Sentence and Its Relationship with Cognitive Structure

—Case in Teaching Chinese as a Foreign Language

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Abstract—**The conventional textbooks are almost organized from a linguistic approach, i.e. in accordance with the words, sentence, and text order to teach. But this kind of teaching violates the human cognitive structure of the second language learner, and will hinder their study. The current study discusses the role of sentence in second language teaching from constructive approach. It argues that sentence as key chunk will stimulate the inner knowledge of a second language learner, and generate situation effect which matches the information process model in our brain. Comparing the conventional and cognitive teaching method, it is found that the cognitive teaching method is more effective than the conventional one.**

Keywords—teaching Chinese as a foreign language; constructiveness; cognitive structure; sentence; teaching design

I.   THE PROBLEMS IN ELEMENTARY CHINESE TEACHING

Today, the Grammatical approach and Communicative approach are two mainstream teaching approaches in the world. Both of them have their own characteristics. Linguistics in language description identifies units which can influence language teaching. We found that, however, the Grammatical approach can create hamper for cognitive development. According to the "Example teaching" genre in Germany, for meeting the standard of systematic knowledge, the Grammatical approach has formalized teaching and learning. It focuses on remembering things without understanding them, thereby aggravating the burden on students and preventing their cognitive development. The conventional textbooks that adopt the Grammatical approach are divided into sections. The teaching orders of them are according to the level of difficulty. The organization of the textbooks is arranged in the vocabulary, sentence and text sequence. Because there is not a direct cognitive relationship between two languages, beginners will feel difficult to understand and recite the vocabularies. They will also fail to learn texts by their own, because they are too long and complex to beginners.

A new language with strange form (phonetic and character) and systematic linguistic knowledge is hard to learn for beginners. Few people could achieve their goal, even with high enthusiasm. And students will gradually lose interest in learning Chinese. Those who stick it out are struggling with words that have similar phonetic forms but completely different semantic meanings. Therefore, it is almost impossible to combine these linguistic components into sentences with right rule.

II.   SOLUTION

According to the cognitive structure of people, we can try to adjust the teaching order. Aiming to master basic communicative ability, we can tell students to learn sentence first. In natural language communication, people usually start from acquiring short sentences in a scenario (sometimes a word, but the word can express the equivalent of a sentence meaning). The requirement of communication is created in scenario. In a restaurant, for example, you need to tell the waiter what you want. Meanwhile, in scenario, we could understand the vocabularies more accurately. In second language teaching, scenario will provide a stage to help students construct schema based on their mother language, which can great improve their understanding ability in Chinese learning. So we suggest students learning sentences first, because they can provide us basic semantic scenario.

Let we see a text about eating in the canteen (Jiang Liping 2006). There are 23 new words in this text. According to the conventional teaching approach, we need to explain the meaning and teach the pronunciation of each vocabulary first, and help students to recite them through reading or playing game. These new vocabularies are appearing in the order of the texts, which are isolated in semantic meanings. They are hard to learn because students can't find the semantic links among them. Secondly, we need to teach student to make sentences using new vocabularies. Since lacking knowledge of grammar, few people could complete this task. Thirdly, we need to explain the text for students. Naturally, we can't get a good outcome.

It will be different if we use cognitive teaching approach. We select some key sentences which are often used in restaurant.

TABLE I.   THE VOCABULARY APPEARING IN THE TEXT

Number	vocabulary	Number	vocabulary
1	食堂(canteen)	13	师傅(chief)
2	馒头 (steamed bread)	14	饺子 (dumpling)
3	米饭(rice)	15	面条(noodle)
4	包子 (steamed stuffed bun)	16	常常(often)
5	碗 (bowl)	17	为什么(why)
6	带(bring)	18	会(can)
7	肉(meat)	19	筷子 (chopsticks)
8	菜 (dish)	20	觉得(feel)
9	喝(drink)	21	难(difficult)
10	鸡蛋(egg)	22	教(teach)
11	汤(soup)	23	俩(two)
12	咖啡(coffee)		

diǎn diǎn cài

点 点 菜 I'd like to order food.

nǐ xiǎng chī shén me

你 想 吃 什 么？What do you want to eat?

wǒ xiǎng chī

我 想 吃 ___。I would like to eat_____。

[可做替换练习:我想吃___(馒头、包子……)]

nǐ xǐ huān chī shén me cài

你 喜 欢 吃 什 么 菜？What food do you like?

wǒ xǐ huān chī là de

我 喜 欢 吃 辣的。I like the spicy food.

The principle of teaching sentences is that the semantic keywords are decomposed from the sentence, and the parts that can't be decomposed are understood in the overall sense. For example, we can find the corresponding semantic meaning in English directly when we learn "点菜" as one word. It is easy to understand the vocabulary in sentences. In the scenario, we can learn that "点" has the meaning of "point", which derives from the meaning of "point to", so there is a scenario of using finger pointing at the dish, which means "I want this dish", so the meaning of "order food" is emerged. We can help students to establish an experiential understanding of the vocabulary in this way, because the meaning of it is related to body movements. If simply explaining it from the semantic meaning, we need to list other meanings of "点", including "o 'clock, dot, point". It is not easy to distinguish these meanings, and it also create burden to students. When we used sentences as the basic unit of teaching, students feel learning Chinese is much easier. And learning the key vocabularies from sentences, the semantic meanings of them can be understood more clearly. Moreover, they will be interested in learning and exploring the semantic sources of these vocabularies and comparing them to the semantic structure in their own language to find the difference between two languages (It is the process of constructing new language mode through "assimilation" and "adaptation"). Taking sentences as a teaching unit, which will provide a determined learning goal to students and help them, achieve their communication goals faster, which could enhance their interest and confidence. And it is very important for beginners. After the basic sentences are mastered, we can improve the vocabularies by practicing "replacement exercise".

It is an approach of using cognitive linguistics to assist learning. The grammatical function of "的" is very complex and inaccessible. But when we learn the sentence: "我喜欢吃辣的" as a whole, the meaning and the function of the word is becoming clearly. After learning the sentence, we can replace the adjective with new words such as "我喜欢吃甜的。" "我喜欢吃酸的。".

We can help students to improve the vocabularies by practicing "replacement exercise" after they have mastered basic sentences. In this case, students are able to classify the vocabularies, because all vocabularies they have learned are each linked to the established semantic framework. For example, "包子"、"饺子"、"馒头"、"米饭" all belong to the staple food. It is really useful for Chinese learning.

Finally, when students read dialogues or texts, they will easily deduce the meaning of the entire dialogues based on the existing knowledge in their mind. In addition, they can reconstitute the dialogues in their own way. Therefore, the semantic framework based on cognitive structure can help students to improve communicative ability in a better way.

III.   THE EVALUATION OF SOLUTION

We have compared the two teaching approaches in the actual teaching. One is the conventional teaching approach (grammar-based pedagogy), which is in accordance with the vocabularies, phrases, sentences, and texts order to teach; the other is based on the cognitive psychology language learning model, we name it cognitive teaching approach, which starts from basic sentences, and then analyses the semantic meanings of vocabularies in the sentences, and finally learns the texts.

There are three classes participating in the experiment, all of which are under the Chinese zero-based courses, and they have learned systematically pronounce of Mandarin at the beginning of the course. We use two different textbooks; however, the content is about the same. The conventional teaching group uses the teaching materials edited by Jiang Liping (2006), and the cognitive teaching group uses the teaching materials edited by Yue Jianling (2006). Students come from all over the world [Source: East Africa, Central Africa, South Africa, South Asia, Central Asia, East Asia, Southeast Asia, North America, Oceania]. One of the classes uses conventional pedagogy and the other two classes use cognitive pedagogy. There are 16 students in conventional teaching class (two of them have studied Chinese and do not take the HSK test). They have 48 teaching hours. And the performance of them as follows: The average score: 72.5. The highest score: 92. The lowest score: 35. The failing rate: 12% .

There are 15 students in cognitive teaching class 1 (two of them have learned Chinese and reached or exceeded HSK Level 3). They have 48 teaching hours. And the performance of them as follows: The average score: 88.7. The highest score: 100. The lowest score: 79. The failing rate: 0% .

There are 10 students in Cognitive Class 2 (two have studied Chinese and do not take the HSK test). They have 80 teaching hours. And the performance of them as follows: The

average score:76.7. The highest score: 92. The lowest score: 64. The failing rate: 0% .

TABLE II.   TEACHING APPROACH EXPERIMENTAL RESULTS

class	Conventional teaching class	Cognitive teaching class1	Cognitive teaching class2
The number of student	16	15	10
Teaching hour	48	48	80
Average score	72.5	88.7	76.7
The highest score	92	100	92
The lowest score	35	79	64
The failing rate	12%	0%	0%

Although, we can't make conclusion only through analyzing scores, we have learned that the cognitive approach have its own advantage. At the same time, cognitive teaching can save more time than the conventional one and leaves more room for students to practice communication skills. In addition to completing the content of the textbooks, the students of Cognitive teaching class1 have also completed three communication tasks, which include making phone calls with a Chinese, shopping in a Chinese store, and going out with a Chinese friend. Our task requires submission of recordings, videos or photo material. In the process of accomplishing these communicative projects, students become more confident in their Chinese communication. And the students of Cognitive teaching class2 participated in a series of teaching games that also help them to develop their practical abilities and confidence in Chinese communication.

IV.   THEORY FOUNDATION

At present, the two mainstream teaching approaches, grammatical approach and Communicative approach, (Canale & Swain 1980) are emphasized on different aspects. A clear description of language from a linguistic perspective is an indispensable basic part for language teaching. However, from the perspective of teaching practice in primary Chinese, there is a problem that obstructs cognitive study in the conventional approach. The "paradigmatic teaching" genre in Germany has criticized the conventional approach that for meeting the standard of systematic knowledge, they have formalized teaching and learning, focusing on reciting things without seeking solutions, thereby aggravating the burden on students and preventing their cognitive development.

The theory of constructivism believes that learning is the process of constructing internal mental representation. Learners do not "move" knowledge into memory from the outside, instead, they based on the existing experience to construct new schema through interacting with the external environment. Schema is the way for individual to sense, comprehend and think about the world. It is the framework or organizational structure of the mental activity and the foundation for the individual to know things. The schema originally came from innate heredity.

Once interacting with the environment, the schema will be evolved and enriched in the process of adapting to the environment, and forming a series of pictorial systems that constitute the cognitive structure of people. In the learning process, individuals effectively integrated external stimuli into the existing schema through assimilation. When external stimuli can't be effectively integrated, the individual will change the internal schema through adaptation to go with the environment. And this process of cognition, or intellectual activity, relies on the transition from an initially unstable equilibrium to a gradual and steady equilibrium between the two intelligent functions of assimilation and adaptation. In fact, constructivism reveals the way of people learning the world, which Piaget (1972) calls epistemology. The study proposes to avoid teaching the vocabularies alone, but to start teaching from the sentences with semantic function, which is consistent with the learning approach of constructivism.

Firstly, like a proposition, sentences can activate the existing semantic function schema in the brain, so as to establish the connection between the new phonetic form of the second language and the semantic schema of mother language, and promote the reconstruction of the cognitive schema in mind. Secondly, learning a second language is different from learning mother language. Second language learning is based on the language knowledge system of the mother language. For second language learners, they have established and stored a set of knowledge system through their mother language. "The existing cognitive structure" in their mind can be used as a tool to help them learn second languages. Therefore, we should fully mobilize the positive valence of mother language in the teaching design. Starting from the existing cognitive structure, in this way we can help learners to become more efficient in learning the knowledge of a new language. In the teaching practice for beginners, we find that sentences learning are more likely to activate the cognitive schema of the learners, which can reduce the difficulty of learning. Secondly, introducing the key sentences in the scenario. It will be more in line with the approach of human learning and storing knowledge, if we take sentences as the basic unit of learning language. The theory of Cognitive psychology (Kintsch 1979, 1990) believes that in the model of language comprehension, the proposition instead of vocabulary is the potential unit of textual material that can be stored in memory. Propositional structure in the language is expressed in the form of sentences. Therefore, learning sentences is more a more efficient learning approach, which is more in line with the memory processing method of students.

Thirdly, we need first match the existing cognitive structure through sentences, and on this basis, we can learn the meaning and function of the vocabularies in the sentences well. Finding the keywords in the sentences, and then, learning them based on the whole sentence meaning. It is much easier to analyze the words in the sentence than to understand the meaning directly. For example, the above-mentioned words"点菜", "来一个", "辣的", they can be easily understand in the sentence. It becomes too difficult to students if they learn them directly. Learners can analyze the corresponding meaning of each word from the structure of knowledge. This process is more like replacing some components in internal memory, for example, replacing another brand of butter to make bread. This learning approach has less cognitive resistance, and learners' original knowledge structure can also help them to realize their own understanding from the whole to the part.

Starting from the word teaching, the unfamiliar language forms will cause great resistance to learners. In addition, the syntax between the meanings of the sentences and vocabularies could be another difficult point. Learners can't use their existing cognitive structure and information to achieve autonomous processing in a deep level, because the syntax is complex, and there is no necessary connection between word meaning and syntax rules.

V. CONCLUSION

According to the cognitive psychology of students, the study states that adjusting the teaching order in second language teaching is necessary. Starting from teaching sentences, we can better activate learners' existing cognitive structures. Students can build a new linguistic knowledge system effectively in their mind through adopting the approach. It coincides the learner's learning model, which reduces the learning burden, enhances student's study enthusiasm and improves the learning effect. The teaching design is consistent with the universal model of the theory of cognition and constructivism, which is especially effective for beginners. After learner has accumulated a certain amount of Chinese vocabulary, it is necessary to learn from the perspective of linguistics and analyze the differences between the semantic and grammatical structures in the two languages for avoiding the negative transfer of native language features.

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