

# **Task-Based Learning Approach Emphasizing Associative Memory Techniques for Chinese Character Recognition and Reading**

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## **Abstract**

This article aims to present a part of an experimental research to develop an instructional model. The purposes of this research were to: 1) develop a Chinese language instructional model based on the Task-Based Learning approach that emphasizes associative memory techniques for Chinese character recognition to enhance reading ability, and 2) evaluate the efficiency of the developed instructional model. This study was conducted in three phases: the first phase was to develop the instructional model; the second phase was to develop the instruments; and the third phase was to evaluate the efficiency of the model and to develop a conclusion based on the results. The sample of this experiment was of sophomore Chinese majors who were students at the University of Thai Chamber of Commerce and who had difficulties recognizing sounds and meanings of Chinese characters and in reading abilities. The instruments used in this study were a pre-post test, two formative tests, observations, journals, questionnaires and interviews. The findings of the study revealed that the developed instructional model was the model emphasizing interactive activities, raising consciousness of associated characters, having semantic and phonic elements as memory cues, so as to enhance ability to identify characters and words in the texts and to apply reading strategies. The procedure of the developed model were: Step one, Associated characters; Step two, Characters in words and contexts;

and Step three, Feedback and reflection. The results of the evaluation of efficiency illustrated that the mean of the post-test scores of Chinese character recognition and reading comprehension ability were higher than that of the pre-test scores at the significance level of .05.

**Key Words:** Task-Based Learning; Associative memory; Chinese Character Recognition

## **Introduction**

One of the major obstacles of learning Chinese as a Foreign Language (CFL) is the nonequivalence between listening-speaking and reading-writing competency. This is because certain Chinese scripts are pictographs that require semantic memory to recognize them (Kupfer, 2007: 6-7). In Thailand, reading is also one of the challenges for CFL students, particularly beginners. After taking CFL for one to two years, these students still find reading Chinese a major challenge. Also, one of the concerns among CFL educators is how to enhance reading and writing skills while developing communicative competence (Cui, 2007: VII).

In the field of Foreign Language Acquisition (FLA), Task-Based Learning (TBL) has been recognized as one of the approaches that effectively promote learners' communication skills (Skehan 1998; Willis, 1998; Lee, 2000; Bygate, Skehan, and Swain, 2001; Nunan, 2006), while reading can also be developed through the required reading materials (Willis, 1998; Ellis, 2009). To do so, CFL learners need to be equipped with ample techniques to recognize the Chinese characters to ease their reading development path.

Due to the fact that most Chinese characters are of semantic and phonic elements, allowing readers to guess meanings and sounds through associated characters, this study thus makes use of Search of Memory (SAM) model (Raaijmakers and Shiffrin, 1981: 93-134) to help strengthen learners' character recognition. Its objective is to develop an instructional model based on the TBL approach, while also applying the SAM model to enhance Chinese character recognition and reading ability.

## **Literature Review**

### **TBL and FLA Approaches**

The sociocultural approach views tasks as mediators in social interactions. The key of the sociocultural theory, which tries to answer how learners internalize new language forms and how social interactions affect this internalized process, is mediated mind. Mental activities are mediated and developed through social activities. Learners can internalize through series of social activities that is later modified and reorganized to the next higher order. The process allows learners to exercise conscious control

within mental activities such as attention, planning and problem-solving. The mediation occurs through means, which includes interactions with concrete materials such as tying a knot, interactions with other people, and interactions through language (Vygotsky, 1987). Language development takes place when learners are placed in an environment where they can control their mental activities and thoughts. Mediation in foreign language learning occurs in three circumstances, namely: 1) meaning negotiation by discourse partner; 2) self negotiating by private speech; and 3) meaning negotiation through concrete substance such as tasks. The key is the close relationship between personal interactions and intramental activities (Lantolf, 2000). Based on this hypothesis, learners internalize new language through the use of language forms when interacting with others. This means internalization occurs before the ability to independently apply these skills and knowledge. It occurs when learners are given an opportunity to use new skills while accomplishing certain goals. To do so, learners need to understand the input that includes unknown language forms and produce these forms in a new context. Tasks are viewed as means for cooperative interactions that allow learners to firstly, use the new form and vocabulary through working with others; secondly, participate in the activities utilizing the internalized skills and knowledge to independently complete undemanding tasks; and finally, apply structures of the acquired language in more complex tasks that require cognitive processes (Ellis: 2009, 178).

### **Task Types and Their Features**

To study the effects of tasks on learning, various types of tasks have been explored (see Ellis, 2009), some of which are demonstrated below:

- 1. Task types distinguished by outcome: convergent (or closed) & divergent (or open)*

The outcome of the convergent task is controlled, providing opportunities for learners to use specific language forms and structures to complete tasks. Thus, using language to negotiate meaning is more applicable and meaning negotiation may occur more frequently in the interactions. On the contrary, a divergent or open task allows students to freely express their thoughts; therefore, it is more challenging with a higher cognitive process. Yet if learners find the task too demanding, they may simply complete the

task without using much of the language. Studies of effects of convergent and divergent tasks also found effects on input and output. While a convergent task has a positive effect on comprehensible input, a divergent task allows more student output (Duff, 1986).

*2. Task types distinguished by input: require information exchange (or split information) & optional information exchange (or shared information)*

The missing information, or information gap, stimulates learners to use language to seek information to complete the task. On the other hand, the shared-information tasks establish interactions through the exchange of opinions.

*3. Task types considered from how much cognitive complexity is required*

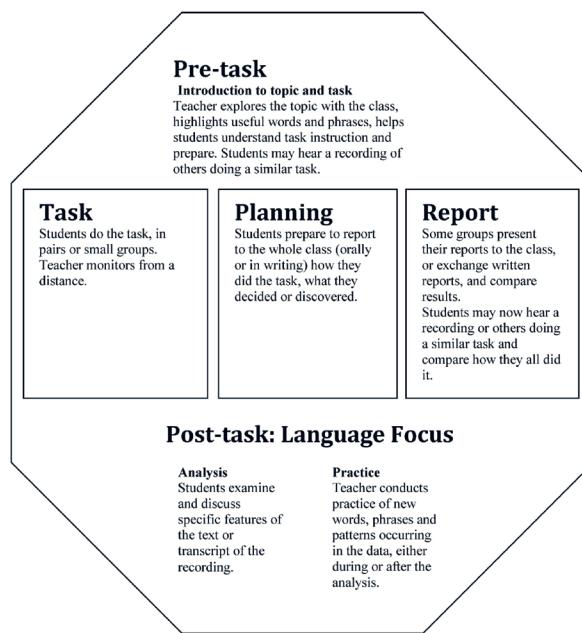
These types of tasks relate to cognitive complexity. Studies on this aspect also include the difficulty of tasks and their effects on meaning negotiation and communication strategies. Table 1 demonstrates task types and their effects on learning.

**Table 1** Task types and their effects on learning

Variables	Types of tasks	Features of tasks & effects on learners
Outcomes	Convergent (closed)	Controlled language forms and structures Intensive use of language to negotiate meaning Positive effect on comprehensible input
	Divergent (open)	Free expressions of thought Extensive use of language to negeotiate meaning Positive effect on learners' output
Input	Shared information	Opinion gap Less control of language forms and patterns
	Split information	Information gap More control of language forms and patterns
Cognitive complexity	Creative	Creative mode of cognitive complexity Describing and persuading
	Problem solving	Problem-solving mode of cognitive complexity Explaining and reasoning

## TBL Procedures

In TBL, learners are provided with opportunities to use language to communicate and develop their use of language that may occur in real life (Skehan, 1998; Nunan, 2006; Willis and Willis, 2007; Ellis, 2009). Using tasks can be either in task-supported or task-based instruction. In task-supported instruction, tasks are used as a part or parts of class activities to serve certain instructional goals while in TBL, tasks are the center of the learning process. Figure 1 demonstrates components of the TBL framework.



**Figure 1** Components of the TBL framework (Willis, 1998)

## Semantic and Phonic Elements of Chinese Characters and Memory Techniques

Each Chinese character is represented in three dimensions: graphic, phonic and semantic. Recognizing a Chinese character requires the understanding of the grapheme-phoneme-semanteme (*xing*, *yin* and *yi*) relationships. As 85.62% of all Chinese characters are pictophonetic (*xingsheng zi*) (Kang, 1993 cited in Li, 2005), many CFL studies pay attention to these meaning-sound representations to create character recognition strategies. Considering two characters sharing the same phonic elements, there are three possible utterances: 1) absolutely resemble utterances; 2) partially resemble utterances; and 3) absolutely different utterances. In terms of meaning representation, many semantic elements (such as wood, water, fire etc.) can represent only broad meanings of the characters. Because of the above limitations, some educators are reluctant to promote this strategy, believing it would encumber beginning CFL learners. Others argue that CFL beginners are not adequately exposed to these elements. Class instruction and the learning process need to allow them to be aware of these features. CFL teaching requires a special model that integrates 'graphemic competence' (Jiang, 1998).

Chinese characters are best memorized in a connected network in the lexicon if : 1) the structures and patterns of characters have visual association; 2) the elements of those characters reappear in the new characters; 3) there is a close relationship between visual graphic and learners' language background (Zhang and Peng, 1992 cited in Shen, 2008: 504). Whenever learners encounter a new character, the visual presentation appears in their operating memory. Meanwhile, it interfaces with the existing characters in long term memory to detect whether there is any resemble visual presentation. The associated cues help them guess the sound or meaning. This interface may occur in either semantic or phonic elements or both. Breaking characters into elements and organize them according to sounds or meaning can support learning (i.e. Li and Jiang, 2008; Zhang, 2010). Table 2 demonstrates examples of these associations.

**Table 2** Examples of characters association

Elements	Associated characters				
Set 1 Signific element 疾 (sickness)	病 (sick)	疼 (ache, pain)	痒 (ache, pain)	疗 (treat, cure)	痴 (silly, insane)
Set 2 Phonic element 包 (bāo)	饱 (bǎo)	抱 (bào)	跑 (pǎo)	炮 (pào)	袍 (páo)
Set 3 Inconsistent association Phonic element 寺 (sì)	持 (chí)	待 (dāi)	寺 (sì)	诗 (shi)	特 (tè)

CFL Psycholinguists argue that the extent pictophonetic characters (*xingsheng zi*) can represent sounds and meanings relying on the following factors (Wang, 1977 cited in Jiang, 1998): 1) The frequency of appearance of that character; 2) The regularity of semantic representation; 3) In what context the character appears; 4) The frequency of appearance of the vocabulary of the character. Jiang Liping (1998) proposes the following memory techniques for beginners: 1) Organize characters in groups according to components (*bujian*) or elements (*pianpang*); 2) Associate the new characters with the previously learned characters by using personal cues; 3) In case the characters are composed of more than two components, focus the memory on the outstanding component of the character; 4) For characters with similar strokes, distinguish them in pairs.

The association concept also appears in the SAM model, indicating two critical features that may be applicable to the associated Chinese semantic and phonic elements:

1. *The use of visual image as a “cue” in encoding and decoding processes*

When a new word is presented, it interfaces with the long-term memory to search for any resemble cue or character. If the resemble cue or character is found, it strengthens the memory of the new word. The SAM model explains the use of cues during the encoding and decoding processes. Memory may also be strengthened with additional clues such as environmental or contextual clues.

## *2. The organization of cues and the prevention of interference*

Memory is more effectively strengthened if items are organized into groups. To limit interference, each group should not require too many cues to recognize, otherwise, they become a factor of interference because of the cue overload.

### **SCT's C-R Task and Chinese Recognition**

The key of Sociocultural Theory (SCT) in TBL is mediated mind (Lantolf and Pavlenko, 1996), which occurs through social interactions. It can be modified and rearranged in higher order, allowing learners to exercise mental activities. According to Vygotsky (1987), the mediation occurs in three ways, one of which is language. That means language learning involves both developing means to internalize through mediating learning and how to use language to mediate language learning (Swain, 2000). Development occurs when the mediated learning is appropriately designed and used in an environment in which learners can control and manage the development in their brains. Tasks support learning by allowing learners to use structures and new vocabulary through cooperative work and gradually manipulate the new language more independently. This means students use the patterns and knowledge about the language in communicating and internalize them in long-term memory so as to retrieve them later. “Task” is different from “activities” and “exercises” in the role of learners. These tasks are designed for explicit learning, with outcomes to be awareness of how some linguistic features work, making language itself the meaning (Ellis, 2009). From the above explanation, Chinese character recognition is the ‘meaning by itself’ for students to ‘raise consciousness’ about the associated Chinese characters through interactions.

## **The Construction of Framework**

### **Task Specification and Their Alignment**

While tasks are means for learners to cooperatively interact, they also give teachers opportunities to observe learners’ errors from their output to provide feedback in the meaningful contexts accordingly (Bygate, Skehan,

and Swain, 2001: 11). It is, therefore, crucial to specify and align various tasks to serve different objectives of each step. Tasks specification and alignment for the developed model is based on SCT's internalization process which are:

- (1) To raise consciousness about semantic and phonic elements of Chinese characters that are associated in a group of 5-7 items, and internalize character recognition through working with others;
- (2) To participate in the use of the previously learned Chinese characters in the vocabulary and sentences; and internalize the structures and character recognition skills more independently through a series of undemanding closed tasks;
- (3) To internalize reading ability by applying the character recognition skills and reading strategies through a more demanding open-ended or closed task;
- (4) To independently execute the use of characters, vocabulary, new language, reading strategies and more complex cognitive processes in an open-ended task.

Table 3 demonstrates task specification and alignment of the developed model.

**Table 3** Task specification and alignment of the developed model

<b>The principles of the developed model</b>	<b>Task</b>	<b>Task Types</b>	<b>Output</b>	<b>Cognitive process</b>
To raise consciousness about semantic and phonic elements of Chinese characters that are associated in a group of 4-6 items; and internalize character recognition through working with others.	Associated semantic and phonic characters in sets.	Consciousness-raising	Closed	Consciousness-raising
To participate in the use of the previously learned Chinese characters in the vocabulary and sentences; and internalize the structures and character recognition skills more independently through a series of undemanding closed tasks.	Character recognition in words, sentences and contexts	Information-gap	Closed	Low complexity
To internalize reading ability by applying the character recognition skills and reading strategies through a more demanding open-ended or closed task.	Character recognition by guessing meanings and sounds and reading strategies	Information-gap or opinion-gap	Closed or open	Medium complexity
To independently execute the use of characters, vocabulary, new language, reading strategies and more complex cognitive processes in an open-ended task.	Outcome as a product of character recognition and reading ability	Creative / Problem solving	Open	Higher complexity

## Construction of Associated Characters Bank and Their Alignment

The associated characters bank contains pictophonetic characters (*xingsheng zi*) which reappear in the reading texts. The selection of characters in this study is based on character level 1 (*jia*) and level 2 (*yi*) in “Hanyu Shuiping Cihui yu Hanzi Dengji Dagang” (Liu and Song, 1992).

### 1. Associated phonic elements

1.1 Group characters according to the same phonic elements. Then analyze their sound representations whether they absolutely resemble, partially resemble or are absolutely different. Table 4 demonstrates samples of the three representations of the same phonic element.

**Table 4** Samples of the three representations of the same phonic element

Phonic element	Absolutely resemble	Partially resemble	Absolutely different
青 (qīng)	青 (qīng) 晴 (qíng) 情 (qíng) 请 (qǐng)	睛 (jìng) 倩 (qiàn)	猜 (cāi)

1.2 Specify a basic character (or characters) in each group so as to memorize it (or them) prior to the association process. Table 5 demonstrates an example of the specification of the basic character.

**Table 5** An example of the specification of the basic character

Basic character	Semantic element	Phonic element	Associated characters with the same phonic element
请 (request, invite)	讠 (concerning language)	青 (qīng)	青(qīng) 晴(qíng) 情(qíng) 请(qǐng) 请(qǐng) 睛(jìng) 猜(cāi) 倩(qiàn)

1.3 Compile all associated characters in the characters bank. In case of this study, the researcher has compiled approximately 30 sets of sound-associated characters.

## 2. Associated semantic elements

2.1 From the associated phonic characters bank in 1.3, analyze their semantic elements. Table 6 demonstrates an example of the analysis.

**Table 6** An example of the analysis

	Character with the element 青	Sound	Meaning	Semantic element	Related meaning of semantic element	Word made up of the character	Meaning of the word
1	请	qǐng	request, invite	讠	language	请问	excuse me, please
2	晴	qíng	bright	日	the sun	晴天	sunny day
3	清	qīng	clear	氵	water	清水	clear water

The basic character (no. 1) possesses a phonic element that can be associated with characters no. 2 and no. 3. Meanwhile, the semantic element of no. 2 (the sun) and of no. 3 (water) can help the association of meanings. These two elements, therefore, reinforce each other. Moreover, memory is strengthened if the character appears in a word or a phrase such as ‘qíngtiān’ : the sunny day (‘tiān’ means ‘day or sky’).

2.2 List all semantic elements found from all of the above and analyze the cross-relationship among them. Table 7 demonstrates a sample of cross relationship among semantic and phonic elements.

**Table 7** A sample of cross relationship among semantic and phonic elements

Semantic elements	Phonic element 青	Phonic element 反	Phonic element 交	Phonic element 包
氵	清			泡
木			校	
心 (忄)	情			
亻	(倩)			
饣		饭	饺	饱
辵		返		

From the above process, sets of associated Chinese characters are compiled and ready for C-R tasks and for constructing the reading materials, which will be incorporated in the next step. Table 8 demonstrates samples of pictophonetic characters that are organized into groups.

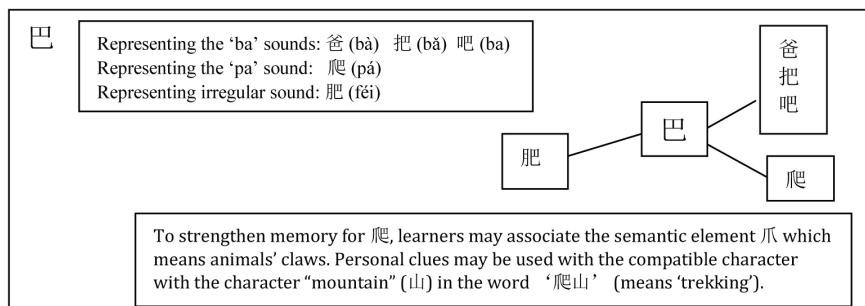
**Table 8** Samples of pictophonetic characters that are organized into groups

Phonic elements	Semantic elements
票: 票、飘、漂、要	病: 痘、疼、痛、症、痒
青: 青、请、清、情、猜	饭: 饭、饮、饺、饱、饿
包: 饱、抱、跑、泡、袍	衬: 衬、袍、衫、裤、裙
古: 姑、故、菇、苦	炎: 炎、烧、灯、煮、照
羊: 样、洋、痒、祥	肉: 肚、肠、脑、肥、有

### *Some Remarks on Characters Grouping*

1. Though an average number of characters a person can memorize is  $7 \pm 2$  at a time (Miller, 1956 cited in Gordon, 1989: 211-212), the researcher proposes that each set should contain 4-6 characters, otherwise the associative memory may not be as effective because learners have to spare their memory on different sounds of characters.
2. It is imperative that the basic character in each set be indicated so as to keep them in long-term memory before the association process.
3. For those inconsistent associations such as semantic in one character and phonic in the other, clarification should be made to students at the beginning to avoid confusion.
4. Additional clues such as episodic memory or learners' background may enable the memory to work more effectively.
5. To reduce interference, when presenting a set of characters, emphasize the regular characters together with the odd/irregular one. Work on all characters, but concentrate on characters appearing in the current lesson.
6. Characters should appear in a word level and in a context. Moreover, they should reappear occasionally so as to stimulate the search of associative memory and enhance recognition.

Figure 2 demonstrates a sample of association of characters, regular and odd/irregular.

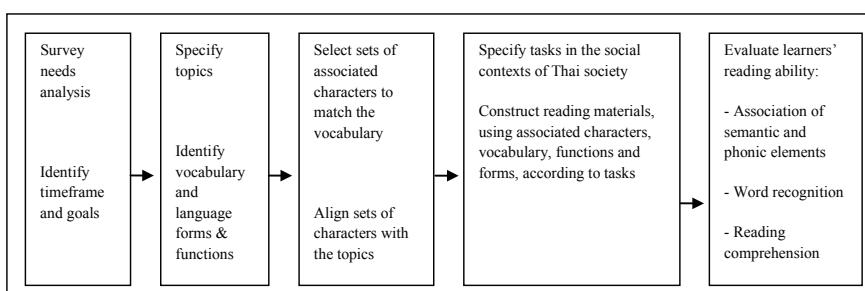


**Figure 2** A sample of association of characters, regular and odd/irregular

### Reading Materials Development

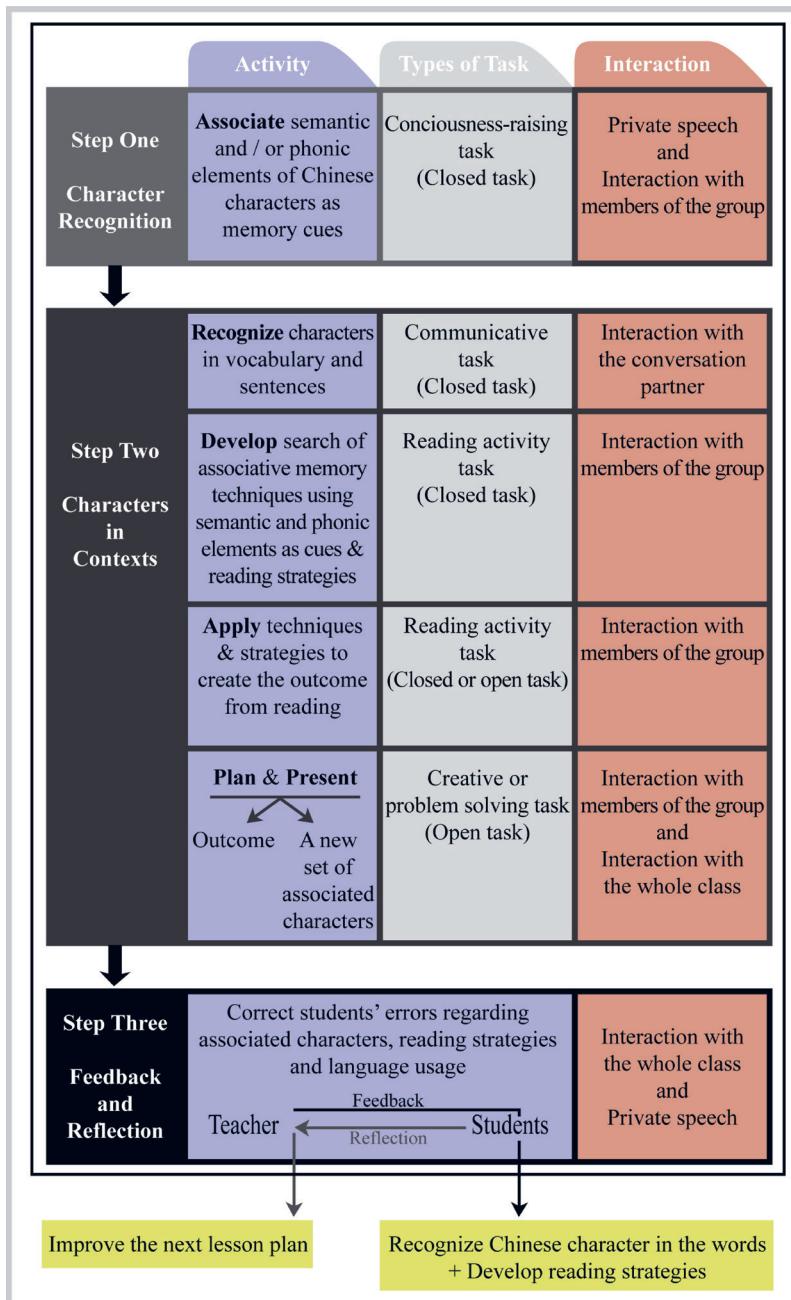
1. Reading materials include sentences, dialogues, tables and passages. Reading passages cover various modes of writing such as narrative, explanatory, informative and descriptive.
2. Reading passages are in line with indicated tasks and Chinese characters in the C-R task.
3. Reading passages are of medium length corresponding to learners' development. Contents cover topics relating to learners' real life situations, reflecting the use of Chinese language to communicate in students' future careers and in Thai social contexts.

Figure 3 demonstrates steps in reading materials development.



**Figure 3** Steps in reading materials development

## Framework of the Developed Model



**Figure 4** The developed Instructional Model

## **Procedure of the Developed Model**

The procedure of the model includes three steps, all of which reflect character recognition through the use of semantic and phonic elements as cues for associative memory.

### **Step One Associated characters**

The aim of this step is to raise students' consciousness about semantic and phonic elements that appear as parts of words in the reading texts.

- 1) The teacher stimulates students' interests by a brief talk that includes topics of interest to students.
- 2) The teacher states the expectation of the outcome and clarifies how the activity supports students' learning in terms of character recognition.
- 3) Students perform associated characters task as indicated on the activity sheet. Students are to study the given characters of the words and associate them in groups according to phonic and/or semantic elements as memory cues.
- 4) Students present their outcomes and discuss their findings with the whole class.
- 5) The teacher monitors, observes and provides feedback.

### **Step Two Characters in words and contexts**

This step consists of three tasks requiring students to apply from simple complexity to higher level of cognitive process in the reading activities.

#### **1) Task One:** Characters in words and sentences

Students apply characters learned in the previous task in meaningful words and sentences relating to the topic. Students are required to perform a communicative task with a conversation partner to find the missing information.

#### **2) Task Two:** Word recognition & Reading strategies

Students interact in a group of four to complete the reading task, applying search of associative memory technique, using semantic and phonic elements as cues, to recognize characters while exploiting the learned reading strategies

to comprehend the reading text and to complete the closed or open task.

**3) Task Three:** Independently apply techniques and strategies to create an outcome.

This is the main task, which requires students to create an outcome by reading the assigned materials in either a creative or problem-solving task. Students should be able to independently exploit associative memory techniques as well as reading strategies to comprehend the reading task so as to complete their assignment and get ready for planning.

**4) Planning and presentation**

Planning is an after-reading activity that allows students to reinvestigate their outcome and make a plan to present to the class. Students are also required to present a new set of associated Chinese characters that appear in their presentation. The teacher observes and monitors students' group activity and provides feedback if necessary.

Students' presentation is the last activity in step two. This presentation can be done in various forms such as drawing, writing, simulation or role-playing.

### **Step Three    Feedback and Reflection**

- 1) After the observations during previous activities, the teacher accumulates students' errors found and provides feedback. The feedback can be activities that involve students in the learning process such as group work.
- 2) Students write reflections in journals and give feedback to the teacher so as to improve instructional activities in the next lesson.

## Conclusion

The purpose of this study is to develop an instructional model for Chinese language based on the Task-Based Learning approach, with emphasis on associative memory techniques to enhance Chinese character recognition and reading ability. The development of the model has applied theories of curriculum and instructional design, which include principles, aims, contents, procedures and evaluation. The researcher found that the developed model can be applied not only to CFL teaching per se but also any FL pedagogy. Further studies regarding the association of Chinese characters in different aspects such as Chinese homophonous words and/or vocabulary (*cihui*) are also recommended so as to obtain the overall picture of character associations in the Chinese language.

## Acknowledgements

This research was conducted under the support of CU Graduate School Thesis Grant.

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