ICT AND AN EXPLORATORY PEDAGOGY FOR CLASSROOM-BASED CHINESE LANGUAGE LEARNING

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ABSTRACT
This paper reports on a new pedagogy for Chinese language teaching and learning at elementary schools through exploratory classroom instruction using Information and Communication Technologies. The study used quantitative method to collect data from two elementary schools of China. The results showed that:(1) the three-in-one pedagogy of "character recognition, in-class reading and in-class writing" is a new approach for enhancing the efficiency of Chinese language learning at elementary schools, and (2) the new pedagogy provides a new perspective of integrating ICT into Classroom-based Chinese Language Learning (CCLL).
Keywords: Pedagogical issues, Improving classroom teaching, Media in education, Teaching/learning strategies, Elementary education

INTRODUCTION

The rapid development of ICT and its wide application have profound influence on education. This influence does not merely manifest in the changes in instructional tools, but more importantly in in-depth revolution in educational thoughts, instructional ideas, learning contents, and teaching methods (He & Ma, 2005). A learning society requires its citizens to have solid knowledge of humanity and science, to be innovative, collaborative and open minded, to have good communication skills and the abilities to search and process information using modern technologies (Ministry of Education of PRC, 2002). Therefore, the teaching and learning of language should play and is playing "double" roles: an advocator and explorer of e-learning transformation, and a foundation-layer and practitioner of life-long learning. An inadequate mastery of its own language will create a dysfunctional society (Ye, 1959). Language is one of the most important communicative tools and is a crucial component of culture. Learning language is also learning to be oneself. Along with the training of reading, writing, listening and speaking, come cognitive education, emotional education and personality-building. Language is more than a system of symbols, but a system of meaning and values through which a nation comes to the understanding of itself and the world. Language is firmly connected with the deep culture of the nation (Yu, 1998). Teaching and learning of language in elementary schools is therefore a significance task. The acquisition of literacy, characters recognition, reading, writing and oral ability, as well as the cultivation of good morals and habits, are all closely related to the teaching and learning of language.

However, Classroom-based Chinese Language Learning (CCLL) faces some challenges in efficiency such as teacher-centered instruction(He, 2002; Li, 1998; Lü, 1987; Peng, 2008; Yu, 1998), inappropriate use of ICT(Peng, 2008), and negligence on the development of pupils' intelligence(He, 2000; Lin, 2007). In this study, we will attempt to seek an approach to meet challenges to enhancing efficiency of Chinese language learning.

AN OVERVIEW OF RELATED RESEARCH

A review of literature in China reveals four trends in an area of Chinese language learning: basic framework trend, decomposition of basic ability trend, integrated ability trend, and trans-disciplinary trend.

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The basic framework trend includes the ability-featured framework and teaching-featured framework. Research on the ability-featured framework asserts that CCLL should consist of four components: reading, speaking, character recognition, and writing (Li, 1930). Yao (2001) holds the viewpoint that pupils' speaking and character application abilities need to be trained in six aspects: character recognition, character writing, passage writing, editing hand-written newspaper, oral reading, and story-telling . Research on teaching-featured framework describes CCLL in four aspects: teachers' responsibility, pupils' learning achievements, curriculum and the process of intensive reading, and holds the belief that there should be different layers and hierarchies of contents and depths in different grades (Wang, 1929). This basic framework trend enables the shaping of theoretical system of CCLL (Wu, 2000).

The trend of decomposition of basic ability mainly focuses on reading ability and gradually divides into different schools of reading teaching and learning. After the founding of the PRC, large-scale discussions and experiments were conducted for the first time in the area of CCLL and "red-scarf" school was one of the results of these experiments (Ye, 1953). "Red-scarf" school advocates that teachers innovate and seek the right way to improve the quality of CCLL" (Zhang, 1954) as against the conventional spoon-feeding way of explaining word by word. This gives new insights and impetus to CCLL reform (Zhang, 2006). Leading reading school advocates that pupils are free to learn the texts under the teachers' guidance, and finally learn to read by themselves (Hong, 1984). Menglong Qian school puts forward three basic reading models of independent reading, guided reading and repeated reading (Dou, 2003).

The trend of integrated ability emphasizes that reading instruction and writing instruction should be combined. The central mission is the development of language and thinking abilities. By plenty of reading and writing, pupils' abilities are built step by step into a solid foundation for learning in future (Ding, 2003).

The trans-disciplinary trend takes the angle of psychological research. It shifts the CCLL from external influence factors to internal cognitive principles. Yuan (1936) had attempted to introduce the psychological aspect into the instruction of reading during his time, and had brought forward the "full-text pedagogy" aiming at grasping the whole meaning of passages. Li (2007) advocates her situation pedagogy with "truth, beauty, emotion and thought" as its characteristics based on artistic conception theory.

In summary, the general claims have been that all about trends regard character recognition, reading and writing as a separate pedagogy in pupils' Chinese language learning. However, they don't still devote to effectively solve the problems of "slow in language acquisition" (Lü, 1987) and in-depth integration of ICT into CCLL(He, 2006). The long existence of these problems is the fundamental reason that why CCLL is unsatisfactory in learning efficiency. In this study, we will attempt to integrate ICT into CCLL and connect character recognition, reading with writing so that form a whole, student-centered approach to enhancing efficiency of Chinese language learning.

RESEARCH QUESTIONS

Learning efficiency, as the name suggests, is one of standards in learning language concerned about relationship between learning time and learning performance according to curriculum required(He & Ma, 2005). The high learning efficiency means less learning time resulting in high learning performance. According to this definition, learning efficiency has two features: "less time" and "high learning performance". In terms of curriculum required, learning periods consist of the first period(grade one to grade two), the second period(grade three to grade four), the third period(grade five to grade six) and the fourth period(grade seven to grade nine) (Ministry of Education of PRC, 2002). For Chinese language learning, less time indicates a "jump" that learners complete the higher goal required by curriculum in lower period and high learning performance puts emphasis on the number of character recognition, reading and writing in every learning period. In this study, we focus on learners' "jump" that happens from the first period to the second period and learners' high performance indicated by the number of character recognition, reading and writing in the first period.

The research aims to seek a new e-learning approach to enhancing learning efficiency at elementary school through exploratory classroom-based instruction. We used quasi-experiments to address the problems mentioned above. The following questions guided this research:
- Is there a new approach for enhancing effiency of learning in CCLL?
- What influence does the approach have on the integration of ICT into CCLL?

RESEARCH DESIGN

In this study, we design basic structure to support "three-in-one" pedagogy. The figure 1 shows the research

structure that consists of (a)learning environment preparation;(b) Lesson Design;(c) Design of time allocation in the instructional process;(d) Design of instructional flow map;(e) Design the strategies of ICT use; (f) Design of in-class extensive reading materials, and (g) Design of in-class oral expression or writing situation.
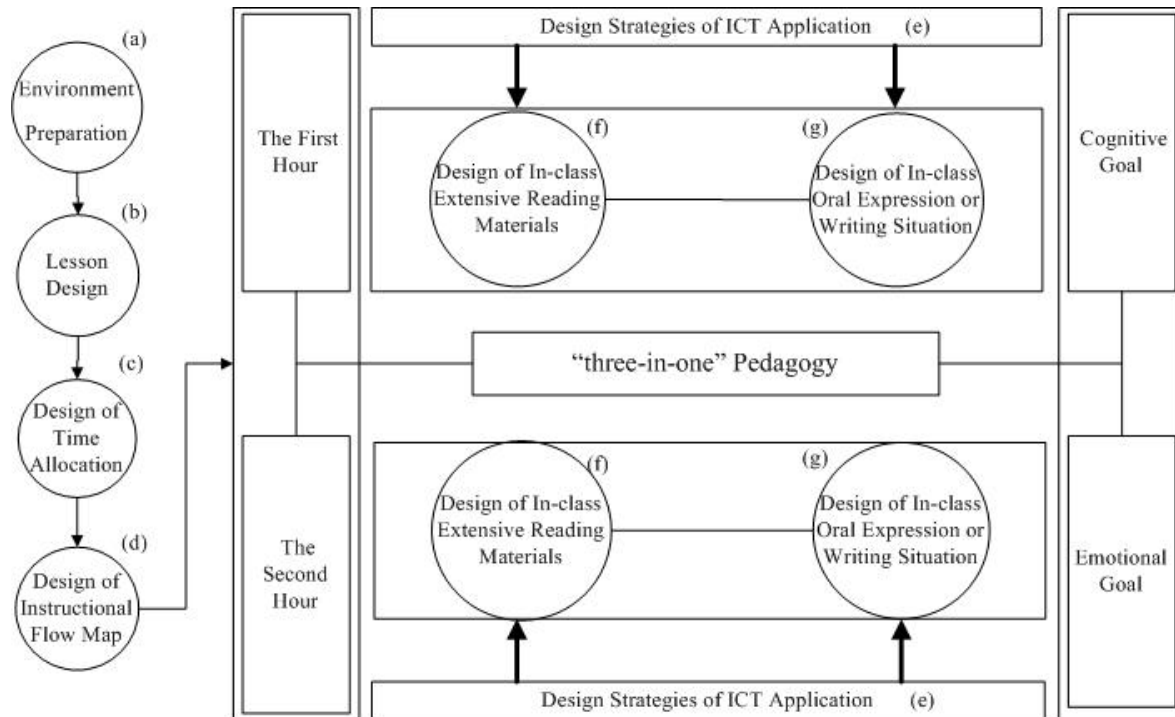

Figure 1. The Structure of Research Design

Learning Environment Preparation

Learning environment consists of hardware environment and programs use.The hardware environment includes a computer connected to multimedia device already available in the schools, such as rear projection TV or overhead projector. Programs such as MS Word, PowerPoint and FrontPage were used frequently for writing instructional designing plan, courseware, and for creating simple web pages.

Lesson Design

The textbook used in the experiment was the standard textbook for compulsory education curriculum published by People's Education Press. The subjects of the experiment were primary school pupils in Grades 1 and 2. The Lesson in lower grades was divided into two categories based on content: pinyin-dominated and text-dominated lesson type (pinyin: the Chinese phonetic symbol). Pinyin-dominated lesson was for the pupils to master "pinyin" to facilitate study in character and reading. Pinyin-dominated lesson take up only 6 to 8 weeks of whole curriculum time. Pupils in the experiment were required to learn 4 units (13 lessons in total) of pinyin-dominated lessons as well as 28 units (120 lessons in total) of text-dominated lessons. The whole process lasts 80 weeks.

Design of Time Allocation in the Instructional Process

In China, a single Chinese lesson for primary pupils is usually 40 minutes. In conventional CCLL lessons that follow the "10:0" rule, the whole instructional time of 40 minutes are monopolized by teachers in all lessons. In our experiment, we changed the time allocation to "5:5", meaning that 20 minutes are allocated for teacher's instruction, and the other 20 minutes are for pupils' independent learning. This "independent learning" was again divided into two stages: 10-minute for extended reading and 10-minute for oral expression or writing.

Design of Instructional Flow Map

Instructional flow map illustrates the steps to follow when teachers conduct instruction in an ICT-supported environment. The design of instructional flow maps is based on principles and requirements of different lesson types(Zhao, 2007). We designed both the pinyin-dominated and text-dominated lessons, in two-hour blocks each, according to the time allocation rule mentioned above. The first hour was for cognitive goals that were mainly about character recognition and the second hour of the block was mainly for emotional goals that were mainly for understanding of the texts. The following four figures show the lesson flows in detail.
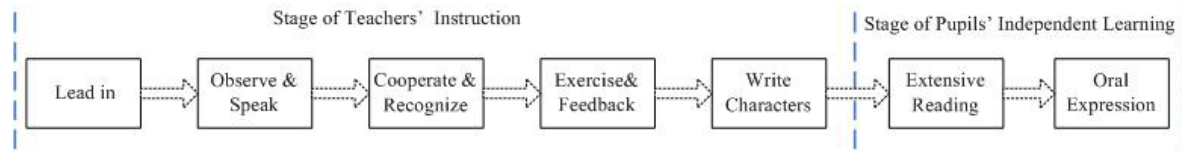
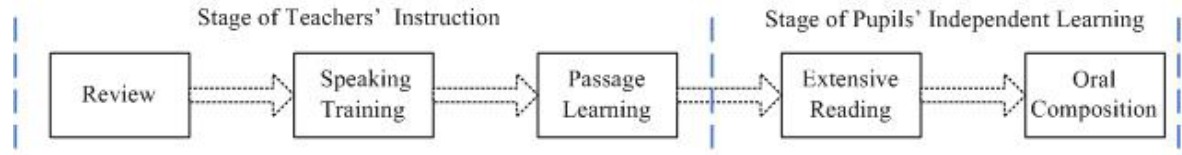Figure 2. First Hour for Pinyin-dominated Lesson Type

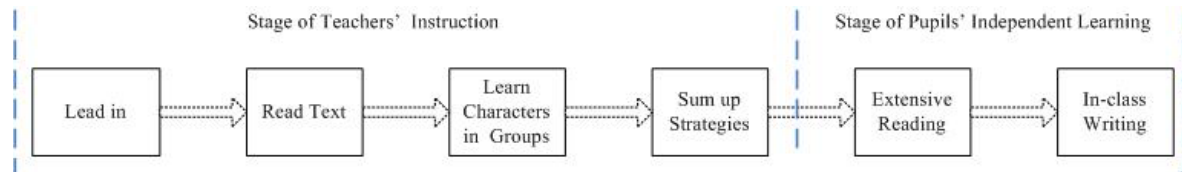Figure 3. Second Hour for Pinyin-dominated Lesson Type
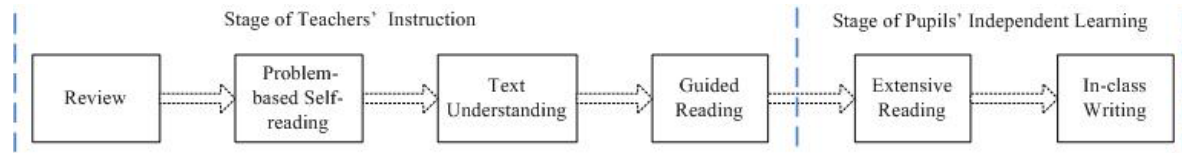

Figure 4. First Hour for Text-dominated Lesson Type

Figure 5. Second Hour for Text-dominated Lesson Type

Design the Strategies of ICT Use
Integration of technology into classroom is inevitable nowadays(Çakir, 2006).There can be different ways of integrating ICT into CCLL. Nevertheless, the successful application of technology always depend on factors such as the contents of different lesson types, instructional goals and instructional process, learners' original cognitive basis, learners' learning situation, etc. When designing instructional experiments, we did not take ICT as the main concern of the whole instructional process, nor did we specifically regulate that what instructional segments ICT must or should support. We provided 8 strategies by which ICT could enhance instructional efficiency and have the teachers choose them according to the actual instructional settings.

- ICT for situation creation. Situation can be created by displaying photos and music, role-playing and so on. Pupils placed in the right emotional experience would better comprehend the artistic conception described in the text and thus their imagination and situational thinking can be fostered (Li, 2007).
- ICT to support oral expression. By displaying pictures, pupils could observe people, event and circumstances, and orally express them in certain order such as when, where, who, what happened. Pupils could also associate the pictures with their life experiences, and talk about what they can imagine. This way of oral expression is called "oral composition" in CCLL.
- ICT to demonstrate good reading. The reading demonstrations are usually done by reputed anchormen or announcers. Their reading not only make pupils appreciate the pronunciation of standard Putonghua, but also create resonance in pupils to stimulate deeper understanding of the text as well as thoughts and emotion of the author.
- ICT to display the stroke order of Chinese characters. This is one of the basic requirements in character writing. It is hard for a teacher without vigorous training to master character writing in "Tian Zi Ge". By using ICT, pupils could not only get a clear view of the components and structure of the characters, but also understand the correct order of the strokes when writing the characters. ICT also enables pupils to repeatedly observe and imitate the writing process.

Design of In-class Extensive Reading Materials
It is critical to use materials to build new knowledge in the process of instructional design(Isman, 2010). So in-class extensive reading materials are used to help student contruct new knowledge in this study. In-class extensive reading materials are mainly auxiliary printed materials prepared to support the 10-minute extended

reading time allocated for pupils' independent learning period. In the 10 minutes allocated, pupils read independently the materials provided while teachers give individual attention to those with reading difficulties. Teachers are to ensure that pupils have sufficient time to engage in uninterrupted reading.

In preparation for the experiment, we designed 3 to 8 such reading materials for each of the hours. Teachers were given the freedom to decide the actual number of passages to be used based on instructional goals and pupils' learning conditions. Extensive reading materials for Grade 1 were annotated pinyin while pinyin was given only for new characters for Grade 2 materials. The selection of materials is based on the four criteria (He, 2007):

- The materials should be closely related to the contents and topics.
- The materials should be similar in text types and forms.
- The materials should be suitable for pupils' cognitive development.
- The materials should be interesting enough and foster intellectual development.

Table 1 shows the example of extended reading material designed for "balloons in front of the window" (from Unit Six, Book Three, Grade Two)

Table 1 Design of Pupils' In-class Extensive Reading Materials for Each of the Hours

	The First Hour	The Second Hour
Instructional Goals	Pupils are able to write the 8 new characters and recognizing and another 9 new characters in the text	Pupils are able to understand the content of the text and comprehend the love between friends
Titles of In-class Extensive Reading Materials	（1）Keliya in Sickroom （2）Sports Meeting （3）What is Carried in the Car	（1）Teacher in Hospital （2）Lunch （3）The Girl in Wheelchair （4）Sing for You （5）The Little Bear Taking Pleasure in Helping （6）A Visitor （7）Straw-crow and Cat （8）A Monkey Sells Umbrella
Instructions	These 3 passages contain the 9 new characters including "科" that pupils should be able to recognize as stated in the instructional goals and the 8 new characters including "床" that pupils should be able to write. This could help pupils to memorize and apply new characters in different language settings	All 8 passages tell stories about the caring love between friends or between teachers and students. By reading them, pupils would have a deeper understanding about the caring love between Keliya, the leading character of the story, and his friends

Design of In-class Oral Expression or Writing Situation
In-class oral expression or writing situation is the cue material presented in the form of pictures and passages. These materials are used to support 10-minute in-class oral expression or writing time allocated for pupils' independent learning period. In the 10 minutes allocated, teachers create an oral expression or writing situation based on the subject matter of the text and instructs pupils to write compositions on their own while teachers pay attention to individual pupils with writing difficulties. Compositions could be long or short, with no specific requirement. Pupils could either imitate or continue with others' works or start their own creation.

In preparation for the experiment, we designed in-class oral expression or writing situation for the each of the hours. The first hour is mainly for flexible application of new characters and phrases while the second is for in-depth reflection upon the subject matter. Our design takes into consideration the following three basic principles (Ye, 1959; Zhao, 2007; He, 2007):

- Describing at least two situations for pupils at different levels to choose from.
- Situation described should be related to pupils' life.
- Situation description cannot stray from the instructional goal of the lesson.

Again we take "balloons in front of the window" (from Unit Six, Book Three, and Grade Two) as example. The situations designed for the first and second hour are as follows:

Situation designed for the first hour:
Keliya lies quietly in a sick bed looking out of the window in a daze. What is he thinking about? His pals? His teachers? Some happy moments? If you were Keliya, what would you be thinking about? Pick up your pen and write it down. You are encouraged to use new characters you have just learnt today.

Situation designed for the second hour:
Ever since Keliya saw the balloons in front of the windows, he felt that he was no longer alone because his pals never forgot him. Every time he felt lonely or sad, he would recall the red balloons flying over the window. Everyday, he cooperates with the doctors, hoping to get back to his friends. Finally, he recovered and left the hospital in a sunny morning. What feeling would Keliya have when he knew that he could leave the hospital? What would happen next?

RESEARCH METHODS

Participants

Participants are recruited from two primary schools in Fengning Manzu Nationality Autonomous County, Hebei Province. It is a national-level impoverished county, and is among the first experimental counties of Modern Distance Education Project for Rural Schools (MDEPRS) organized by Ministry of Education of China. 42 students was from Class 1, Grade 2 in Fengning No. 3 Primary School, the sample includes 23 girls and 19 boys, the mean age is 7.0 years(SD=0.000); 45 students was from Class 4, Grade 2 in Fengning No. 1 Primary School, the sample includes 27 girls and 18 boys, the mean age is 7.089 years(SD=0.596).

Data Collection

Quantitative research method is employed in this experiment.

In data collection for characters recognition, "One to one" testing method is used. The test was administered by pupils from higher grades (generally in Grade 5 or 6) in a one-to-one question-answer sessions(He & Ma, 2005). the characters used in the test were selected from the textbook 1 to 12 for compulsory education curriculum, published by People's Education Press. Totally 3132 characters were tested. As to multiple pronunciation characters, pupils who get one pronunciation right could be considered as correct.

About test of efficiency enhancement of reading, exam papers are used.

The reading scores test was designed to test reading speed, comprehension, and understanding of the emotion expressed. The test paper consists of 5 passages, 250 to 350 characters in length, of different genre from outside sources and the test level is equal to the level required by curriculum standards in the second period. For assessing reliability for exam paper, the Cronbach's alpha coefficient is adopted. The alpha coefficient is alpha= 0.6758(N=43). The total score is 40 and the lowest score is 24(60% of total score, sometimes even 70%) that required by curriculum standards to pass. Within 45 minute, each pupil was to read independently and answer the given questions which included fill in the blanks, multiple choice and short answers.

on-the-spot composition are used in this study.Teachers project the title or situation description of the composition assigned onto the big screen and explained briefly before pupils commence. The title and situation description for writing score test was decided by the researcher with content and level of difficulty pegged to the standard instructional goal. Time given for writing was 30 minutes. The topic for the test was "A Water Drop Journey". The level is equal to the level required by curriculum standards in the second period. For assessing reliability for exam paper, the Cronbach's alpha coefficient is adopted. The alpha coefficient is alpha= 0.9010(N=43).The total score is 30 and the lowest score is 18(60% of total score, sometimes even 70%) that required by curriculum standards to pass.

RESULTS

Efficiency Enhancement on Chinese Character Recognition Score

According to the curriculum standards, pupils in the first period(from Grade one to Grade two) are to recognize only 1600-1800 frequently used characters (Ministry of Education of PRC, 2002). Table 2 shows that pupils' average number of character recognition is about 2942.67 and 2867.70 respectively, which has exceeded 1800 as stated in the curriculum standards. Of the two experimental classes, the minimum of character recognition also exceeds 1800.

Standards for Grade three to Grade four was 2500 frequently used characters (Ministry of Education of PRC, 2002). Table 2 shows that the average number of character recognition for every experimental class exceeds 2500. The percentage of pupils that the number of character recognition is more than 2500 have been reached 95.2% and 93.5% respectively.

According to the curriculum standards, we used one-sample t-test to compare mean differents and used "1800"

and "2500" as two test value. There has been a significant different no mattter which test value is used(see table 3). This indicates that the number of of character recognition in the first period has reached the goal that required by the curriculum standards in the second period.

Table 2 Number of Chinese Character Recognition about Experimental Classes at the end of Grade 2

No. [a]	N	Fewer than 2500		2500~3000		More than 3000		Minimum	Mean	Std.Error
		N	%	N	%	N	%			
1	42	2	4.76%	16	38.10%	24	57.14%	2193	2942.67	30.19
2	45	3	6.67%	26	57.78%	16	35.56%	2007	2863.44	34.66

Note. [a] 1: Class 1, Grade 2, Fengning No. 3 Primary School;2: Class 4, Grade 2, Fengning No. 1 Primary School.

Table 3 The One Sample T-test of Number of Chinese Character Recognition about Experimental Classes at the end of Grade 2

No. [a]	N	Test value=1800			Test value=2500		
		t	df	p	t	df	p
1	42	38.845	41	0.000	14.661	41	0.000
2	45	30.686	44	0.000	10.487	44	0.000

Note. [a] 1: Class 1, Grade 2, Fengning No. 3 Primary School;2: Class 4, Grade 2, Fengning No. 1 Primary School.

Efficiency Enhancement on In-class Reading Scores
We have conducted statistical analysis of the number of characters for the 10-minute in-class extending reading materials. By reading 10 minutes each lesson, pupils have read over 550,000 characters from grade one to grade two. However, in the curriculum standards of Chinese language for the first learning period (Grade one to Grade two), the requirement for extra-curriculum reading only is "no less than 50,000 characters", and the requirement for the second learning period (Grade three to Grade four) is "no less than 40,000 characters".

According to the curriculum standards, we used one-sample t-test to compare mean differents and used "24" and "28" as two test value. Table 4 shows that there has been a significant different no mattter which test value is used.This indicates that the scores of reading in the first period have reached the goal that required by the curriculum standards in the second period.

Table 4 The One Sample T-test of Scores of Reading about Experimental Classes at the end of Grade 2

No. [a]	N	Test value=24				Test value=28			
		t	df	p	Mean	t	df	p	Mean
1	42	11.198	41	0.000	32.56	5.965	41	0.000	32.56
2	45	15.347	44	0.000	34.13	9.289	44	0.000	34.13

Note. [a] 1: Class 1, Grade 2, Fengning No. 3 Primary School;2: Class 4, Grade 2, Fengning No. 1 Primary School.

Efficiency Enhancement on In-class writing Scores
As is shown in table 5, the average number of characters in pupils' writing for every experimental class was 300 and 278 respectively. The maximum of characters is 537 and the least number of characters is 166. According to the curriculum standards, we used one-sample t-test to compare mean differents and used "18" and "21" as two test value. Table 6 shows that there has been a significant different no mattter which test value is used.This indicates that the scores of writing in the first period have reached the goal that required by the curriculum standards in the second period.

As for the quality of the content, the curriculum standards(Ministry of Education of PRC, 2002) for Grade one and grade two require pupils "to write what you want to say, write what you imagine, and your feelings and impressions about your surroundings"(p.6), whereas for Grades three and four, the requirement is "to write your feelings and imaginations as well as what your have seen and heard free without constraint, with special attention on what makes you feel strange, impressed or deeply moved" (p.8). The researcher found that the writing ability of those pupils in the experimental classes has exceeded the requirement for Grades one and two and almost reached the requirement for Grades three and four.

Table 5 30-minute Writing Test Data about Experimental Classes at the end of Grade 2

Primary School [a]	Class name	N	Minimum	Maximum	Mean
1	Class 1 Grade 2	42	220	400	300
2	Class 4 Grade 2	45	166	537	278

Note. [a] 1: Class 1, Grade 2, Fengning No. 3 Primary School;2: Class 4, Grade 2, Fengning No. 1 Primary School.

Table 6 The One Sample T-test of Scores of Writing about Experimental Classes at the end of Grade 2

No. [a]	N	Test value=18				Test value=21			
		t	df	p	Mean	t	df	p	Mean
1	42	7.333	41	0.000	22.07	1.930	41	0.061	22.07
2	45	12.411	44	0.000	25.73	7.596	44	0.000	25.73

Note. [a] 1: Class 1, Grade 2, Fengning No. 3 Primary School;2: Class 4, Grade 2, Fengning No. 1 Primary School.

By the passage below, we can see that the pupil was able to bring her imagination into full play, compared the water droplet to a child capable of solving problems and remaining calm when faced with danger. The short passage did not limit itself to the journey of a water droplet, instead it extended into a lesson to educate and enlighten fellow peers. Meanwhile, the writer used such words as "眼珠一转" to illustrate the cleverness of the water droplet, which made the passage especially vivid and interesting.
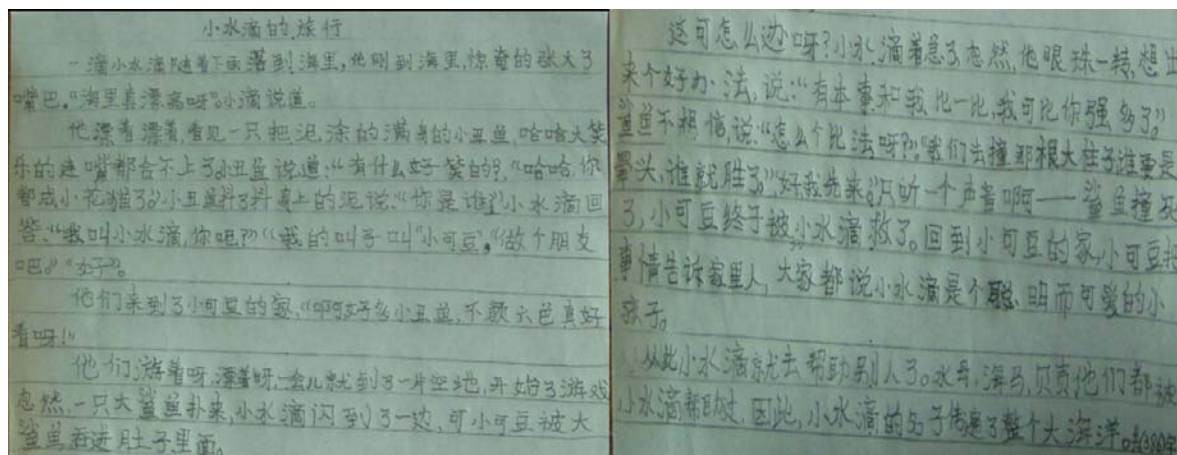

Figure 6. A Passage by a Pupil in Class 4, Grade 2, Fengning No. 1 Primary School

To enable a more comprehensive understanding of the pupils' progress in writing ability from the perspective of class collective development, we selected Class 4, Grade 2, of Fengning No.1 Primary School as research sample and conducted random test every month (except during summer and winter holidays) in the two-year experiment. We conducted 14 tests in total and calculate the average number of character, the most and the least numbers of character. We found the following:

- In the monthly writing test, pupils in experimental classes showed obvious sign of improvement on the average number of character, the most number of characters and the lowest number of characters.
- Some pupils in the experimental classes peaked after a certain period and stood out in the class.
- Pupils in the experimental class with the least number of characters showed obvious signs of improvement in their writing ability.
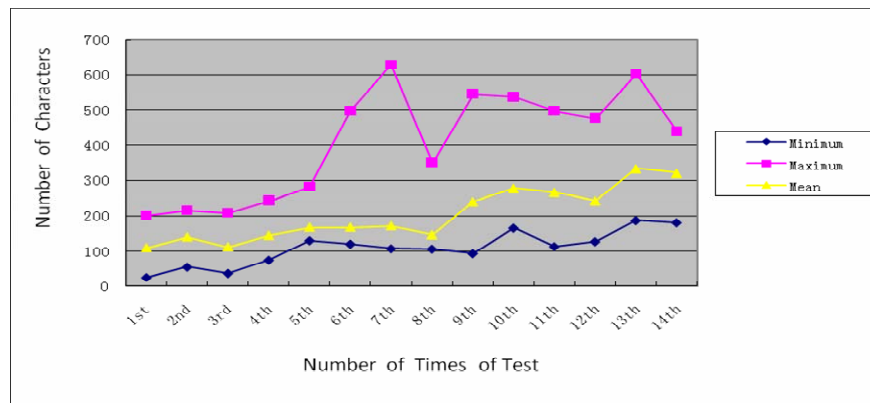
Figure 7. The Number of Character in Writing Test in Class 4 Grade 2 of Fengning No.1 Primary School

DISCUSSION

From the above analysis of the results we find that the level of character recognition, in-class reading and in-class writing in the first period has reached(even exceeded) the higher goal required in the second period. There are enough evidences to indicate a distinct improvement of learning efficiency represented by relationship between less time and high performance. Based on the results, the following discussion will respond to the two research questions as mentioned above.

The first research question related to approach for enhancing learning effiency in CCLL.Chinese language learning mainly consists of three parts: character recognition, reading and writing. Conventional CCLL ignores inner the link between Chinese language teaching and learning and thinking development and regards character recognition, reading and writing as three independent parts and to be carried out separately in different hours. They also regard pupils in lower grades as individuals with no ability in logic thinking and neglect to develop their potential in quality thinking. Therefore, they are not in favor of in-class writing that could represent pupils' logic thinking generally. However, applying language in authentic contexts is a fundamental way to help pupils quickly learn and master Chinese language (He, 2007). The pupils were by no means merely passive absorber of knowledge but individuals with thinking abilities, capable of acquiring information on their own and with ability to analyze, generalize, ascertain, deducting and imagining. Based upon traditional CCLL emphasis on character recognition and reading, we design a new approach for combining in-class writing with character recognition and in-class reading. Pupils begin in-class reading immediately after recognizing character, begin in-class writing immediately after in-class reading. All of these activities performed in one lesson (In pinyin instruction, oral expression instead of writing). We were pleased to find that pupils in experiment were able to write articles that are fluent and clear, complete in structure and with few misspelled or wrongly used words. These passages also showed logical thinking and imagination. By perfect union of character recognition, in-class reading and in-class writing, we find a new approach for combining Chinese language teaching and learning with thinking development, which enhances the quality and efficiency of CCLL and significantly improve pupils' abilities of character recognition, reading and writing. As this new approach involves the combination of three parts of character recognition, in-class reading and in-class writing, we call it "new three-in-one" pedagogy. We also found that pupils could read and write passages with inquiring mind, express their feelings and reflect on their own reading and writing, this could benefit the development of their intellectual quality.

The second research question is related to the influence of new pedagogy on the integration of ICT into CCLL. With regard to integration, we focus more on how they integrate rather than the degree of integration. Conventional theory of media focuses more upon the communicating process of information, and conventional theory of cognitive tools focus more upon how to help learners solve problems with high efficiency. These are merely one aspect of integrating ICT into the instructional process. What is even more important is to create a new instructional environment with the support of ICT (He, 2006), which has been seen as a new perspective. ICT could take the roles of tutors, peers, students and assistants. ICT could also imitate things to provide learners with an integrated environment that blend multiple interaction, independent exploration, emulation and simulation, collaborative communication, knowledge construction and so on, so as to bring the teachers' role of guiding and organizing into full play, and meanwhile fully develop learners' role as masters and subject of learning.

In the whole study, we could hardly feel the traces of ICT use. ICT is like "the hero behind the scenes", quietly supporting all kinds of learning activities. It creates the environment that help with the memorizing of new characters and phrases, enable pupils to read the texts with emotions, guide pupils' oral expression, help pupils

to establish the relations between concepts so as to construct the meaning of knowledge, and remind pupils to accomplish learning tasks more accurately and smoothly. ICT not only promotes all activities in the process but also promotes pupils' zeal, activeness and interest in learning. This would benefit pupils' development in the non-intellectual quality.

CONCLUSIONS

This study investigates an approach to integrate ICT into CCLL and connects character recognition, reading with writing so that form a whole, student-centered approach to enhancing efficiency of Chinese language learning. The conclusions drawn from entire research are as follows:

(1) the three-in-one pedagogy of "character recognition, in-class reading and in-class writing" is a new approach for enhancing the efficiency of Chinese language learning at elementary schools, and

(2) The pedagogy provides a new perspective of integrating ICT into Classroom-based Chinese Language Instruction (CCLL).

In addition, some implications from our research are worth mentioning here:(a) for the acquisition of native language, the new three-in-one pedagogy is not only an approach for the fast grasp of Chinese. It might be able to be used for other languages., The pupils with Grade one may have potential to read and write simultaneously, the timely language knowledge applications in reading and writing task with authentic context and sustaining classroom practices may enhance the quality and efficiency of mother language learning for school-age children; (b)for successful technology use, the judgment should not stay on advanced or advanced hardware and software devices, but shift to knowledge building with technology and using appropriateness in special contexts; (c) the new three-in-one pedagogy provide possibility to look for a low-cost, high-efficiency approach for classroom teaching and learning for rural schools, enjoying   good education in rural schools as well as in urban schools for every pupil through enhancing quality and efficiency of classroom teaching and learning should be regarded as main strategy of sustainable development for rural schools.

As CCLL is complicated and dynamic, and limited by the influences of many factors such as instructional thoughts, instructional contents, instructional resources, application of technological tools, teacher-students relationship, classroom capacity and so on, we are incapable of controlling all the independent variables to observe and analyze the changes of dependent variables. Data are mainly collected by teachers in the experiment, and in the method of testing we make a compromise between the efficiency and reliability of the testing. It is the limitation of this research.

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