

# Research on Strategies for Improving Primary School Chinese Pinyin Ability Based on Blended Learning

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**Abstract**—The teaching of Pinyin is the basis of Chinese teaching in primary schools. The level of Chinese spelling ability will have a direct impact on students' future learning and cognition of things. How can we better improve the classroom quality of primary school Chinese and the learning efficiency of students? This is a question that needs to be considered. In the teaching process, blended learning can fully leverage students' subjectivity and teachers' leadership, thereby improving students' overall level. Through conducting educational quasi experiments, selecting the same teaching content for teaching design, selecting research subjects, and setting up experimental and control groups in the experiment, the experimental group adopts a mixed teaching mode, while the control group continues to use traditional teaching mode. Finally, test questions are used for summary evaluation and interviews with parents. The implementation effect is summarized through data analysis. The experimental results show that compared with traditional single classroom teaching, the blended learning classroom is lively and interesting, effectively solving problems such as students' difficulty in reading tones and overall recognition of syllables. From this, it can be seen that the blended learning mode is one of the effective ways to improve primary school Chinese spelling ability. During the learning process, tasks are assigned online before class, materials are collected, and various teaching methods are used to analyze and expand after class. Students use blended learning mode to preview online, expanding knowledge in offline classrooms, this learning model also provides ideas for teaching other teaching content.

**Keywords**—blended learning, primary school Chinese, Chinese Pinyin

## I. INTRODUCTION

With the rapid development of computer and network technology, human beings have begun to enter the new era of "Internet plus", and human society has therefore gradually entered the era of comprehensive informatization. The wave of e-learning has swept the world. Under the new historical background and technical conditions, Blended Learning has begun to be widely used in the field of education. According to the survey

report issued by the United States Department of Education, blended learning is the most effective way of learning compared with simple classroom teaching and distance online learning [1].

Due to the continuous application of information technology in the field of education, the country also attaches great importance to it. The 13th Five Year Plan for the Development of National Education issued by the State Council in 2017 clearly stipulates that "actively develop 'Internet plus' education, encourage teachers to use information technology to improve teaching levels, innovate teaching models, and make good use of high-quality resources by Flipped classroom, hybrid learning and other methods" [2]. At the same time, the "Chinese Language Curriculum Standards for Compulsory Education (2011 Edition)" clearly states: "Chinese education should fully mobilize students' enthusiasm for learning, cultivate their awareness and habits of autonomous learning, guide students to master the methods of Chinese learning and create an environment conducive to students' independent, cooperative and exploratory learning. At the same time, it should also respect individual differences, encourage students to find their own learning methods, flexibly use a variety of teaching strategies and modern information technology, and strive to explore new teaching methods under the network environment" [3]. Meanwhile, modern society also requires changes in traditional education. Modern education relies on the construction of educational resources and an information-based learning environment, advocates innovative learning, promotes the integration of information technology and teaching, and cultivates students' learning abilities in an information-based environment.

This paper intends to change the students' original learning mode through blended learning, transform the students' passive acceptance of knowledge into active discovery learning, integrate information technology into primary school Chinese Pinyin teaching, stimulate students' interest in learning, and then improve students' ability of Chinese spelling. Based on the organization and analysis of the relevant theories of blended learning, and in response to the current situation of primary school Pinyin teaching, a blended learning plan suitable for primary school Chinese Pinyin teaching is designed, in

order to propose specific and feasible plans and suggestions for primary school Chinese Pinyin teaching.

## II. CURRENT RESEARCH STATUS

### A. Abroad Research Status

Blended learning originated in foreign countries and has received high attention from numerous scholars since its inception. Numerous scholars have made significant contributions to the practice and improvement of blended learning theory. Blended learning is also widely used in the field of online education. Curtis Bunker conducted a very detailed analysis of the current situation and other aspects of blended learning strategies, and also provided prospects for their future development trends [4]. Scholars such as Halverson used systematic analysis to analyze the most frequently cited publication content in the past decade from three aspects: the exploration approach, research subjects, and the theoretical framework of student participation in blended learning. The final research results pointed out that the curriculum design, intention, exploration subjects, and learning effects of blended learning are the four most valued themes by scholars.

### B. Domestic Research Status

The term ‘blended learning’ was first mentioned in China by Professor He Kekang at the 7th Global Conference on the Application of Chinese Computer Education in 2003. A year later, Professor He Kekang published an article titled ‘New Developments in Educational Technology Theory from Blending Learning’ in the journal ‘Research on Electronic Education’. In terms of the research on the mode of blended learning, Professor Li Kedong pointed out that the core concept of blended learning is to adopt different teaching methods based on different actual situations and conditions, with the goal of achieving the highest teaching effect at the lowest cost in the classroom, and achieving teaching through different media and information dissemination methods. In addition, Professor Huang Ronghuai, Professor Wang Yuanbin, and others have also achieved good results in empirical research on blended learning. Professor Huang Ronghuai proposed a curriculum design module that combines the advantages of traditional classroom and online teaching, and conducted empirical research on its specific use in classroom teaching. At the same time, Professor Wang Yuanbin and others also conducted theoretical design and applied research on blended learning, creating a blended learning model for universities. On this basis, they also studied the application of blended learning in university classrooms.

### C. Overview and Analysis

At present, theoretical research on blended learning in the field of educational technology at home and abroad mostly focuses on the definition, basic principles, teaching models, and strategies of blended learning, as well as the practical connotations of “mixing” and “mixing” at what level can be achieved, as well as the

value and significance of blended learning. However, there is very little empirical research on the curriculum design, teaching effectiveness, and influencing factors of blended learning, especially the use of blended learning models in primary and secondary education. For example, how to reasonably allocate the time and proportion of traditional classroom teaching and online teaching, how to design and implement blended learning with limited resources to make the teaching effect of blended learning better than traditional classroom teaching, etc., these are all issues worth further research.

## III. DEFINITION OF RELEVANT CONCEPTS

### A. Blended Learning

Due to the different research directions of different scholars, the concept of blended learning varies in different eras. The author mainly understands the definition of blended learning by scholars or institutions that have achieved significant results in the field of blended learning both domestically and internationally.

The definition of blended learning in foreign countries was first seen in American training institutions, which believed that “the goal of blended learning is mainly to cultivate employees’ interpersonal skills, problem-solving skills, Cooperative learning, and personality chemistry learning ability, so as to achieve the maximum goal of the enterprise” [5]. Other foreign scholars have also provided their own explanations for the concept of “blended learning”, as shown in Table I.

In China, there is no unified standard for the definition of blended learning, and different scholars have provided their own definitions of blended learning based on their research directions. Mainly including Professor Li Jiahou, Professor Li Kedong, and Professor Huang Ronghuai, as shown in Table II.

In this paper, the author agrees more with Professor He Kekang’s viewpoint that blended learning combines the advantages of traditional classroom teaching with digital or networked learning. It should not only fully leverage the leading role of teachers in guiding, inspiring, and monitoring the teaching process, but also fully reflect students’ initiative, enthusiasm, and creativity to highlight their learning subject status [12].

TABLE I. THE DEFINITION OF BLENDED LEARNING BY FOREIGN SCHOLARS

Scholars	Definition
American studies	Blended learning is a learning method about how learners can master and improve their personal learning performance [6].
Curtis Bonk	Blended learning is a combination of face-to-face learning and online teaching, where teachers need to design teaching based on different teaching objects, learning environments, and learning needs [7].
Hofmann	Behind blended learning lies the idea that instructional designers divide a learning process into many modules and then decide to present these modules to learners using the best media [8].

TABLE II. DOMESTIC SCHOLARS' DEFINITION OF BLENDED LEARNING

Scholars	Definition
Li Jiahou	The so-called blended learning refers to the optimization and combination of all teaching elements to achieve teaching objectives, while teachers and students need to skillfully use various teaching methods, models, strategies, media, technologies, etc. according to teaching requirements in the process of learning and teaching, to achieve an artistic realm [9].
Li Kedong	The essence of blended learning is a teaching method that organically integrates face-to-face learning and online learning to achieve the goal of reducing costs and improving efficiency [10].
Huang Ronghuai	Blended learning is the organic integration of face-to-face learning and digital learning [11].

### B. Chinese Pinyin

Baidu Baike mentioned that “Pindu” means to read syllables by combining two or more phonemes. At the same time, the Pinyin Scheme provides detailed standards for the content and rules of Pinyin. The Pinyin unit consists of 39 vowels and 21 initials, as well as four tones: Yin Ping, Yang Ping, Shang Sheng and Qu Sheng. Chinese Pinyin refers to the continuous process of combining initials and vowels into complete syllables and combining them with four tones for spelling.

## IV. PRELIMINARY ANALYSIS OF INSTRUCTIONAL DESIGN

### A. Respondents

As the first grade students of primary schools have just started learning Pinyin, they still do not have the ability to read and express words, but teachers can understand students' attitudes through students' Microexpression and micro movements. Therefore, the survey objects are Chinese teachers of some front-line primary schools in Changsha High Tech Zone, to understand and analyze the current situation of primary school Chinese Pinyin students' learning and teachers' teaching.

### B. Problem in Pinyin Teaching in Primary School

#### 1) Elementary education in early childhood

According to the data of the questionnaire survey, 19.3% of the students have learned Pinyin to varying degrees before entering school. Because some students have learned Pinyin to varying degrees in kindergarten education, which makes the initial ability of primary school students in grade one to learn Pinyin inconsistent. Therefore, some students with Pinyin foundation will lose their concentration in classroom teaching and are not interested in learning Pinyin, which seriously affects the effect of primary school Pinyin classroom teaching. Students enter the school with imperfect Pinyin, such as incorrect front and back nasal pronunciation, flat tongue pronunciation, etc. This questionnaire also reflects this problem, which will bring greater difficulties to the first grade Pinyin teaching [13].

#### 2) Single teaching method form

First grade students have a relatively short concentration time and are mainly focused on unintentional attention, with strong interest, intuition, and emotional color. Their attention is unstable. In a class, students often only focus relatively in the first twenty minutes, while in the last twenty minutes, students are easily attracted to other things, resulting in low learning efficiency. According to the survey results, 85.71% of teachers use teaching aids such as pinyin cards, textbook scenarios, and audio to teach Pinyin, while 83.93% of teachers use teacher demonstration reading and student follow-up reading to teach Pinyin. And teachers rarely provide extracurricular learning resources for students. During my internship, I found through classroom observation that when teachers use demonstration reading and students follow teaching methods, students' interest in learning is not high and they are easily bored. If teachers are limited to rote memorization, constantly repeating, and not selecting appropriate teaching methods based on students' cognitive characteristics, it is difficult to stimulate students' learning interest and achieve the expected teaching effect.

#### 3) Not valuing students' differences

Each student is an independent individual, and their living environment, family background and knowledge base are different, which also leads to great differences in students' learning of Pinyin, and some students have been exposed to Pinyin learning to varying degrees before entering school, which further increases this difference. In each class, students can be roughly divided into three categories based on their learning level. The first kind of students are very receptive to learning. They perform very well both in class and in practice tests. They are easy to learn Pinyin and can accurately spell and write. The second kind of students do not have too much difficulty in reading and writing Pinyin as a whole, but there are small problems in some aspects [14]. The third kind of students are not ideal in syllable spelling or writing, especially during practice, it is particularly evident. The number of these three types of students is generally in the form of “rugby”, with small ends and large middle. When teaching, teachers may fail to pay attention to the third type of students in a timely manner due to the large amount of teaching content and tight teaching time. There are differences among each student, and teachers should take this into account when conducting normal teaching. They should have a comprehensive understanding of students and try to teach them according to their aptitude.

## V. PRELIMINARY ANALYSIS OF INSTRUCTIONAL DESIGN

### A. Preliminary Preparation for the Experiment

#### 1) Experimental research subjects

This research chooses a primary school in Changsha High Tech Zone to conduct an experimental study on the application effect of mixed mode in the Pinyin of primary school first grade Chinese. Through communication with school leaders and teachers, this research selects students from two classes, Class 2104 and Class 2105, as the

research objects. Class 2104 is the control group, which adopts the original Pinyin teaching mode. There are 23 girls and 25 boys in the class, a total of 48 students. Class 2105 is the experimental group. There are 27 boys and 21 girls in the class, 48 students in total. The class adopts the mixed learning mode to teach Pinyin. The two classes are taught by the same teacher, and the teaching materials are the “Compulsory Education Textbook (Chinese First Grade Volume)” published by the People’s Education Publishing House organized by the Ministry of Education. The teaching progress and content of the experimental group and the control group are the same.

2) *Experimental research tools*

This research mainly uses the primary school Pinyin test paper to make a summary evaluation of the teaching effect of the mixed teaching mode and the traditional teaching mode.

B. *Experimentation*

During the one-week teaching experiment, Class 2105 of the experimental group strictly followed the teaching design scheme based on the blended learning concept designed by the author. The courseware was sent to the teacher in advance before class, and was modified by the teacher before use in class. The teacher sent the micro lesson to the WeChat parent group before class, allowing students to watch and learn on their own before class. After class, the micro lesson exercises were sent to the parent group for students to practice on their own. Class 2104 follows the original teaching mode, and the teaching progress of the two classes is the same.

1) *Teaching process of the control group*

The control group still uses the traditional classroom teaching mode, explaining new knowledge points on the blackboard, completing exercises in the textbook, and the interaction between teachers and students completely relies on Q&A. The students’ enthusiasm for discussion throughout the class is not very high, and the classroom atmosphere is relatively dull. The teacher occupies a dominant position in the classroom, and the students are waiting for the teacher’s arrangements and instructions, resulting in low learning initiative.

2) *Teaching process of the experimental group*

Before class, students have systematically studied the teaching content of this lesson through videos. Most students are already familiar with the teaching content, which is beneficial for students to have more time to interact with the teacher when learning new lessons and stimulate their interest in learning. The introduction section of the new lesson involves reviewing old knowledge and combining it with the illustrations in the textbook. Use the little monkeys, hedgehogs, lions, and saplings in the picture to introduce the learned tongue raising sounds and overall recognition syllables. Provide a detailed explanation using the pronunciation techniques of flat tongue sounds, and then allow students to experience the subtle changes in the tongue when using a raised tongue sound. Let students intuitively experience the differences between flat tongue sounds and raised tongue sounds through personal experience, in order to

prevent confusion or errors in using a flat raised tongue sound. Reuse the method of memorizing tongue curling sounds to help students remember them. After the knowledge points are explained, classroom exercises are conducted in various ways. Students who successfully challenge will be rewarded accordingly. The main forms of practice include spelling, linking, and filling out. Pinyin refers to the presentation of a certain number of syllables in the courseware and placing them in the corresponding specific context, inviting students to challenge them. The next step is to connect. The courseware will provide four pictures, each representing a common item in daily life. Above the pictures are the syllables of the item, and students need to connect the syllables with the corresponding pictures. Then fill in the blanks. There will be four pictures in the courseware, each representing an item. The syllables of the item are given below the pictures, but the syllables are missing the initial consonants. Students need to complete them. Finally, there is a classroom summary, where teachers summarize based on the teaching content to strengthen students’ consolidation of the learned content. After class, exercise questions will be issued to students to test their learning effectiveness.

C. *Experimental Results*

In order to ensure the effectiveness and scientificity of the experiment, two classes with similar numbers and basic levels of students in a primary school in Changsha High Tech Zone were selected as the control group and the experimental group, using the same teaching content. The control group (Class 2104) used the traditional teaching mode, and the experimental group (Class 2105) used the mixed teaching mode for teaching. The testing method for the results of this experiment is based on exercise questions as post evaluation, and appropriate difficulty exercises (see appendix) are set based on students’ cognitive level, teaching content, and teaching objectives for post evaluation. The statistical analysis of the test results of the experimental group and the control group is shown in Tables III and IV, and Fig. 1:

TABLE III. STATISTICAL TABLE OF EXPERIMENTAL RESULTS

Experimental Group			Control Group		
Grade	Number of people	PCT	Grade	Number of people	PCT
> 90	13	27%	> 90	10	21%
80-89	21	44%	80-89	18	38%
70-79	12	25%	70-79	15	31%
60-69	2	4%	60-69	4	8%
< 60	0	0%	< 60	1	2%
	48	100%		48	100%

TABLE IV. ANALYSIS OF EXPERIMENTAL RESULTS (Z-TEST)

Group	Number of people	AVG ( $\bar{X}$ )	$\sigma$	P	Z
Experimental Group	48	81.81 ( $\bar{X}1$ )	7.90 (S1)	< 0.01	3.06
Control Group	48	79.85 ( $\bar{X}2$ )	9.05 (S2)		

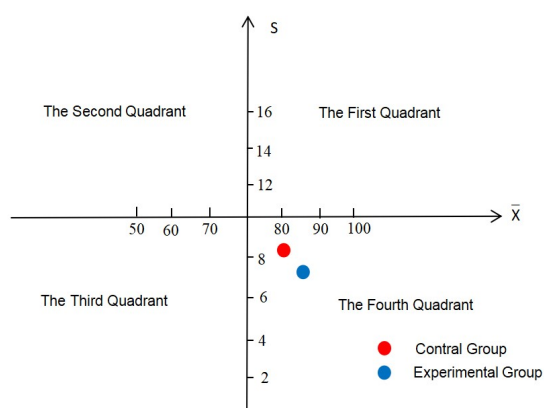


Fig. 1.  $\bar{X}$ -S plane analysis model

From Table III, it can be seen that in the score range of 90 or above, the proportion of the experimental group is 6% higher than that of the control group. In the graduation thesis (design) from 70 to 79, a study on strategies for improving primary school Chinese spelling ability based on blended learning was conducted. In the score range of 25, the control group is 6% higher than the experimental group, and the proportion of the control group is 2%, which is lower than 60 points. However, this situation did not occur in the experimental group. This analysis method adopts the double population Z-test. It can be seen from Table IV that the average value of the experimental group is higher than that of the control group, and  $S_1 < S_2$ , which means that the performance of the experimental group is better than that of the control group and more stable than that of the control group. Additionally, establish the null hypothesis:  $H_0: \mu_1 = \mu_2$ ,  $\bar{X}_1 = \bar{X}_2$ . By searching the Z-value table, it can be seen that  $Z_{0.01} = 2.58$ , while  $Z = 3.06 > 2.58$ . From the Z-value table,  $P < 0.01$  was found, and the null hypothesis  $H_0$  was rejected. It can be considered that there is a very significant difference in performance between the experimental group and the control group. In addition, from Fig. 1, it can be seen that the data of the experimental group and the control group are both in the fourth quadrant, belonging to a high average level and relatively concentrated state. However, the experimental group is far from the origin (representing normal ( $\bar{X} = 75$ ,  $S = 10$ )) than the control group, indicating that the experimental group has better results than the control group. In summary, the blended teaching mode is more effective than the traditional teaching mode.

#### D. Empirical Conclusion

With the help of modern information technology, this study explores the application of blended learning in the teaching of Pinyin in primary schools. First of all, through consulting and collecting relevant literature, we can understand the current research situation at home and abroad, sort out the theoretical basis, clarify the research ideas and research methods of blended learning in Pinyin teaching in primary schools, and elaborate its core concepts and related concepts. Before the teaching experiment, we conducted a questionnaire survey on teachers to understand the current situation of Pinyin

teaching in the first grade of primary school. Then we selected the same teaching content for teaching design based on the theoretical basis, and selected the research objects. In the experiment, we set up an experimental group and a control group. The experimental group used a hybrid teaching mode for teaching, while the control group still used a traditional teaching mode. Finally, we used test questions for a summary evaluation, by analyzing the data and summarizing the implementation effect, the experimental conclusions are as follows. Blended learning can improve the primary school students' interest in learning Pinyin, so as to improve their Chinese spelling ability. The blended teaching model can greatly unleash students' subjectivity in learning, making the classroom atmosphere more lively and active, and teachers are no longer the masters of the classroom. Compared to traditional single classroom teaching, blended teaching is lively and interesting, effectively solving problems such as students' difficulty in reading tones and overall recognition of syllables during learning. In addition, the online teaching resources in blended learning can enable students to repeatedly use them before, during, and after class, without being limited by time and space. It can deepen memory and further enhance students' learning effectiveness.

## VI. STRATEGIES FOR IMPROVING PRIMARY SCHOOL CHINESE PINYIN ABILITY

### A. Suggestions for the Teachers

Teachers are the guides for students in the learning process, playing a very important role in their daily learning, course management, and teacher-student communication. Due to the teacher oriented nature of first grade students in the learning process, they unconsciously imitate the teacher's words and actions. Therefore, as a teacher, one should always pay attention to their words and actions, and set a good example for students.

#### 1) Update educational concepts

In traditional classrooms, teaching is mainly centered around teachers, who have absolute authority. This teaching mode will greatly limit students' thinking and innovation abilities, hinder their comprehensive development, which does not meet the requirements of the new curriculum reform for teachers. Constructivism emphasizes that learning is self constructed by learners in the interaction with the environment, rather than instilled. Therefore, teachers should constantly update their educational concepts, fully realize that the teaching process should be student-centered, and play the role of students as the main body. Teachers should also strive to transform their roles from the original leader to the guide, and pay attention to the creation of situations in the teaching process. Teachers in the new era should carefully study the teaching theories of the new curriculum standards, continuously improve themselves through learning, keep up with the times, and strive to be good educators in the new era.

#### 2) Combining local dialects to correct Mandarin pronunciation

When students learn Pinyin, they mainly want to master the knowledge of the four aspects of initial consonants and vowels, accurately recognize syllables and distinguish four tones. Students learn Pinyin mainly through teacher demonstration and students' following, so whether the teacher's pronunciation of Putonghua is correct will indirectly affect students' learning. According to the author's visit to the teachers during the internship, the first grade Chinese teachers and 90% of the students are from Hunan, and Hunan people have the problem of indistinguishable nasal n and lateral l in the initial pronunciation. Therefore, on the basis of accurate reading and mastering each Pinyin initial and final, the first grade teachers need to combine the local pronunciation characteristics and existing problems to change the dialect pronunciation habits in the teaching process, and timely correct their own and students in the teaching of Pinyin deficiencies.

### *B. Suggestions for the Family*

In the process of a person's growth, the formation of thoughts and behaviors is always inseparable from the influence of family. In addition to receiving education in school, the influence of education from families and society also subtly affects students' development. If these impacts can always be consistent, it will promote the comprehensive development of students, and in turn, it will hinder their development.

#### *1) Synchronized development of family education and school education*

The comprehensive development of students requires a dual approach to home school education. In the process of education, family education should be consistent with school education. Family education and school education are dialectical and unified, and neither is indispensable. Parents should actively cooperate with school education, not argue against the teacher, and should not assume that students have already learned about pinyin in school, so they don't need to study at home. Parents should fully recognize the importance of family education. When students return home, parents should urge them to review in a timely manner, consolidate and strengthen the knowledge they have learned, fully leverage the overall role of family education and school education. In addition, if the goals of home school education are not consistent, it will seriously hinder students' rapid and healthy growth.

#### *2) Creating a good Pinyin learning atmosphere*

The environment determines various aspects of people's language, cultivation, habits, consciousness, and behavioral nature [15]. The atmosphere in the family will also affect students' enthusiasm for learning. If students are willing to take the initiative to learn Pinyin, parents should also create an atmosphere for students to learn Pinyin at home. For example, parents can guide students to spell the names of items in their daily lives, play animations and nursery rhymes related to pinyin, etc. Parents cannot force students to memorize, should be patient, pay attention to the stages and imbalances of students' development, and guide students to actively learn and engage in meaningful learning in a relaxed and happy atmosphere.

### *C. Suggestions for the Teaching*

#### *1) Develop reasonable teaching objectives*

Teaching objectives are the direction indicators of teaching practice activities. If the teaching objectives are reasonable, effective teaching will be derived. Conversely, it will lead to ineffective teaching. Zankov, a Education in the Soviet Union educator, once pointed out that the teaching goal should be set within the students' "nearest development zone". Teaching should be difficult and students should be allowed to "jump" to pick peaches [16]. Therefore, before carrying out teaching activities, it is necessary to establish a reasonable teaching objective. In view of the characteristics of poor self-control and relatively unfocused attention of the first grade students, teachers should fully consider the learning situation and cognitive characteristics of students when setting teaching goals. For example, whether they have learned Pinyin before entering school needs targeted teaching of Pinyin. At the same time, teachers should also communicate and exchange more with other excellent teachers, learn effective teaching methods from other teachers, and reflect and summarize in a timely manner after class, adjusting teaching objectives in a timely manner. Only in this way can the teaching objectives set by teachers be more reasonable.

#### *2) Properly organize teaching content*

The teaching content of Pinyin in primary school Chinese is mainly to be able to pronounce correctly, write correctly, spell correctly, and distinguish four tones correctly. Ausubel's Meaningful learning theory believes that Meaningful learning refers to the non-human and substantive connection between the new knowledge represented by symbols and the existing appropriate concepts in learners' cognitive structure. In addition, the thinking of first grade primary school students is mainly based on visual thinking, making it difficult to understand abstract pinyin letters. In addition, the teaching tasks are heavy and the teaching time is limited. Therefore, it is necessary for teachers to connect the teaching content with familiar things in students' daily lives, organize the teaching content appropriately, and improve teaching efficiency.

#### *3) Adopting diverse teaching methods*

Due to the influence of traditional education, teachers often use indoctrination methods throughout the entire classroom teaching process, which often fail to stimulate the learning initiative of first grade children. Therefore, teachers should try to use diverse and interesting teaching methods in order to fully stimulate students' learning interests and improve their learning effectiveness.

#### CONFLICT OF INTEREST

The author declares no conflict of interest.

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