

A cognitive-based investigation of students' learning of Chinese grammar in Singapore bilingual context

Dr. ZHAN Fangqiong Grace

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Introduction

- It is well acknowledged that the bilingual policy may be the cornerstone of the education system in Singapore (cf. [CLCPRC] 2004).
- However, there is mounting evidence showing that Chinese language teachers are having a harder time inspiring and engaging their students to study the language, and that the students' Chinese language proficiency level has been declining.



- In such context, concerns regarding children's ability to handle two distinct languages and other subjects in school have been expressed by several members of the community.
- In the initiative proposed by CLCPRC (2004), the Chinese language pedagogy will place less emphasis on memorizing large numbers of Chinese characters, and place greater emphasis on speaking, listening, and reading abilities.
- Consequently, the learner-centered communicative approach has been advocated. The student-centered teaching strategies and learning processes entail a great variety of whole class activities, group work and student demonstration, whereas **grammar teaching and practice are more or less excluded** for the purpose of pursuing language learners' communicative competence.

- This pedagogical method takes the interests and needs of the learners into account and works well for the students who speak Chinese at home and have already developed a Chinese language system in their mind.
- However, for those who are learning Chinese as a second language, the incorrect morphological choices, inaccurate grammatical sentences and incoherent discourse other students produce might impede the process of the establishment of their Chinese language system.
- Liu, Zhao & Zhang (2006: 11) point out that even though the student-centered orientation in classroom practice is “conducive to Chinese learning, we would not believe that these could achieve the policy goals and priorities.”

- Since the communicative approach has been advocated, the pedagogical practice in classroom mainly focuses on language use and instructors are not advised to introduce grammatical and morphological structures of the language formally and directly.
- Consequently, there is very little research on how language structures are presented and taught by instructors and how this approach might affect the students' language proficiency.
- Hu (2006) points out that such an approach is not conducive to the development of Chinese learning, and that teaching Chinese should take complete and comprehensive care at the structural level of words and sentences.

- Ultimately, it is a question of how the target language is processed in the brain. It is a question of deciphering the symbolic system of language itself manifested by an unlimited range of lexicon, syntax, semantic structures, and discourses.
- Accordingly, it is beneficial if the students can establish a framework of the basic structures of the target language in which all linguistic elements are represented by schematic categories and connected to one another linearly and hierarchically in a network.
- It is also crucial to teach students how to locate the target components and identify the links between them and other elements in the network by using their primary cognitive abilities and instruments, such as comparison, categorization, generalization, metaphor, and metonymy.

Table 1 illustrates the preliminary information of the current approach and the suggestions based on the guiding principles of the cognitive-based practices.

欢乐伙伴3A	Grammar point	Example	Current teaching approach	Suggestions for instruction based on the guiding principles of the cognitive-based practices
Lesson 1	Compound sentence	只要好好努力, 就能学得更好。	Drilling with substitution	1) condition is ground; result is figure. 2) Conjunctions in compound sentences appear in pairs.
Lesson 2	The verb-copy construction	他写字写得很好。	Drilling with substitution	‘他写字’ is ground (topic), ‘写得很好’ is figure (action+ evaluation)
Lesson 3	‘as soon as’ pattern	我一按按钮, 盖子就会弹开。	Drilling with substitution	Chain reaction. One action causes reaction.
Lesson 4	Comparative incremental pattern	树枝越来越长。	Drilling with substitution	Generalization: 越来越 Adj.
Lesson 5	disjunctive	爷爷可以下棋或者打太极拳。	Drilling with substitution	One or the other or both
Lesson 6	Confirmative ‘shi’	是我不好。	Nil	Confirm and emphasize the proposition to show sincerity or certainty.
Lesson 7	‘how about’ pattern	要不我们留张纸条吧。	Drilling with substitution	Give suggestions.
Lesson 8	The BA construction	我把弟弟的画挂在客厅里。	Drilling with substitution	Physical displacement “我把弟弟的画挂在客厅里” Metaphorical displacement “我把欢乐带回家” Metonymical displacement “你把这首歌唱一下”
Lesson 9	Sequence	先, 然后, 再, 最后	Drilling with substitution	Temporal sequence

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Primary Goals

- 1) To connect the theoretical concepts of cognitive linguistics with the empirical language pedagogical practices in classroom.
- 2) To establish a framework of the basic structures of Chinese grammar according to the basic concepts in cognitive linguistics such as symbolic system and schematic network, ground and figure, metaphor and metonymy.
- 3) To generate language pedagogical practices from the cognitive-based framework of Chinese grammar, apply these practices to classroom teaching and learning, and determine more effective instructional techniques for developing students' Chinese proficiency.

- The study consists of two parts: to establish a theoretical framework of the basic structures of Chinese grammar from the perspective of cognitive linguistics and to empirically apply the cognitive-based practices generated by this framework in language teaching and learning.
- This study focuses on grammar learning of a group of P3 students (normal Chinese) in a public primary school in Singapore, observes the current teaching approach and learning outcomes, identify the gaps between the teaching goals and students' learning outcomes, and conducts two experiments (compound sentence and the BA construction) to fill the gaps by incorporating the cognitive-based pedagogical practices.
- The hypothesis is that since the cognitive-based practices accord with cognitive process of human brain, they will determine more effective classroom instruction and learning activities for developing students' Chinese proficiency.

The background features a light grey base with several overlapping organic shapes. A large, dark brown shape is on the left, partially overlapping a light green shape on the right. A white silhouette of a pine branch is in the top left. A white wavy line is on the right side.

Theoretical Background



THE COGNITIVE-BASED FRAMEWORK OF CHINESE GRAMMAR

- **Symbolic system and schematic network**
- **Figure and Ground**
- **Metaphor and Metonymy**

Symbolic system and schematic network

- In the field of cognition, any symbol is a combination of form and function (cf. Goldberg 1995, Croft 2001).
- Any symbolic system is organized as a schematic network (cf. Croft 2001, Goldberg 2006)

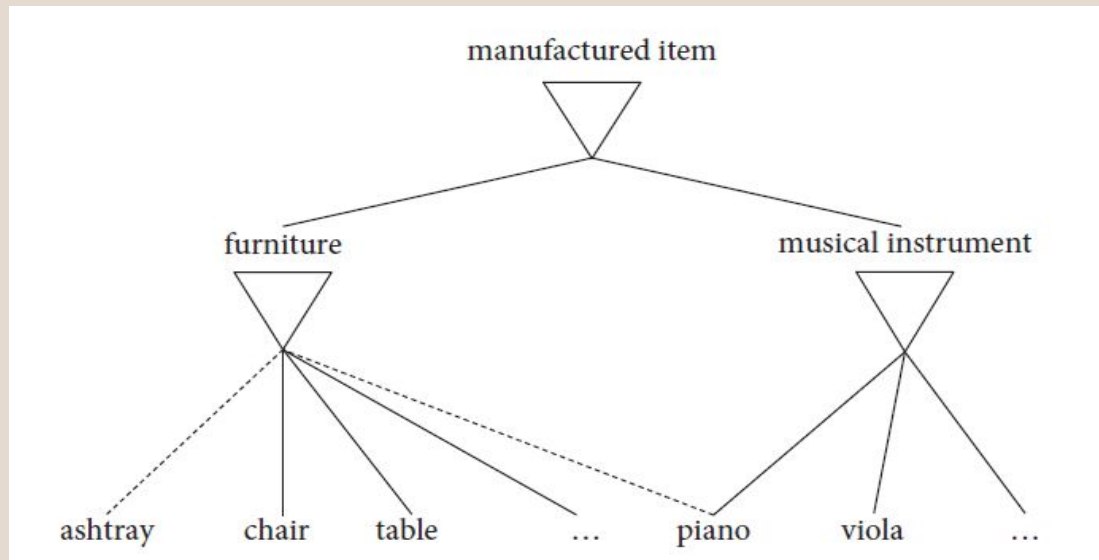


Figure 1: a simple conceptual network

- Similarly, the totality of our knowledge of language is captured by a network of symbols, which are ranked in a grammatical hierarchy

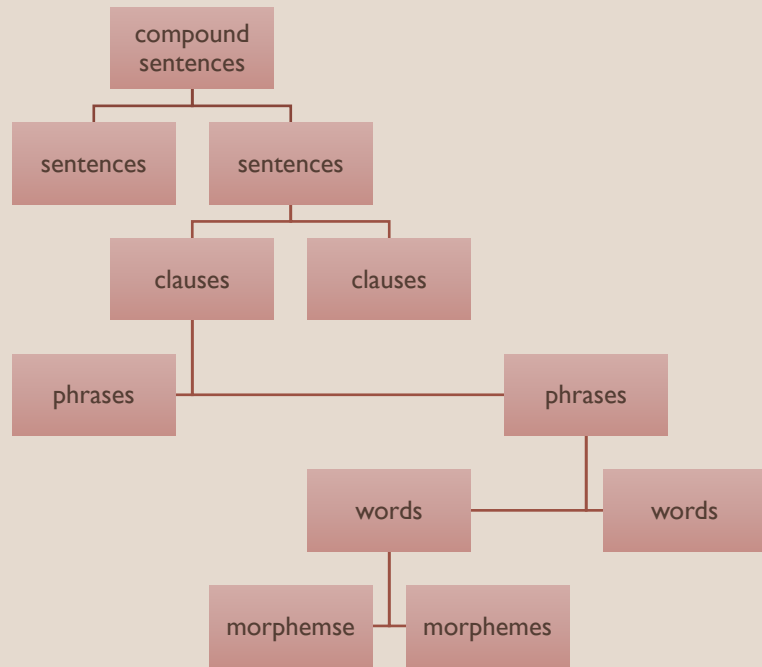


Figure 2: The foundation of the cognitive-based framework of Chinese grammar

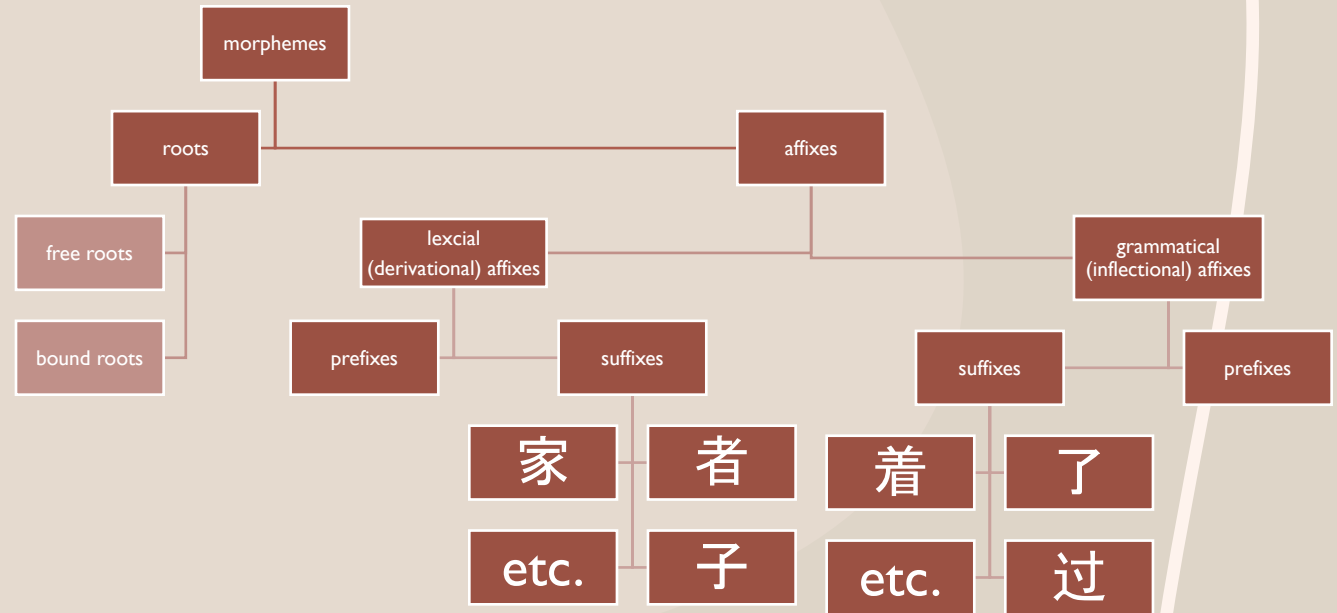


Figure 3: A hierarchical network of Chinese morphemes

Figure and Ground

- Provided that the scaffolding of the cognitive-based framework of Chinese grammar is established, and then the next question is how the combination of linguistic components at a particular level in the framework can be accounted for, for an instance, how words are combined to form a phrase, and how phrases are combined to form a clause.
- To learn the syntagmatic structure of Chinese, e.g., word formation (at the level of morphemes), word order (at the levels of words, phrases and clauses), it is beneficial to understand the cognitive concepts of figure and ground.



Figure 4: The word order of Chinese declarative clauses based on the concepts of ground and figure

(1) 上午, 我要跟弟弟妹妹在草地上学蜗牛慢慢爬。 (欢乐伙伴 3A L5 P60)

Shàngwǔ, wǒ yào gēn dìdì mèimei zài cǎodì-shàng xué wōniú mànman pá
In the morning, I will and younger bro. and sis. at lawn-on learn snake slowly crawl
Time Old info Conco. Loc. Event

In the morning, I will learn snail crawling slowly on the grass with my younger brother and sister.

(2) 桌上摆满了好吃的食物。 (欢乐伙伴3A L5 P56)

Zhuō-shàng bǎi mǎnle hàochīde shíwù
Table-on put full-PERF delicious foods
Loc Action New info.

There are delicious foods on the table.

Metaphor and Metonymy

- A related question to syntagmatic combination is how particular language components are selected to form a phrase, a clause, or a sentence. Such a semantic relation is termed paradigmatic relation in linguistics, i.e., a type of semantic relations between words that can be substituted with another word in the same categories.
- In order to understand paradigmatic selection and its relationship with syntagmatic combination, it is helpful if we understand the cognitive processes of metaphor and metonymy

(3) 最 ‘most’ +X

最+adj: 最美 ‘most beautiful’/最帅气 ‘most handsome’

最+n: 最夏天 ‘most summer’

(4) 五颜六色 ‘colorful’

Metonymy, five and six colours replacing all colours



THE COGNITIVE-BASED PEDAGOGICAL PRACTICES

Applying the cognitive-based framework of Chinese grammar to pedagogy, cognitive-based pedagogical practices can be generated, and I propose five guiding principles of the practices.

1. **Grammar teaching should be always put forward after reading comprehension.** Whether the teaching material is a dialogue, a story or an article, comprehensive reading should be conducted before grammar introduction and practice. Instead of openly enforcing pattern rules on students, grammar introduction should provide a wealth of instances to assist students induce the pattern generalizations from their observations. In this way, students can mobilize their cognitive abilities such as comparison, categorization, and generalization.
2. **In teaching, try to make students understand the form (phonology and character, morphology, syntax) and function (semantics, pragmatics, discourse) of language components.** For example, if a student uses the word 憧憬 ‘look forward to’ for a sport event in the coming week, s/he might only know the semantics of this verb but does not understand its pragmatic function. That is, it can only be used to look forward to abstract glories in the future. Such knowledge might not appear in the vocabulary list or grammar notes of the textbooks; therefore, it is up to the teacher to make sure the students have chances to observe and understand such information in class.

3. **In teaching, try to let students establish the connections between language components within a network, and let them build their own framework of Chinese grammar little by little.** For example, as mentioned above affixes can be linked in a hierarchical network based on their form and function. If students are learning vocabulary like 老虎 ‘tiger’, expose them with more examples with the prefix 老, such as 老师 ‘teacher’, 老鼠 ‘mouse’, 老板 ‘boss’, etc., help them generate a pattern [老N], and encourage them to draw links with other prefixes that have been introduced, like 小 as in 小孩 ‘child’, 小草 ‘grass’, 小鸟 ‘bird’, etc., and to connect with other suffixes such as 子, 儿, that they have learned to reach a schematic network similar to Figure 2. By restoring all this knowledge into a linked network and making connections between new and prior knowledge, students will find it easier to retrieve the related information in the future.

4. **In teaching, try to let students understand the principle of ground and figure. This practice can be assisted by animation or pictures.** As mentioned above Chinese language in general follows the principle that the elements of ground go preceding the elements of figure. Such practice will help student understand that the word order and word formation of Chinese are different from those of English and accordingly avoid negative transference of English if it is their first language. It can also help students recognize the word order for non-prototypical clauses such as those with existential, posture, motion/action verbs. However, it is very important that students do not over-generate the pattern. Encourage them to group and restore the words they come across that contain the prefix in a network by writing them down together.

5. In teaching, try to mobilize students' cognitive instruments such as metaphor and metonymy to deal with paradigmatic selection, abstract concepts, and uncommon grammar patterns in Chinese language learning. For example, the Chinese BA construction (e.g., 我把苹果吃了 'I ate the apple') as uncommon grammatical structure has been one of the difficulties in Chinese teaching. How to understand the BA construction is as well a well-discussed question. Within this cognitive-based framework of Chinese grammar, the BA construction is conceptualized as a spatial displacement schema. Accordingly, the cognitive-based practices will teach the BA construction in terms of the three levels (physical displacement, metaphorical displacement and metonymical displacement) in the spatial displacement hierarchical network.

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Research Design

Research questions

1. How to teach grammar? How to help second language learners understand grammar?
 - a) How can the research results of cognitive linguistics be connected to language pedagogical practice in classroom?
 - b) What is the cognitive-based framework of Chinese grammar?

2. What kinds of pedagogical practices can be generated from the cognitive-based framework of Chinese grammar?
 - a) What kinds of classroom instruction and activities can be generated?
 - b) How can we determine these classroom instruction and activities are more effective for developing students' Chinese proficiency compared with the traditional ones?

3. What are the challenges of Chinese grammar learning in Singapore primary schools?
 - a) How does English affect Chinese language learning in the current bilingual context?
 - b) What are the current approaches used in teaching Chinese grammar?
 - c) Are there gaps between the teaching goals and learning outcomes?
 - d) How to fill the gaps?

Research Methodologies

The two pedagogical experiment aims to examine and compare two pedagogical practices, i.e., the current teaching approach and the cognitive-based practices generated by the cognitive-based framework of Chinese grammar, in teaching the BA construction in P3 (normal Chinese) classrooms. The goal of the experiments is to find out which practices present an effective pedagogical process that can significantly help students acquire these grammar patterns.

Four classes of the P3 normal Chinese students (approximately 80 students) of a public primary school in Singapore will be selected and grouped into two groups as the subjects of this experiment. In **Group 1** (approximately 40 students), the teacher will use the current teaching approach. In **Group 2** (approximately 40 students), the teacher will adopt the cognitive-based practices to teach the BA construction. During the experiments all the classroom instruction and activities will be recorded and later transcribed, and the data will be analyzed to identify the relations between instructional techniques and students' language proficiency.

BA1- the basic displacement: physical, visible location change

(6) 我把弟弟的画挂在客厅里 (欢乐伙伴3A L8 P93)

wǒ bǎ dìdì-de huà guà zài kètīng-lǐ

I BA brother's drawing hang at living room-in

I hang my brother's drawing in the living room.

BA2- metaphorical displacement: metaphorical change

(7) 我把欢乐带给大家 (欢乐伙伴3A L1 P6)

wǒ bǎ huānlè dài gěi dàjiā

I BA happiness bring to everyone

I bring happiness to everyone.

BA3- metonymical displacement: part-whole replacement

(8) 我把圆盘分成七个部分 (欢乐伙伴3A L8 P93)

wǒ bǎ yuánpán fēnchéng qī-gè bùfèn

I BA round disc divide into seven-CL parts

I divide the round disc into seven parts.

(9) Questionnaire:

--Please translate the following sentences into Chinese: (level 1, 2, 3)

- 1) I ate up the apple.
- 2) I washed the clothes clean.
- 3) I like to wash his clothes.
- 4) I sang this song twice.
- 5) I wanted to go home.
- 6) I put that book in his schoolbag.
- 7) I moved the book to the table.
- 8) I cut the bread into two pieces.
- 9) I gave this book to the teacher.

Our expected findings will be:

Total accuracy rate: **Group1 < Group2**

For L1, accuracy rate: **Group1 < Group2**

For L2, accuracy rate: **Group1 < Group2**

For L3, accuracy rate: **Group1 < Group2**

For those cannot use BA, accuracy rate: **Group1 < Group2**

And our expected conclusions of the two pedagogical experiments are:

- 1) The pedagogical methods do affect students' interpretation and production of grammar patterns.
- 2) The cognitive-based pedagogical practices are more effective and comprehensible than the traditional drilling and substitution method.

summary

□ This project intends to develop cognitive-based practices to Chinese grammar teaching and learning for P3 students (normal Chinese) in Singapore primary schools. The project is divided into two parts: creating a cognitive-based framework for the basic structures of Chinese grammar and applying this framework in Chinese grammar teaching and learning. The goal of this study is to prove the hypothesis that such cognitive-based practices will determine more efficient instructional strategies and incorporate more useful classroom activities for improving Chinese proficiency.



summary

□ If this project is successful, it might potentially be expanded to cover all levels of the Chinese curriculum taught in Singapore's primary schools (P1-P6), and eventually a cognitive-based approach for teaching Chinese grammar could be created. Thousands of students will benefit from the cognitive-based approach by significantly boosting their Chinese proficiency if it is demonstrated to be effective and widely implemented in Singapore's primary schools.



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Thank You

Dr. Zhan Fangqiong
fangqiong.zhan@nie.edu.sg