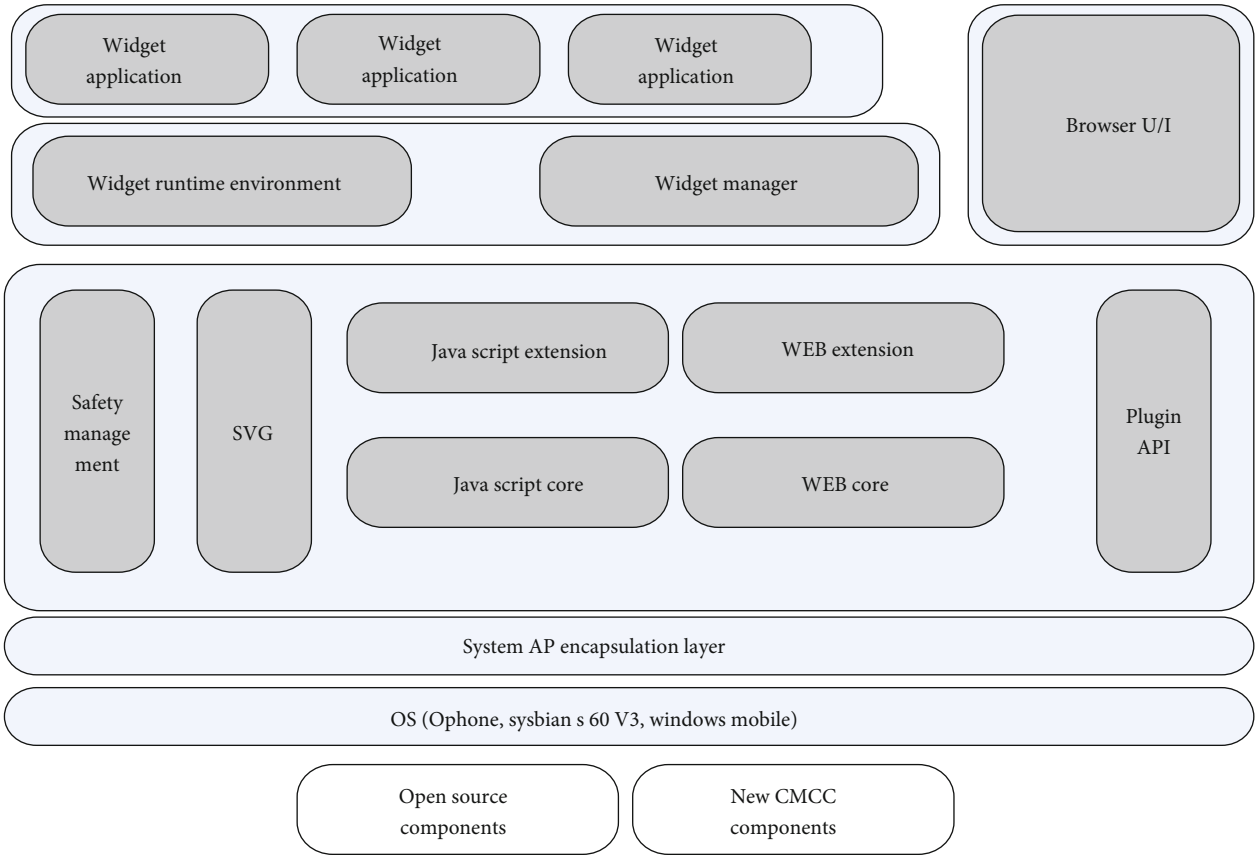

Figure 3: BAE system architecture diagram.

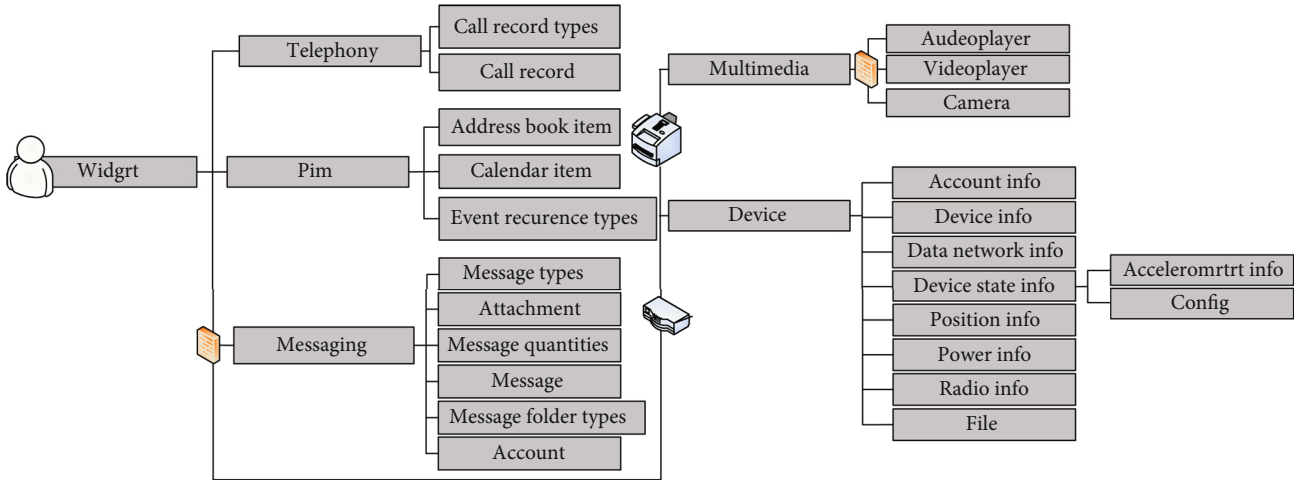

Figure 4: Hierarchical object model diagram.

above visual level. The process of this progressive advancement is a process of refining. For example, the functionality at the usage level can be divided into visibility and distinction, visibility can be refined to describe with perceptual words such as clear, and distinction is described with words such as reasonable division and customary. The refining and derivation process of the emotional factor usage level and brand level of the mobile app interface is shown in Figure 5 [17].

75% of the students who studied Chinese for three months and 96.1% of the students who studied Chinese for six months downloaded the app-assisted Chinese learning program. 78.72% of students who have studied Chinese for more than one year have downloaded relevant app software, and more than 90% of undergraduates, postgraduates, and doctoral students have downloaded the app Chinese language learning auxiliary teaching program. It seems that the Chinese app-assisted teaching plan will have a certain

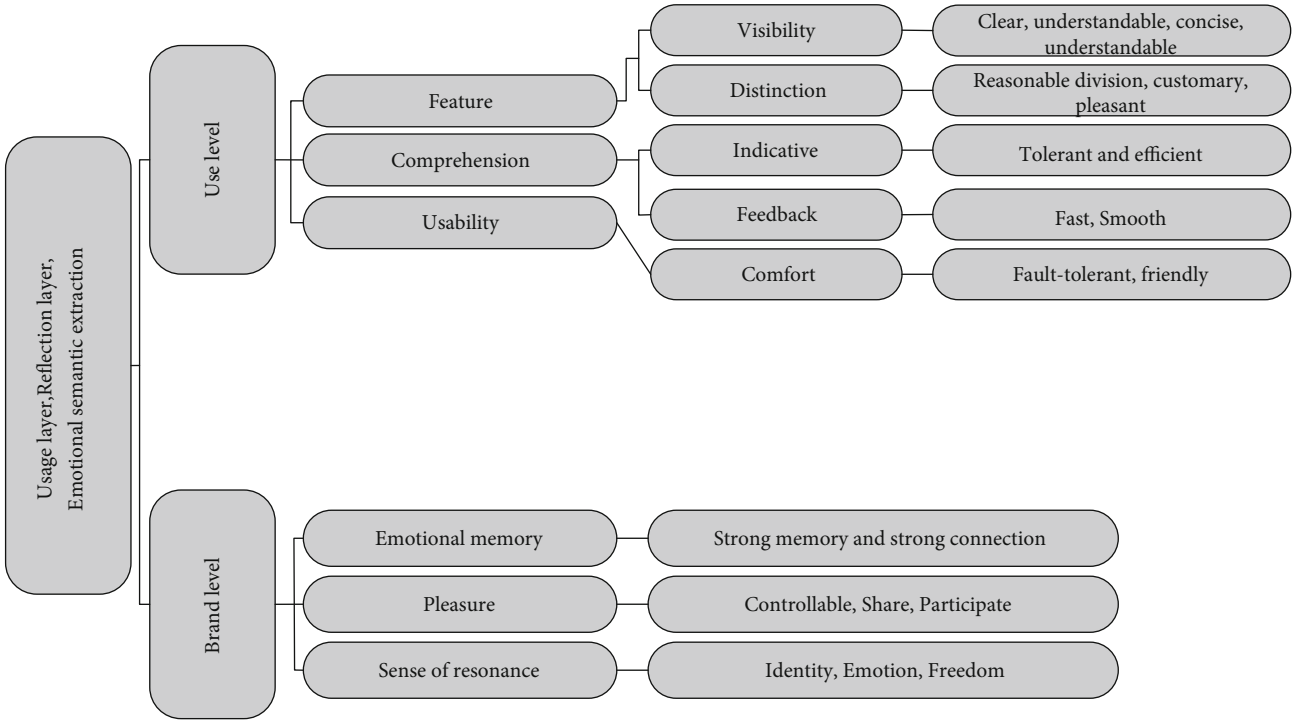

Figure 5: Refinement of emotional factors in mobile app interface using level and brand level.

Table 2: Survey on satisfaction with app Chinese auxiliary teaching software.

$X\backslash Y$	Great help	Occasionally helpful	Generally	Little help	A little help	Subtotal
Junior high school	28 (70%)	3 (7.5%)	8 (20%)	0 (0%)	1 (2.5%)	40
High school	27 (50%)	11 (20.4%)	9 (16.7%)	2 (3.7%)	5 (9.3%)	54
Postgraduate	32 (69.6%)	10 (21.7%)	2 (4.3%)	2 (4.3%)	0 (0%)	46
Undergraduate	37 (60.7%)	18 (29.5%)	6 (9.8%)	0 (0%)	0 (0%)	61
PhD and above	1 (50%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	2
Three months	23 (71.9%)	4 (12.5%)	5 (15.6%)	0 (0%)	0 (0%)	32
Six months	38 (74.5%)	7 (13.7%)	6 (11.8%)	0 (0%)	0 (0%)	51
One year	20 (76.9%)	5 (19.2%)	1 (3.9%)	0 (0%)	0 (0%)	26
More than a year	61 (64.9%)	15 (15.9%)	15 (15.9%)	2 (2.1%)	1 (1.1%)	94

impact on students' Chinese learning, especially for students who have studied Chinese for half a year or a year and have a certain Chinese foundation, or undergraduate and graduate students. This program has the highest download rate, as shown in Table 2:

First of all, it is necessary to conduct current research and demand analysis on the developed applications and research the technical support theory. On this basis, functional modules are designed to extract relevant design concepts. The system platform that can support development then needs to be categorized and selected, after designing and building the relevant development environment, into the development phase. After the first development is completed, the program needs to be tested in time, and the requirements and goals of the secondary development are summarized through functional testing, user experience testing, etc. and make reasonable adjustments to the design concepts, functional modules, development environment, system definition, development platform, program writing, etc. After many iterations, the developed software finally achieves satisfactory results. In addition, mobile learning software can be divided into three categories: mobile learning based on short messages, mobile learning based on recognition and connection, and mobile learning based on third-party software. However, no matter what type of mobile learning, when the mobile Internet is needed as a support, that is, when it is necessary to obtain online educational resources or to communicate through the network, the network topology model shown in Figure 6 is usually used [18].

3.5. Overall Design of Chinese Mobile Learning Software. For an input image, first define the integral graph $ii(x, y)$ of a

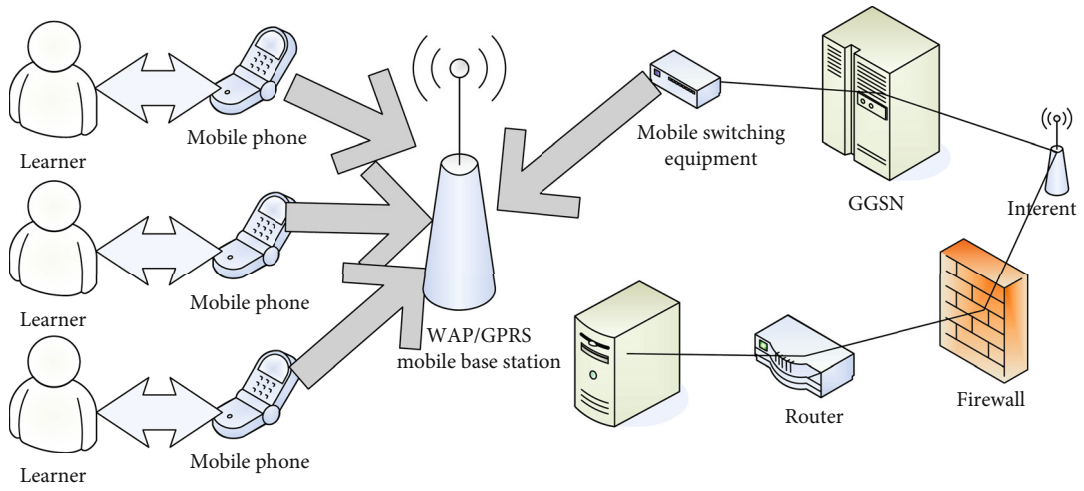

Figure 6: Network model topology diagram.

point $i(x, y)$ as

$$ii(x, y) = \sum_{x1 \le x, y1 \le y} i(x_1, y_1), \tag{1}$$

that is, to define

$$s(x, y) = \sum_{y1=y} i(x, y_1). \tag{2}$$

Then, the integral graph of the whole image can be obtained by the recursive formula:

$$S(x, y) = s(x, y-1) + i(x, y), \tag{3}$$

$$Ii(x, y) = ii(x-1) + s(x, y). \tag{4}$$

For each rectangular feature, the corresponding weak classifier can be designed. First, define the weak classifier as

$$h(x, f, p, \theta) = \begin{cases} 1 & pf(x) < p\theta \\ 0 & \text{else} \end{cases}. \tag{5}$$

Combined in a weighted manner by their respective error rates, the following strong classifiers are obtained:

$$f(x) = \begin{cases} 1 & \sum_{t=1}^{T} \alpha_t h_{t(x)} \ge \frac{1}{2} \sum_{t=1}^{T} \alpha_t \\ 0 & \text{others} \end{cases}, \tag{6}$$

$$\begin{bmatrix} Y \\ Cb \\ Cr \end{bmatrix} = \begin{bmatrix} 16 \\ 128 \\ 128 \end{bmatrix} + \frac{1}{1000} \begin{bmatrix} 257 & 504 & 98 \\ 318 & 439 & -121 \\ -148 & -291 & 439 \end{bmatrix} \bullet \begin{bmatrix} R \\ G \\ B \end{bmatrix}, \tag{7}$$

$$P(c_b, c_r) = e^{\left[-0.5(x-M)^{c-1}(x-M)\right]}. \tag{8}$$

After statistical analysis of a large number of sample sets, the mean and covariance matrix of the samples are taken as:

$$M = \begin{bmatrix} 148.5599 \\ 117.4316 \end{bmatrix}, C = \begin{bmatrix} 260.1301 & 12.1430 \\ 121430 & 150.4574 \end{bmatrix}. \tag{9}$$

Assuming that both A and B are sets in Z^2, the mathematical definition of B's expansion of A is

$$A \oplus B = \left\{ Z \middle| \left(\widehat{B}\right)_Z \cap A \ne \varphi \right\}. \tag{10}$$

Assuming that both A and B are sets in Z^2, the mathematical definition of B's erosion of A is

$$A \oplus B = \left\{ Z \middle| (B)_Z \subseteq A \right\}, \tag{11}$$

$$A \circ B = (A \oplus B) \oplus B, \tag{12}$$

$$A \bullet B = (A \oplus B) \oplus B. \tag{13}$$

Defined as a two-dimensional Gaussian distribution image with radius δ:

$$g(x, y) = e \frac{(x - x_0)^2 + (y - y_0)^2}{\delta^2}, \tag{14}$$

$$(f \otimes g)(\tau) = \int_{-\infty}^{+\infty} f * (t) g(t + \tau) dt, \tag{15}$$

$$g(x, y) = (f \otimes h)(x, y). \tag{16}$$

Converting to frequency domain,

$$G(w, v) = F(w, v) \cdot H^*(w, v), \tag{17}$$

$$H * (w, v) = \frac{G(w, v)}{F(w, v)}. \tag{18}$$

In order to separate the illumination component from the reflection component, the logarithm of the image to be

compensated needs to be taken:

$$z(x, y) = \mathrm{Inf}(x, y) = \mathrm{Ini}(x, y) + \mathrm{Inr}(x, y), \tag{19}$$

$$Z(u, v) = F(u, v) + F(u, v), \tag{20}$$

$$H(u, v) = (\gamma_H - \gamma_L)\left[1 - e^{-c\left[D2(u,v)/D_0^2\right]}\right] + \gamma_L. \tag{21}$$

4. Interactive Classification of Mobile App in Interactive Chinese Online Teaching

The interaction method in the traditional classroom is single, mainly face-to-face communication between teachers and learners, and between learners and learners, which is a synchronous real-time interactive behavior. The interactive mode of mobile app used in interactive online teaching of Chinese as a foreign language is more complex, flexible, and diverse (especially between interactive subjects). The sources of survey data for the development of Chinese language teaching software supported by app are usually CNKI papers and journals on the subject. In the experiment, a questionnaire was designed for the use of app Chinese teaching software. The article selects foreign students from a university as the object of investigation. Combined with the survey results of Chinese learners at home and abroad using the app Chinese teaching software teaching mode, we can analyze the difference between using the app Chinese teaching mode to assist software teaching and the traditional method of learning Chinese in the classroom and compare the benefits [19].

This paper conducts a questionnaire survey on the use of Chinese-assisted app teaching software for foreign students in a Chinese university and investigates the frequency of software use, the impact of Chinese learning, and the satisfaction of software use. A total of 203 questionnaires were distributed, and 203 valid questionnaires were returned, including 115 foreign students studying Chinese in China and 88 students studying other Chinese [20].

In the survey, it was found that junior high school students and graduate students, as well as students who have studied Chinese for one year and six months, generally believe that using app Chinese language teaching software to learn Chinese is very helpful for them to learn Chinese, as shown in Table 3.

As can be seen from Figure 7, among the students who have studied Chinese for six months, one year, and more than one year, the most popular software is *A* software and *B* software for hsk test. Among graduate and undergraduate students, more than half of the students are using both software.

The survey found that most students who have studied Chinese for one year, and students with undergraduate and postgraduate degrees believe that it is not difficult or easy to use app Chinese-assisted teaching software to learn Chinese. Students who have studied for more than one year think that the difficulty of operation is average. High school students and students who have studied Chinese for three months will find it very difficult to operate. Students who study for half a year and postgraduate degrees find such software interesting.

Table 3: Survey of students who have downloaded app Chinese aided teaching software.

$X\backslash Y$	Yes	No	Subtotal
Three months	24 (75%)	8 (25%)	32
Six months	49 (96.1%)	2 (3.9%)	51
One year	25 (96.2)	1 (3.8%)	26
More than a year	74 (78.8)	20 (21.2%)	94
Junior high school	32 (80%)	8 (20%)	40
High school	40 (74.1%)	14 (25.9%)	54
Postgraduate	42 (91.3%)	4 (8.7%)	56
Undergraduate	56 (91.8%)	5 (8.2%)	61
PhD and above	2 (100%)	0 (0%)	2

It can be seen that this kind of app Chinese-assisted learning software is more convenient and effective for students with a high degree of education and a specific level of Chinese. Figures 8 and 9 are, respectively, the user preference survey on the functions of the app Chinese aided teaching software and the user's satisfaction survey on the current use of the app Chinese aided teaching software.

Referring to the current survey on the use of Chinese-assisted app teaching software used in Chinese teaching, the questionnaire also counted software errors and received some feedback. Most of the students who have studied for three months think that the explanation of this kind of Chinese-assisted APP teaching software is not detailed enough, and the translation is not accurate enough. Most of the students from different educational backgrounds felt that the Chinese examples of the app Chinese tutoring software were not enough. It can be seen from the survey that there are still relatively big problems in today's Chinese-assisted teaching app [21].

Traditional classroom teaching is often difficult to get rid of the "teacher-centered" teaching method, while Chinese teachers have always dominated the classroom, ignoring the problem of teaching. In line with the student-centered teaching principle of Chinese as a foreign language, we strive to create the best model that is most suitable for students, analyze the parts that students have learned the most, and should focus on the weak links of students' language. Therefore, it is more targeted than the traditional classroom network teaching method.

There are differences between the teaching mode of the app Chinese teaching software and the traditional teaching mode in terms of exchange items. The language learning app software demonstrates the "human-computer interaction" teaching method. The object of students' communication is electronic equipment; so, the students' practice goals are constructed virtually, while the traditional classroom teaching is the way of "human-human interaction." In teaching, students communicate with Chinese teachers and learn Chinese with their classmates. Therefore, teaching Chinese auxiliary app software will play a more active role in the process of language learning, especially helping to improve

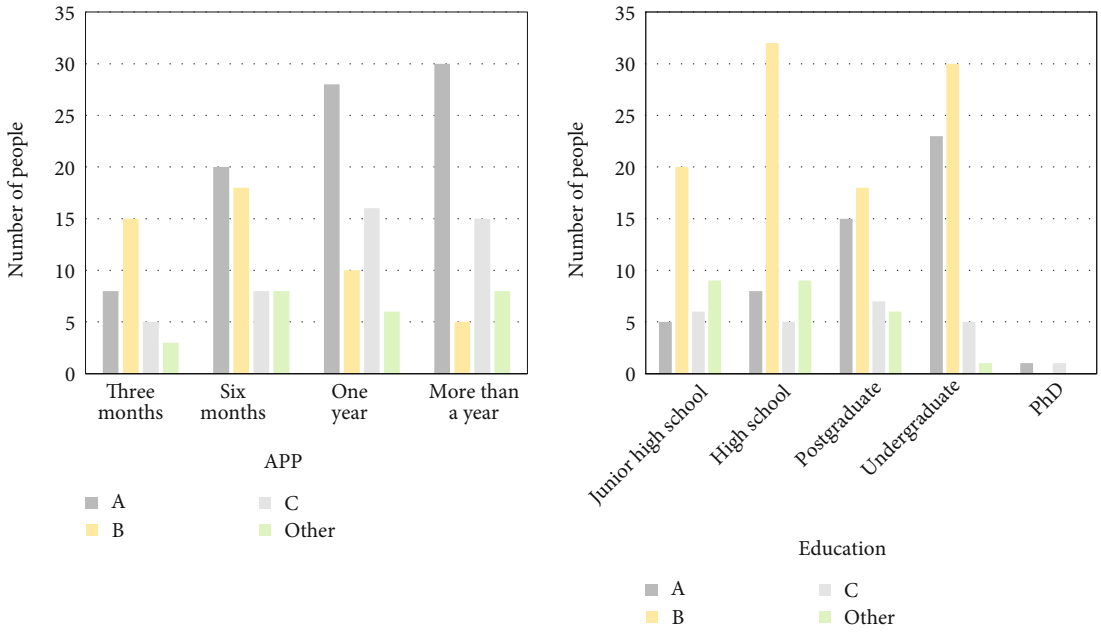

Figure 7: Survey on the usage of specific app Chinese aided teaching software.

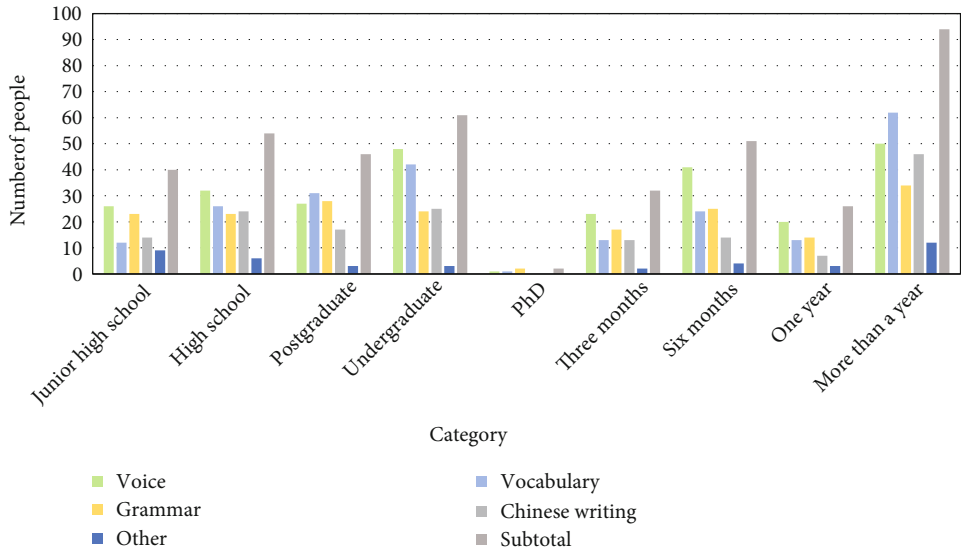

Figure 8: A survey of app Chinese-assisted teaching software in solving Chinese learning problems.

students' Chinese oral level. The use of Chinese-assisted teaching app to learn Chinese pays more attention to the individuality of the students, each person who downloads the app software is independent, and the software or platform components provide users with one-to-one services. The service can tailor appropriate courses to the individual needs of learning objects. Different from traditional classroom teaching, language learning with the help of Chinese teaching software is not only conducive to the development of students' language ability but also to exercise and improve the learners' ability to learn independently. In terms of individual needs, the online learning platform under the self-learning teaching mode will provide teaching resources of different Chinese levels and different topics (set according to the learners' different interests/learning purposes). However, how to scientifically identify the needs of learning itself lacks an evaluation system. Learners can only vaguely and intuitively choose the teaching content that suits them, which is easy to cause information loss, cognitive overload, and other consequences. Third, from a fundamental point of view, the interaction with learners is insufficient and the communication is not strong. From the perspective of interaction between teaching and learning, a conversational model of the learning process is proposed, as shown in Figure 10.

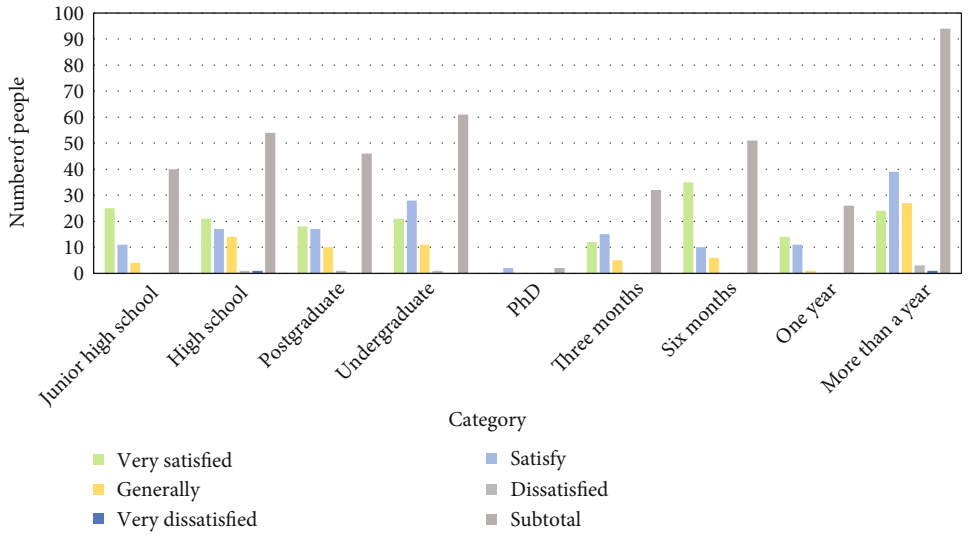

Figure 9: Satisfaction survey on users' current usage of app Chinese aided teaching software downloaded.

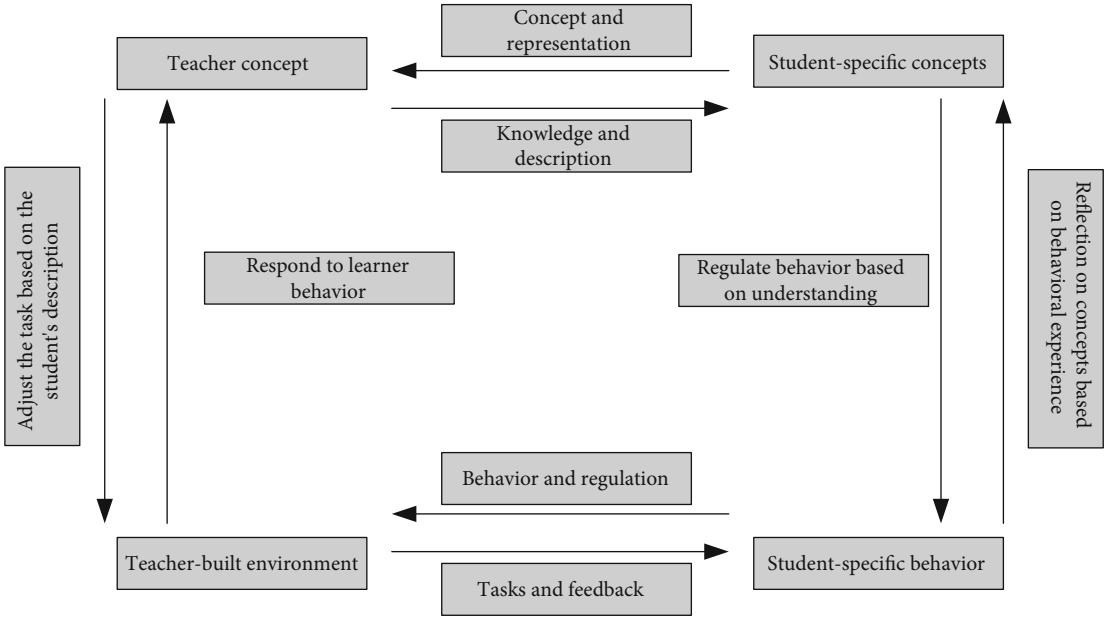

Figure 10: Conversational model of the learning process.

5. Discussion

Compared with the traditional classroom teaching method, the use of Chinese-assisted teaching app for Chinese teaching is more intuitive, and it is easier for students to understand and master new knowledge. Colorful pictures, exquisite short videos, and changes in various software languages make the original abstract language more concrete and intuitive, making it easier, more efficient, and more convenient for students to learn. It has the advantages of freedom, efficiency, and convenience. Compared with the traditional classroom learning mode, the use of new media technology to download software for Chinese learning can not only break the limitations of learners' learning time and learning space but also allow students to choose their own suitable time and place for learning according to their needs, not just limited to the classroom. Users can download the app Chinese auxiliary teaching software through the mobile client, and they can learn anytime and anywhere on the train, in the coffee shop, at anytime, and anywhere, and will no longer be restricted by objective factors. Therefore, it can also improve the efficiency of learning Chinese, expand students' horizons, and improve their autonomous learning ability. Using app software to learn Chinese not only allows foreign students to learn basic Chinese knowledge but also understands the broad and profound Chinese culture through videos, pictures, etc., expands students' horizons, enriches teaching methods, and enhances students' interest and enthusiasm in learning Chinese. The knowledge learned in the original book may be too limited, and students

are like "frogs in the bottom of the well" who can only understand the knowledge in front of them [22]. However, using app software to learn Chinese can provide a lot of knowledge extension, which is convenient for students to form knowledge transfer when learning language, so as to expand students' horizons and accumulate language knowledge. Using app software to learn Chinese is convenient to improve students' autonomous learning ability. Due to the difference of each individual's ability to accept, students can watch and study repeatedly according to their confusion, which is convenient to solve difficult points and resolve the embarrassing situation that others understand but they do not understand. Teaching in the new era is no longer limited to the teaching mode of "teacher teaches, students listen," and the indoctrination learning mode does not meet the learning requirements of students in modern society. Self-study has become a more modern way of learning. Therefore, learning Chinese through app software not only allows foreign students to improve their Chinese proficiency and ability but also exercises and enhances their ability to learn independently. This self-learning ability can be said to be a lifelong benefit for students, and it will be an important manifestation of their own ability, whether in school learning or in their daily work in the future [23].

Due to the short development time of app software teaching technology, teaching materials and teaching resources are very limited, and it is difficult to find learning content suitable for teaching objects; so, the requirements for teachers and students are higher. Therefore, there will be some deficiencies in language materials. For example, the grammatical knowledge that students want to learn may not be found in the software, or some software gives too few example sentences, etc., which may become problems encountered by students in their learning [24]. In the new media era, the information exchange platform is networked, and the information platform also presents the characteristics of integration, mobility, compatibility, etc. app software has become the exchange platform of teaching resources, and the sharing of teaching resources has also become the theme. Book text resources, video teaching resources, high-quality course resources, online course resources, etc. can all be shared in the app software. However, in the era of resource sharing, some resources that do not conform to language learning will be uploaded to the platform, such as some content that is not recognized, does not conform to grammatical norms, and even misleads and negatively transfer students' learning. Therefore, in such a flexible, open, multidimensional, and free resource platform, how to effectively integrate resources and standardize the management platform is particularly important. Therefore, standardizing the management platform and effectively integrating resources is a strong guarantee for the better dissemination and application of app software in international Chinese education. It has higher requirements for students' self-management ability, and the use of downloaded app software for Chinese learning has high requirements for students' consciousness and initiative. Due to the diversity of software content, students may be attracted by the rich and diverse learning materials, while ignoring the essence of language learning. Therefore, how to choose appropriate learning resources has become a higher requirement for students. Since the management of the network is not so sound and mature, students have limited expertise in learning Chinese, and it has become a problem whether to choose the app software suitable for their own learning. Therefore, it is difficult for students to choose high-quality and efficient learning resources that are suitable for them [25]. Especially for Chinese beginners, there is a lack of understanding of Chinese. Therefore, it is difficult to select the most suitable part from the many teaching resources; so, it is possible to find that have not improved much after the study, which has the adverse effect of getting twice the result with half the effort. Lack of blackboard writing given by teachers in traditional teaching, and only borrowing technical means in app, makes students ignore the good habit of taking notes; so, it will form the embarrassing phenomenon of "forgetting after seeing it, and understanding at a glance." Students use software to learn and memorize faster, but also forget quickly. Because they use electronic devices to learn language, they are just passing their brains, not their hands. There is a Chinese saying that "good memory is not as good as bad writing." Therefore, it is not only not conducive to students' memory of language but also to the improvement of students' writing level of Chinese characters. Compared with traditional teaching, the development cost of app software in the early stage is relatively high, and many app software used to learn Chinese needs to spend money to purchase teaching courses. Since software development and recording courses require financial support, payment has become one of the prerequisites for the use of many software; so, it will also increase students' learning input.

6. Conclusion

In order to make up for the shortage of the two main teaching methods of online teaching Chinese as a foreign language, the installation and update of teaching resources and the robustness of teacher support services. From a learner's perspective, this article combines a mobile phone assistance program that meets students' individual needs and lifestyles with interactive online teaching of Chinese as a foreign language. The "interactivity" of the two can help learners acquire the construction of Chinese knowledge, promote the improvement of Chinese proficiency, thereby enhancing the stability of Chinese as a second language learners in online teaching, further improve the credibility of online teaching of Chinese as a foreign language, and expand the popularity of online teaching of Chinese as a foreign language. Of course, it does not mean that the online interactive teaching of Chinese as a foreign language based on mobile app is omnipotent. It is impossible to completely replace the traditional classroom teaching but only under the situation of international promotion of Chinese. Under the background of the development of popularization and application of Chinese, the online teaching of Chinese as a foreign language combined with mobile app and interactive teaching mode is more in line with the trend of the times and in line with the development law of internationalization of Chinese.

This paper conducts a detailed and rigorous analysis of the classification of interactions in the interactive online teaching of Chinese as a foreign language using mobile apps, especially in the dimension of interactive subjects. In the article, it is divided into several types, and the specific content of each interaction is explained. A new type of language learning partner "traveler" for learners is also found, and this identity is specifically dissected. Compared with the Chinese learners in the traditional classroom, the learners who conduct online learning of Chinese as a foreign language based on mobile apps are less controllable, such as learners with weak self-control, and their attention is not easy to concentrate, which will affect their teaching effect. The learning purpose is not strong, the learning attitude is not firm, the learning interest is not strong, and it is easily affected by negative factors, which is not conducive to the stability of their Chinese. This article starts from "interaction" and combines the interactivity of mobile app with the interactive teaching mode, hoping to use its "interactivity" to build a "group learning atmosphere" for Chinese learners who learn in individual learning environments, in order to effectively maintain the learner's long-term learning motivation and continuous learning interest.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that there is no conflict of interest with any financial organizations regarding the material reported in this manuscript.

Authors' Contributions

Xuelian He and Zhenhuan Liu made equal contributions to the article.

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