Research and Analysis of Chinese Character Learning Apps for Foreigners and Construction of the "HanZi Tong" Model

Jiaqi Wang

Jiangxi University of Finance and Economics, Nanchang, Jiangxi,330032, China

Email:2776993784@qq.com

Abstract. Based on the theory of self-directed learning and mobile learning, this text explores the research results of foreign Chinese learners and overseas Chinese in the application of Chinese character learning. The text aims to make use of fragmented time to break the time and space, material, and object limitations of Chinese character learning to promote the benign interaction between language technology and language economy. It also applies this approach to the practice of teaching Chinese as a foreign language to explore a new teaching model - the Chinese character learning application model. Based on the test results of the Chinese character learning application in the IOS system, this study proposes a prototype of an ideal Chinese character learning application - "Hanzi Tong" - through in-depth analyses and summaries of the main problems and advantages of the current Chinese character learning application, aiming at overcoming the difficulties in writing, remembering and recognising Chinese characters, and to provide feasible suggestions for promoting the integration of app-based independent learning and traditional classroom teaching.

Keywords: international Chinese language education; Chinese character app; Chinese character learning.

1. Introduction

Since the implementation of the "Belt and Road" initiative, China's interaction with neighbouring countries has become closer, the number of international students has been rising rapidly, and Chinese has gradually become one of the most learned languages in the world. However, the teaching effect has been seriously affected by the insufficient number and low professional quality of Chinese a foreign language teachers in China. In order to improve the quality of international Chinese language education, some colleges and universities have set off a boom in international Chinese language education to stimulate the interest of international students in Chinese language learning by improving the interactivity of Chinese language teaching. However, the lack of high-level international Chinese language teachers and the inadequacy of Chinese language teaching service products and resource allocation methods have led to a huge gap in the online Chinese language education market, which is unable to meet the needs of users. In addition, the lack of effective management and maintenance of online teaching platforms fails to ensure the quality of teaching, resulting in poorer learning outcomes for learners. Therefore, the overall quality of educational resources needs to be urgently improved, and the degree of interaction between teachers and multimedia technicians in resource development needs to be strengthened.

2. The Market App Evaluation Analysis

A total of eleven existing Chinese teaching apps on the market were evaluated, and the following is a summary and analysis of the pros and cons of the relevant software.

(i) PLECO

Multi-language Translation Chinese Dictionary, full-featured and powerful, contains idioms, slang, and more. Features such as word cards and stroke order make it easy for learners to memorise and review. The software comes with Cantonese pronunciation and authentic usage collocations, suitable for whole-sentence use.

However, the pages are skimpy, there is no detailed grading, and there is a lack of scenario-building with real life. Premium accessories cost extra.

(ii) E Learning Chinese

The software has hundreds of sets of simulation and full-fledged questions covering key HSK vocabulary and grammar. The platform can be used for targeted learning and training to prepare for the exam through AI intelligent assessment.

However, the platform has some drawbacks, such as lack of integration with real-life scenarios, high price and support for mainland China only.

(iii) Hi Chinese

The software adopts the form of short videos and live broadcasts, and users can customise the handouts to learn about field life situations such as settling down in China, going on business trips, studying abroad, and so on. The software provides pronunciation demonstration videos, situational dramas, and a variety of Chinese-speaking test question banks.

However, there is only a small amount of free content within the software, most of which needs to be unlocked for a fee; there is less grammar and stroke order teaching content; and the number of test questions is insufficient.

(iv) ChineseSkill

ChineseSkill is a learning software for beginners of Chinese, covering the grammar and vocabulary required for HSK levels 3-4. The programme uses contextual teaching methods, automatic voice assessment and other aspects to help learners improve their listening, speaking, reading and writing skills.

However, the number of learning contents is small, covering only HSK3-4 levels, and the board division is not clear enough, without adding special practice boards, which is only suitable for beginner learners.

(v) TrainChinese

TrainChinese is an English interface offline software for learning Chinese, whose main body is a free dictionary including synonyms of words and radical composition. The software can be categorised according to usage scenarios and offers features such as Chinese character writing exercises and discussion boards.

The downside is that only the dictionary is available for free, you have to pay for the other features and the HSK level of the words is not available.

(vi) Art of Chinese Characters

The learning platform presents the themes through drawings, combines drawing with Chinese characters, provides a comprehensive introduction to Chinese characters, allows you to practice writing Chinese characters, and features accurate and clear pronunciation by real people.

The disadvantage is that it covers less vocabulary and Chinese characters, which makes it difficult to express a large number of abstract Chinese characters, and the scope of application is smaller.

(vii) Skritter

This Chinese character learning software distinguishes learning difficulty levels and targeted training, introduces the radicals of Chinese characters, has a variety of themes, differentiated difficulty levels, more pictures, and focuses on the introduction of tones.

Weaknesses include a lack of authentic expressions, difficulty in applying to daily life, and the need to pay for access to some of the content.

(viii) DuoLinGuo

The software focuses on life scene learning, suitable for zero basic learners, through the game to break through the way to learn. The software provides an SMS reminder function, according to the learner's basic division of the stage, the difficulty and the questions show different forms.

Weaknesses include lack of professionalism, more errors in translation and understanding of word meanings, too fragmented cuts of life scenarios, lack of systematic organisation, and lack of communication and troubleshooting sessions.

(ix) italki

This foreign language learning software offers interactive one-on-one online teaching by tutors, flexible study schedules and a dedicated community for communication. Trial services are available.

The downsides are that the verification of tutor qualifications needs to be improved, the software is overloaded with features, the interface is complex, there are lag issues, and the professionalism of some of the tutors is questionable.

(x) Du Chinese

DuChinese includes a wide range of Chinese short texts, and users can choose the difficulty level that suits them according to their Chinese learning level. The number of short texts is large and the types of texts are rich, the grading is clear from simple to difficult, the recordings are accurate and clear, and the speed of speech and pinyin can be customised.

The downsides are that you have to pay for downloads and other features, most of the articles likewise require a fee to use, there is a lack of learning to write individual Chinese character strokes, and the short articles are mainly stories without the use of specified scenarios.

(xi) Chinagram

The software provides an introduction to the history of the development of Chinese characters, together with a large number of multimedia elements such as pictures, animations and videos. You can learn each Chinese character individually and practice handwriting.

Weaknesses include errors in individual characters, mistakes in writing stroke order markings, and a limited number of characters that can be learnt.

3. Summary Of Issues

There are many Chinese character APPs for overseas Chinese learners, but the quality varies, the teaching effect is not satisfactory, there is an urgent need for a Chinese character learning platform or APP that contains text and video explanation and is interesting.The following is a summary of the author's problems with the software in this evaluation.

3.1 Interpretation bias

As a professional Chinese learning software, the accuracy of interpretation is the foundation of learning. Like English words, Chinese characters may have many different meanings, and learners have to pay attention to the situation of "familiar words" after learning the basic meanings. However, in this regard, there is a certain degree of interpretation bias in all learning software. For beginners of Chinese characters, and Chinese characters with simple forms and single meanings, it may not be a problem to use English words to explain them simply, for example, various nouns. However, when it comes to more complicated Chinese characters, such as "魑魅魍魉", or various adverbs and tone words with complicated meanings, just interpreting them in English will not solve the learner's confusion completely.

3.2 Incomplete teaching content

As a Chinese character learning app, it should present the knowledge of pinyin, tones, pronunciation, character shape, meaning, strokes, stroke order, parts, etc. In addition, it can also show the evolution of character shape and analysis of character composition more comprehensively. However, during the statistical process, the author still found that the basic teaching content of a few apps is incomplete, for example, "Hi Chinese" has very little grammar and stroke order teaching content; "Du Chinese" only has a short text to learn. At present, most of the apps do not show the pronunciation, strokes and stroke order completely, and the resources of the apps are uneven. There are even fewer displays of Chinese character parts, character shape evolution and character analysis.

3.3 Independent learning aids are relatively homogenous

3.3.1 Learning level positioning and testing

The software should recommend or choose suitable courses according to the user's learning level. Most of the Chinese character learning software on the market do not do this, but "E Learning Chinese" and "ChineseSkill" have AI intelligent tests and different levels of exercises, "TrainChinese" has HSK grading, and "Du Chinese" has HSK grading. TrainChinese" has HSK levels, while "Du Chinese" allows learners to choose their own learning level.

3.3.2 Exercise question bank

software should provide an exercise question bank to match the course being learnt, so as to facilitate self-study in the form of pre-study or consolidation after class. Currently, 4 of the Chinese character learning software on the market have appropriate tests or exercises, 2 have fewer tests, and 5 lack appropriate review tests. In this respect, "Skritter" and "italki" are more complete, while "E Learning Chinese" is mainly for HSK test questions.

3.3.3 Online toolkits

Software should provide convenient and accurate toolkits, such as Chinese character (word) dictionaries, pinyin converters, etc., which can provide accurate basic interpretations and application examples to make it more convenient for beginners to learn Chinese characters and words. In this regard, most of the evaluated software lacks the setting of tool books.

3.4 Inadequate setting of search language

According to a survey on the homepage of the Chinese language teaching online interactive platform in China, the media languages of the online platform are mainly English, Korean and Japanese, but also German, French, Vietnamese and other national languages (e.g. "Multi-neighbouring countries", "italki"), and "skritter" has 21 national languages to choose from, "Pleco"), and "skritter" has 21 languages to choose from. According to the above evaluation, the homepages of existing apps for teaching Chinese as a foreign language are mainly in Chinese and English, and lack the ability to switch between multiple languages.

4. Building On Strengths

4.1 Dissemination of information on Chinese culture

The main purpose of learning Chinese for non-Chinese speaking learners is not only to communicate in Chinese, but also to learn about China and its culture. "Du Chinese" provides Chinese stories, and "Pleco" contains all kinds of Chinese slang, hiatus, idioms, popular phrases, etc. Some software also has the learning of ancient Chinese language such as oracle bone inscriptions, which fully promotes the excellent traditional Chinese culture. In addition, Chinese online teaching software also needs to provide Chinese cultural information, including traditional culture, geography and cities, literature and art, travel and food, entertainment and hot topics.

4.2 Classification of Chinese characters

The association of the meaning of Chinese characters is generally reflected in the form of classification, and apps generally adopt a topic-focused approach. For example, "Hi Chinese" uses role-playing scenarios to learn Chinese characters; "DuoLinGuo" and "Art of Chinese Characters" use topics and scenarios to classify Chinese characters. The "Multi-Neighbouring Countries" and "Art of Chinese Characters" categorise Chinese characters by topics and scenarios. In general, there is a single form of classification, so the author believes that in addition to topics, Chinese characters can be classified by criteria such as meaning, sound, parts of characters, character structure, analysis of characters in the Six Books, and unique characters and composite characters, so as to explore an efficient way of teaching Chinese characters.

4.3 Ranking records

The existence of rankings allows students to visualise their own learning level, see the progress of others at the same level as them, and improve their self-learning planning. Skritter pushes learners to do their best in learning Chinese character sounds, meanings, and shapes by means of a ranking test competition that is not found in other software.

4.4 Confusing comparisons

Liu Mengdan (2016) stated that there are a large number of characters in Chinese that are similar in form but have very different meanings. For non-native speakers of Chinese, they may not be able to distinguish these similar characters clearly. For example, "于" and "干" (dry), "很" and "银" (silver) are similar in form, but their pronunciations and meanings are very different. There is a section called "Easily Confused" in ZiBaoBao, which includes some easily confused characters, such as "凹" and "凸" (concave), but this function is not perfect. When designing the app, perhaps we could group confusing words together and focus on the differences between them.

5. Software Prototype

Based on the research conducted and the team's expected goals for the Hanzi App, we can initially construct the prototype of the software.

5.1 Language settings

Because HanZi Tong is an app for a multinational audience, and to ensure accurate and efficient teaching quality, HanZi Tong is available in five main languages: English, Japanese, Korean, French and Russian.

5.2 Learning content

The software will grade the level of the learner based on the initial test, which is mainly categorised into beginner and intermediate/advanced stages. Users must have a clear syllabus and reference materials to learn Chinese characters, and cannot learn without knowing the source of the Chinese character arrangement. Therefore, the software needs to be set up with a formal and clear textbook reference, which is mainly based on the HSK Standard Tutorial and other textbooks commonly used by foreign Chinese learners.

5.2.1 Primary stage

Teaching Methods for Initial Understanding of Chinese Characters

The introductory stage of Chinese characters can be very difficult. For adult students, Chinese characters may be a completely new field, and their knowledge of Chinese characters is almost nil, and they may even have the misconception that they see Chinese characters as pictures. Therefore, at this stage, it is extremely important to change students' cognitive models of other languages and re-establish a cognitive model suitable for Chinese characters.

However, in actual teaching, just teaching these basics may seem monotonous and uninteresting. Therefore, we also need to adopt some more lively and interesting teaching methods, such as using Chinese pinyin and phonetics to assist in memorising Chinese characters and their pronunciation, and making sentences from Chinese characters to help students better master Chinese characters.

Apart from these teaching methods, there are other ways to help students overcome the difficulties in learning Chinese characters. Firstly, students should be exposed to as many Chinese character materials as possible, such as Chinese character books, newspapers, magazines, etc., in order to enhance their interest and love for Chinese characters; secondly, some activities, such as Chinese character competitions, Chinese character writing competitions, etc., can be organised in order to enhance the students' motivation and initiative in learning Chinese characters; and lastly, it is also possible to look for some native speakers of Chinese language or Chinese culture enthusiasts

to communicate with the students, so as to better understand and master Chinese characters and Chinese culture.

Selection of appropriate difficulty level of Chinese characters for teaching.

In the process of learning Chinese characters, it is crucial to choose suitable characters. Firstly, we should choose characters with low difficulty in learning glyphs, high frequency and fewer strokes, which reduces the difficulty of learning and enhances students' interest in learning. Secondly, in order to facilitate future self-learning, it is best to choose characters that show basic strokes and basic structures.

Apart from that, some words that are closely related to the learners' learning environment, living environment and learning purposes should be chosen appropriately. It is worth noting that apart from real words, some imaginary words should also be chosen appropriately to facilitate the formation of characters. This can deepen students' understanding and mastery of Chinese characters by combining different words.

5.2.2 Upper intermediate stage

Having mastered a small number of simple Chinese characters and having some basic knowledge of Chinese characters, foreign students at this stage have got rid of their unfamiliarity with Chinese characters, and have some understanding and mastery of some basic rules of Chinese characters. However, with the gradual increase in the number of Chinese characters learnt, the phenomenon of confusion between similar components and radicals is becoming more and more prominent, and the mixing of homophonic characters is also increasing. Therefore, the software will focus on the teaching of ideographs and form-sound characters, i.e., characters that can be linked by phonetic symbols and form-sound symbols.

5.2.3 Review

The wrong and difficult words that are repeatedly wrong or marked by the learner will be classified into the vocabulary book. According to the Ebbinghaus Memory Curve, the software will periodically pop up reminders for learners to review the wrong words.

5.3 Independent learning aids

5.3.1 Dictionary search.

In this section, learners can use the software to look up vocabulary that is included in the programme, or to learn new vocabulary. The introduction of words includes character shapes, which are highlighted to make it easier for learners to remember the characters; some of the words can also be explained using patterns that express the relevant meanings; and example sentences, which use more authentic expressions and add some vocabulary-related dialogues.

5.3.2 "Hearing" zone

In this section, learners can listen to the pronunciation of Chinese characters over and over again. The section also introduces how to pronounce Chinese characters, parts of the body, precautions to be taken when pronouncing Chinese characters, the difference between Chinese characters and other pronunciations, etc. Through "Pronunciation Scoring", learners can practice and then be scored automatically by the machine.

5.3.3 "Writing" area

There are two main parts in this zone: one is the introduction of the etymology of Chinese characters, i.e. the changes of Chinese character shapes from oracle bone inscriptions to JinWen to small seal scripts to li shu regular scripts; and the other focus is the introduction of Chinese character stroke order, which is shown to the user in the form of animation to show the sequence of Chinese character strokes and the provision of a blank metre grid on which the learner can follow the animated strokes to learn how to write the Chinese characters step-by-step.

5.3.4 Interactive area

In the "Discover" interface, learners can join different study groups according to their own Chinese language level and communicate with each other. The learning progress and efficiency ranking of group members is updated at any time to enhance the urgency of learning. After clicking into a certain content module, learners can also view the content posted by other users related to the circle of interest, which may help them find like-minded people and enhance the sense of interaction.

5.4 Video boards

The content of the videos consists of three main areas: explanations of common basic individual Chinese characters, explanations of HSK test questions, and topics of confusing comparisons. Each video is about 25 minutes long. The explanation of Chinese characters mainly includes the introduction of pronunciation, strokes, radicals, etymology, phrases, example sentences, usage and other comprehensive contents. For Chinese learners, there are great problems in mastering many polyphonic characters, near-synonyms, morphology, and confusing characters with similar readings. To address this situation, the video will carry out a topic to compare the relevant content in a confusing manner. The team will build on its professional strengths and contact experienced lecturers in the industry to shoot and explain the video.

5.5 "Daily Learning" function

As the name suggests, "Daily Learning" means that every day the system will automatically push corresponding learning contents to the learners on the homepage, which are mainly about Chinese culture, including traditional Chinese culture such as the 24 solar terms, traditional Chinese costumes, etc., as well as modern Chinese culture, such as popular words at a certain stage, hot topics at a certain stage, etc. The system will also help learners understand more about Chinese culture and Chinese society through traditional culture and modern culture. By reading the pushed articles, learners can increase their interest in learning Chinese, and make learners understand more about Chinese culture and Chinese society through traditional and modern culture, national conditions, and so on.

6. Conclusion

In recent years, there has been significant growth in the Chinese language learning and education industry. With increased economic and cultural exchanges between countries, an increasing number of non-native Chinese speakers are showing interest in learning the language. Mobile applications designed for learning Chinese characters have emerged as a crucial tool for supporting classroom teaching. Given that Chinese characters form the foundation of Chinese language learning, it is important to consider the differences in learning styles between learners from Chinese character-based languages and those from non-Chinese character-based languages. Additionally, it is essential to emphasize the integration of the whole and the parts of Chinese character learning, encompassing their form, sound, and meaning.

As online teaching gains prominence in today's educational landscape, the development of a comprehensive mobile application platform for Chinese characters still has a long way to go. "HanZi Tong" platform would aim to provide a wide range of resources and interactive features to facilitate effective and engaging Chinese character learning for learners of all levels. By leveraging the power of technology and incorporating pedagogically sound approaches, such a platform can contribute significantly to the accessibility and effectiveness of Chinese language education for non-native speakers.

Acknowledgements

References

[1] Wu Zhouxin. Analysis and Improvement of Chinese Character Learning APP for Teaching Chinese as a Foreign Language[J]. Forest Teaching,2020,No.274(01):50-53.

[2] ZHANG Jingwei,LIU Liquan. Survey and analysis of the current situation of Chinese language education application software for mobile terminals[J]. China Language Strategy,2019,6(01):92-100.

[3] Yochen An (Okafor Francis Emeka). An investigation of mobile application (APP) solutions for Chinese language learning[D]. Zhejiang Institute of Science and Technology,2021.DOI:10.27840/d.cnki.gzjkj.2021.000074.

[4] Yi Xin Liu. Research on User Experience Design of Language Learning App [D]. Jiangnan University,2020.DOI:10.27169/d.cnki.gwqgu.2020.000613.

[5] Zhang Wenjun. A preliminary study of teaching Chinese characters in teaching Chinese as a foreign language [D]. Fudan University,2009.