THE APPLICATION OF PROBLEM BASED LEARNING METHOD IN CHINESE READING SKILL OF GRADE 5 STUDENTS IN GUIZHOU PROVINCE, CHINA

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Abstract

This quantitative study investigated whether the application of Problem based learning (PBL) method improved grade 5 Chinese students' Chinese reading skill and their satisfaction in learning Chinese reading. The sample group consisted of 30 Chinese students studying in grade 5 in Guizhou Province, China. The data were collected through the use of four lesson plans, pretest and posttest as well as questionnaire, and analyzed using descriptive statistics analysis and paired-sample t-test. The data collection lasted for four weeks with the teaching experiment which was carried out online. The results obtained from the pretest and posttest revealed that the students in a sample group improved their Chinese reading skill with the mean score of posttest ($\bar{x}$=26.37, SD=2.54) and the mean score of pretest ($\bar{x}$=22.57, SD=4.22), resulting in the mean difference of 3.8 points. Almost all of the items of the questionnaire were rated in the highest level. Most students in a sample group expressed remarkable satisfaction towards the application of PBL method in learning Chinese reading. This study has proved that the use of PBL method sheds light on an alternative effective way of learning Chinese reading. In other words, this may be considered as an option for Chinese language teachers in China and all.

Keywords: PBL teaching method, Chinese language reading Skill, Learning Achievement, Students' Satisfaction and Grade 5 Students

Introduction

Chinese is a comprehensive subject that combines characters and language organically. Language learning is carried out through texts or some exemplary works, rather than simply learning words, sentences and other knowledge. People's daily communication is inseparable from Chinese, and the inheritance of human culture is inseparable from Chinese. It is not only a tool for human communication, but also an integral part of culture. Chen (2021) indicating Chinese is a basic subject of education in China. It is also a very important subject, for the importance of the cultivation of the students' language power of expression.

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Reading is an activity that uses language to acquire information, understand the world, develop thinking, and gain aesthetic experience and knowledge. It is the process of obtaining information from visual materials. It is very common in Chinese language classes in elementary and secondary schools in China. As Wang (2019) describes in his study of elementary school Chinese language teaching, reading is the most important teaching element to guide students to establish their interest in Chinese language learning, and it is essential for improving elementary school students' Chinese language learning literacy. The cultivation of reading ability plays a vital role in the Chinese quality education of primary school students. Therefore, with the deepening of the new curriculum reform, reading teaching is becoming more and more important in primary school Chinese teaching.

Under the influence of traditional Chinese education, students lack interest in reading. Students participate in teaching activities in a passive role, taking notes at the request of the teacher, and it is difficult to achieve independent analysis and thinking, and they lack the necessary attitude of inquiry and questioning about the content of the reading. This prevents them from reading across a wider range of topics, thus limiting the development of their Chinese literacy.

As society develops and science and technology rapidly develop, education is constantly changing, especially in the context of new curricular ideas. Chinese Curriculum Standards for Compulsory Education (2022) put forward the idea that students are the subjects of learning, which completely changed the teacher-oriented teaching method and returned the dominant position of learning to students, so that students take the initiative to learn the knowledge and content they are interested in rather than passively accept it. Arousing students' problem consciousness, developing students' creative thinking, improving students' Chinese literacy comprehensively.

Based on the current teaching situation of Chinese reading in primary schools, in order to strengthen students' Chinese reading ability, many teachers combine their own teaching experience and use the Problem-Based Learning teaching method (Qian, 2021). The PBL teaching method was developed in 1969 by Barrows, a professor of neurology at McMaster University in Canada. Problem-based Learning is called PBL for short. PBL teaching method is a kind of problem-based teaching method, which is organized around problems. Students should be given consideration for their subject status. They should be taught around problems, they should be encouraged to acquire basic knowledge, and they should be allowed to use their existing knowledge to rebuild and to learn new knowledge.

Chen (2017) notes that problem-centered PBL teaching methods can be effective in avoiding the problems teachers face in the teaching process while taking full advantage of the teaching advantages brought about by "problems." Cui (2021) points out that stimulating students' interest is the most crucial aspect of primary school Chinese reading teaching. By incorporating PBL teaching methods into Chinese reading lessons, Chinese classrooms can become livelier and more interesting, thereby improving classroom quality. Wang (2019) notes that integrating PBL into Chinese reading instruction can improve students' capacities for independent learning, cooperative learning, and inquiry learning, expand their thought processes, and improve Chinese proficiency.

Based on all the information above, this study; therefore, aimed to compare grade 5 Chinese students' Chinese reading ability before and after the use of PBL method in Guizhou province, China as well as to examine the students’ satisfaction in learning Chinese reading. The researchers have expected to provide an effective reference for the implementation of primary school Chinese reading in the future.

Research Objectives

1. To compare grade 5 Chinese students' Chinese reading ability before and after the use of PBL teaching method in Guizhou province.

2. To investigate grade 5 Chinese students' satisfaction toward the application of PBL teaching method in Chinese reading learning.

Literature Review

Chinese Curriculum in China

Nowadays, the Ministry of Education has announced details of the reform of the Chinese and English language exams, and the importance of the Chinese language subject has become even more apparent, and it is likely that it will become a 200-point subject in the future. Therefore, Chinese language must become an important subject for schools. After the reform of the college entrance examination, the three subjects of the general examination: Chinese language, mathematics and English, the difficulty of English has been reduced, while the breadth and depth of the Chinese language has been increased (Liu & Ling，2019). As a result, Chinese language curricula are receiving increasing attention.

Chinese Reading Skill

Referring to the ability of students to read and comprehend texts actively with the help of PBL teaching method and through group discussions in order to solve problems. In this study, it was assessed through the use of pretest and posttest. The achievement test included 30 questions with a total of 30 points, one point per question.

Problem Based Learning Method

PBL as a teaching method can strengthen the relationship between teachers and students. It can enrich the reading teaching process. It combines students' independent learning and cooperative inquiry. This enables them to actively search for relevant information, discuss and communicate with other students, and jointly explore solutions to problems. It also can change the roles of teachers and students in the classroom.

Steps of Using PBL Method in Teaching Chinese Reading

In Chinese language reading teaching from the perspective of PBL teaching method, teachers should have a certain understanding of the teaching contents, so they need to organize the teaching contents and the expanded contents before the class, determine the teaching objectives, and then integrate the implementation process of PBL teaching method into it. According to the PBL method, the teaching mode is roughly divided into five steps: proposing a problem or project, formulating a plan and scheme, exploring and practicing, communicating and sharing, and providing feedback and evaluation. These five steps are not unchanging, and their use in different subject areas can be adjusted with the characteristics of the subject.

According to Huang (2020), the PBL teaching method can be used in upper elementary school reading teaching through the following four steps:

1. Create the situation and introduce the problem. 2. Form groups to explore the problem. 3. Share presentations and solve problems. 4. Summary and evaluation.

Within the PBL teaching method, the reading process is roughly divided into four links. These four links are complementary and interlocking, but not completely rigid, and can be adapted by teachers or students based on content or requirements.

Conceptual Framework of the Study

This study composed of independent variables and dependent variables. The independent variable would be PBL teaching method. Students' Chinese reading skill and student satisfaction were the dependent variables. Figure 1 illustrates the conceptual framework of this study.

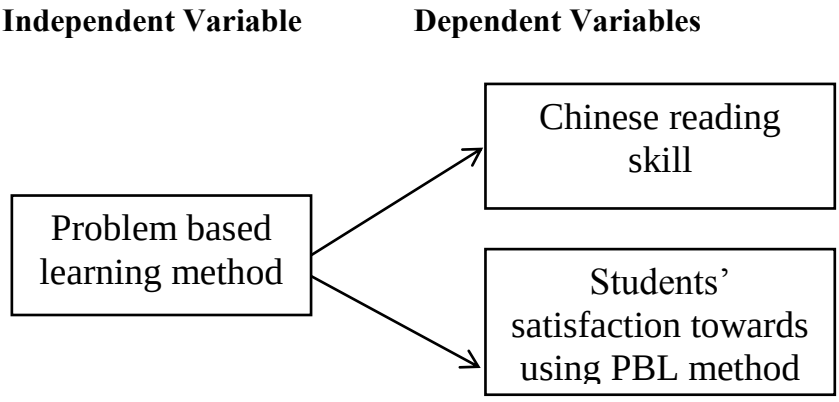

Figure 1 Independent Variable and Dependent Variables

Research methodology

Research Instruments

In this study, quantitative approach was used to assess the achievement of Chinese students and their satisfaction with the PBL teaching method. Zhao (2012) mentioned the quantitative study is one in which the researcher establishes hypotheses and identifies various variables with causal relationships in advance, and then measures and analyzes these variables using certain tested instruments to test the researcher's predetermined hypotheses. According to Fang (2010) the superiority of quantitative research is mainly manifested in objectivity, rigor and generalizability. Specifically, describing things with numbers is less subjective than describing them with words and more consistent with objective facts. Research in quantitative categories is based on a large number of sampling statistics, and the scope of the research object is larger and more substantial. Therefore, researchers used a quantitative approach to conduct the study. Figure 2 below describes the research design of the study.

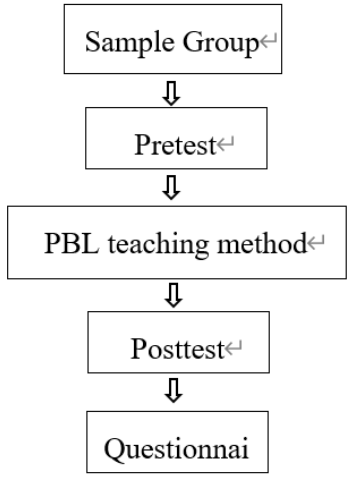

Figure 2 Illustration of Research Design

Lesson Plans

The researcher developed 4 lesson plans of 45 minutes each for a total of 360 minutes (1 lesson plan = 2 lessons), including the use of PBL in the classroom. The researcher taught 8 lessons (2 per week) over the course of a month. To select a topic for the study, the researcher considered the school curriculum, educational level of the sample group, and their interest.

Achievement Test

The Chinese Reading Achievement Test was used to measure the students' achievement before and after an intervention with PBL teaching method lessons and to compare their achievements before and after the intervention. There were 30 questions multiple choice test in total. In order to better analyze students' Chinese reading skills, all questions were designed to test students' reading and comprehension skills.

Questionnaire

Five-point Likert scale questionnaire was administered to find out the students' satisfaction towards the use of PBL method in Chinese reading class concerning interest, motivation and engagement. The participants completed the questionnaire after finishing the achievement test. The questionnaire responses completed by the participants were kept confidential and only used for this study.

Validity and Reliability

According to Yuan (2006), validity refers to the degree of conformity between research results and objective reality, i.e., the degree of accuracy of the research. Research with validity not only clarifies the research questions and explains the research results, but also ensures that the research results are replicated in a certain field and at a certain scale. if the value of the item is greater than or equal to 0.67, the research instruments have validity. If the test value is less than 0.67, the research instruments should be modified. In this study, all research instruments were validated by 3 experts in Chinese language teaching and education both in China. The result of the validity test of all instruments were greater than or equal to 0.67. This proved the validation in this study.

In this study, the reliability test was also carried out with other 30 students studying in grade 5 at the same school. They were taught for one session with PBL method, then asked to do the test and respond the questionnaire. A reliability test was conducted using Cronbach's alpha to determine the reliability of the 5-point Likert scale questionnaire. The higher the score, the higher the reliability will be. If the score is lower than 0.7, the item will be deemed unreliable and will be deleted. In this study, the result of the reliability test of the questionnaire items was 0.87, which was acceptable.

Participants

The population of this study consisted of two classes of 30 students from a elementary school in Guizhou Province, China. Their ages varied from 10 to 12, and they were of various mixed genders and Chinese reading learning capacities. The researcher used simple random sampling to select one class (N=30 students) from these two classes.

Data Collection Procedures

To conduct the research in the school, the researcher would obtain an approval letter from the fifth elementary school in Minxin Road, Anlong County, Administrative Department (See Appendix A). As the participants of this study were between the ages of 10-12, the researcher also asked for the approval from the responsible department of the school and also parent as well. All data were kept confidential and removed by the researcher after the study was finished.

Data Analysis and results

Table 1 below shows the results of the statistical analysis of the students' test scores. The pretest mean was 22.57 with a standard deviation of 4.22; the posttest mean was 26.37 with a standard deviation of 2.54. A difference of 3.8 was observed between the pretest and posttest means; this resulted in an increase in the posttest mean. The significant value (P) obtained was 0.01, which was lower than 0.05 (P*0.05). Therefore, there was a statistically

significant increase in the posttest scores as compared to the pretest scores of the sample group. Table 1 below compares the pretest and posttest means.

One Sample T-Test

	Mean	N	Std.Deviation	Sig.
pretest	22.57	30	4.22	.000
posttest	26.37	30	2.54	.000
Significance Level： <0.05-Significant				

Table 1 One Sample T-Test

Table 2 shows the scores of the pretest and posttest of the sample group. The highest score on the pretest was 27 (out of a total of 30) and the lowest score was 13. The posttest scores increased significantly, with seven participants receiving the highest score of 29 out of 30, an improvement about 2-4 points compared to their pretest scores, and one participant receiving the lowest score of 20 out of 30. Obviously, all 30 students showed significant or slight improvement on the posttest, with score gaps ranging from 2 to 9 points respectively.

Student ID	Pretest Scores (Full Score=30)	Posttest Scores (Full Score=30)	Increase in test Scores	% difference
1	17	22	5	16.67%
2	25	27	2	6.67%
3	17	22	5	16.67%
4	24	28	4	13.33%
5	19	24	5	16.67%
6	25	28	3	10.00%
7	22	26	4	13.33%
8	25	28	3	10.00%
9	24	27	3	10.00%
10	24	28	4	13.33%
11	24	26	2	6.67%
12	24	26	2	6.67%
13	26	29	3	10.00%
14	19	25	6	20.00%
15	25	27	2	6.67%
16	25	29	4	13.33%
17	25	28	3	10.00%
18	15	24	9	30.00%
19	26	28	2	6.67%
20	27	29	2	6.67%
21	24	27	3	10.00%
22	16	23	7	23.33%
23	27	29	2	6.67%
24	25	27	2	6.67%
25	19	23	4	13.33%
26	26	29	3	10.00%
27	15	24	9	30.00%
28	27	29	2	6.67%
29	13	20	7	23.33%
30	27	29	2	6.67%

Table 2 Pretest & Posttest scores of the sample group

Figure 3 below shows the mean scores of the pretest and posttest, which were 22.57 and 26.37. The mean score of the posttest was significantly higher than the mean score for the pretest. The posttest scores represented by the green bar on the right confirmed a slight

increase of 3.8 points compared to the pretest scores represented by the yellow bar on the left. Therefore, it may be concluded that each student had the improvement in their reading ability in the posttest and obtained a higher score after the use of PBL method.

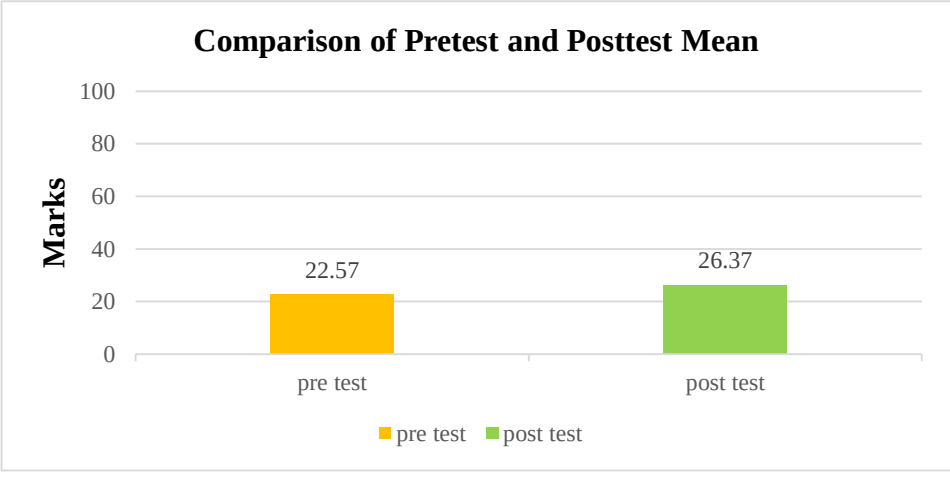

Figure 3 Comparison of pretest and posttest mean

To collect quantitative data and to study students' satisfaction towards using PBL method in Chinese language reading class, a five-point Likert scale was used, where 1=strongly disagree and 5=strongly agree. The questionnaire was administered to all 30 (N=30) study participants. The survey results were analyzed using descriptive statistics (mean and standard deviation).

Table 3 below shows the mean scores and standard deviations of students' satisfaction of Part A concerning interest & motivation. The highest mean ($\bar{x}$) score of 4.70 was obtained for item 1, which fell within the mean score range of the five-point Likert scale indicating the "Highest" level. Although the mean score for Item 4 was relatively ($\bar{x}$= 4.23), the interpretation of the mean score showed that students' perceptions of Part A of the questionnaire, interest & motivation were still at the highest level ($\bar{x}$==4.43).

Table 3 Mean and Standard Deviation: Part A (N=30)

	Part A- Interest & motivation	**Mean**	**SD**	**Interpretation**
1	Using PBL teaching method made learning interesting.	4.70	.535	Highest
2	Using PBL teaching method made learning meaningful.	4.43	.679	Highest
3	Using PBL teaching method helped me develop the confidence to learn Chinese reading.	4.40	.675	Highest
4	Using PBL teaching method motivated me to learn Chinese reading.	4.23	.728	Highest
5	PBL teaching method provided a more effective learning style.	4.37	.809	Highest
	Average	4.43	.685	Highest

Table 4 below shows the mean and standard deviation of students' scores for Part B regarding Engagement. As can be seen from the data, Item 10 was rated with the highest mean score of 4.50. Item 6 was rated the lowest mean score of 4.27. However, considering the average score of 4.35, it still fell within the "Highest" average score range.

Table 4 Mean and Standard Deviation: Part B (N=30)

	Part B- Engagement	**Mean**	**SD**	**Interpretation**
6	All the activities related to PBL teaching method were interesting.	4.27	.704	Highest
7	All the activities related to PBL teaching method were meaningful.	4.33	.758	Highest
8	Cooperative group learning was important in the Chinese reading classroom.	4.33	.758	Highest
9	Speaking in the Chinese language classroom versus helped to understand the reading.	4.33	.758	Highest
10	I felt more engaged when using PBL teaching method.	4.50	.682	Highest
	Average	4.35	.739	Highest

Table 5 below illustrates the mean scores and standard deviations of students' responses to Part C concerning Efficacy of PBL teaching method on student learning. The majority of students affirmed that PBL teaching method was helpful in improving their Chinese language reading scores. The mean score of 4.31 was in the "Highest" level. Item 13 had the highest mean score of 4.47. Item 12 had the lowest mean score of 4.13. In terms of the overall mean score, it was still at the Highest level, and it could be determined that using PBL teaching method improved students' Chinese language reading skill achievement.

Table 5 Mean and Standard Deviation: Part C (N=30)

	Part C- Efficacy of welcome media on student learning	**Mean**	**SD**	**Interpretation**
11	Using PBL teaching method helped improve my Chinese reading skill.	4.30	.702	Highest
12	Using PBL teaching method helped improve my cooperation capability.	4.13	.819	High
13	Using PBL teaching method helped improve my self-directed learning ability.	4.47	.681	Highest
14	Using PBL teaching method helped improve my class participation.	4.23	.858	Highest
15	Using PBL teaching method helped improve my Chinese reading achievement.	4.40	.724	Highest
	Average	4.31	.757	Highest
	Overall Mean & SD for all 15 items	4.36	0.727	Highest

Finally, as mentioned above, among the three parts, Part A achieved the highest mean score of 4.43 with a standard deviation of 0.685, while Parts B and C had relatively lower mean scores of 4.35 and 4.31 with standard deviations of 0.739 and 0.757 respectively. Nevertheless, considering the overall mean of 4.36, the researcher was convinced that the students had a remarkable satisfaction with using PBL method in their Chinese reading learning.

Result Conclusion and Discussion

As previously noted, the study generated two main conclusions as follows.

The first finding showed that grade 5 students in a sample group improved their Chinese reading skill after using PBL teaching method with the higher achievement score after the intervention.

The second finding was that grade 5 students had positive satisfaction towards using PBL method in learning Chinese reading with the questionnaire responses in either the high level and the highest level.

The following section the findings will be summarized and the study's research questions will be discussed.

Chinese Writing Achievement

Following the pretest and posttest results, a paired sample t-test was conducted to compare the learning performance within one group of students.

1) The statistical analysis of the paired-samples t-test for achievement scores showed that the mean score of the posttest (26.37) was higher than that of the pretest (22.57), with a mean difference of (3.8). The standard deviations of the pretest and posttest for the sample group were (4.22) and (2.54), respectively. The mean score of the posttest was higher than that of the pretest. The higher mean score of the posttest indicated that PBL teaching method had a positive effect on improving students' academic performance in Chinese language reading skill.

2) The highest and lowest scores of the pretest were (27) and (13), respectively. The highest and lowest scores of the posttest were (29) and (20), respectively. The difference between these pretest and posttest scores led to the conclusion that the maximum score of the posttest was (2) points higher than the score of the pretest. The lowest score of the posttest was (7) points higher than the lowest score of the pretest.

3) Most of the participants, 22 out of 30 participants scored 24 and above out of the total 30 points in the posttest. In contrast, only 14 students scored 24 and above out of 30 in the pretest.

4) For all 30 students, all participants scored higher on the posttest than on the pretest. The improved scores ranged from 2 to 9 points.

Obviously, the above quantitative data analysis clearly revealed the improvement of students' scores in the posttest. Thus, the results of the study clearly indicated that it was effective to improve the Chinese language reading level of grade 5 Chinese students in Guizhou Province, China through the use of PBL teaching method.

Student's Satisfaction

To collect quantitative data concerning the students' satisfaction towards using PBL teaching method in learning Chinese language reading, a five-point Likert scale was used, where 1=strongly disagree and 5=strongly agree. The questionnaire had 15 items divided into Part A for interest & motivation, Part B for engagement, and Part C for efficacy of PBL teaching method on student learning. The questionnaire was administered to all 30 (N=30) study participants. The survey results were analyzed using descriptive statistics (mean and standard deviation). The mean scores were highest at 4.21-5.00, high at 3.41-4.20, moderate at 2.61-3.40, low at 1.81-2.60, and lowest at 1.00-1.80. The findings can be concluded as follows:

1) 14 questionnaire items were rated in the "Highest" level and the just one in a "High" level. None of the items were rated as strongly disagree.

2) The findings of the descriptive statistical analysis of the questionnaire suggested that students had positive satisfaction towards using PBL teaching method in their Chinese language reading learning. Most notably, none of the issues were marked as "strongly

disagree," which provided strong proof of students' positive satisfaction towards utilizing PBL teaching method in Chinese language reading learning.

3) Most students also agreed that regular use of the PBL teaching method would give them a better grasp of reading methods and comprehension skills.

The results of the study also suggested that the all of the students considered that altogether, using PBL method in Chinese reading course was a pleasurable experience for them. Ali, Hukamdad, Akhter & Khan (2010) also found that the students who were taught through problem-based learning achieved better than those who were taught by a traditional method. This could be assumed that the significant difference between the achievement tests was due to PBL effectiveness. This was in line with the study by Li (2008) who found that more than 75 percent of the students believed that using PBL method for teaching and learning Chinese reading lessons facilitated the students learning and they were able to learn Chinese language actively and positively; in other words, they preferred to learn the language with this alternative method. According to Gong (2016), this alternative effective teaching method was obviously applicable to Chinese language teaching and learning. In the long term, the students' independent learning ability was improved; their sense of cooperation and group collaboration was enhanced. Simply put, the students changed from passive learning to active learning, and this subsequently yielded a very good learning outcome.

Recommendations for Future Research

The following recommendations are for any interested researchers to take into account before doing any similar studies in the future.

1) This study was confined to 30 Chinese students in grade 5 in Guizhou Province, China. Therefore, a comparable study may be undertaken in a bigger sample in a different region of China, which would be valuable for replication and serve to validate and ensure the trustworthiness of the conclusions drawn from this study.

2) This study was limited by the time and was conducted over a period of one month. Therefore, further studies over a longer period of time are recommended in order to obtain more reliable and significant results.

3) Further similar studies could be conducted by including different schools located in different geographical locations in the country.

4) Similar research can be undertaken utilizing PBL teaching method for other Chinese language skills. This may yield a variety of results and benefits.

5) For the purpose of comparative study, this study can be repeated to examine the efficacy of PBL teaching method in different schools in different regions.

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