The Schematic Association of Vocabulary Learning

Zhenyu Ma
College of Foreign Studies,
Technology of Guilin University,
China
E-mail: 1502710279@QQ.com

Abstract
In order to make vocabulary learning more effective for non-English majors than rote repetition, this study experiments on schematic word association by oral presentation in classroom teaching and after 12 weeks of experiment the result reveals that the experimental class score much higher in what has been taught during the experiment period than the control class in the word retainment and that they are more competent in the schematic word association. The study also betrays serious polarization between the highly-motivated learners and the passive learners. This implies a better attention should be paid on poor learners in later researchers.

Key words: vocabulary schema

Widdowson (1983) describes schema as cognitive constructs which allow for the organization of information in our long-term memory. Cook (1989) states, "the mind, stimulated by key words or phrases in the text or by the context, activates a knowledge, schema"(P. 69). Widdowson & Cook both empathize the cognitive characteristics of schema which allow us to related incoming information to already known information. This covers the knowledge of the world, from everyday knowledge to very specialized knowledge, knowledge of language structures, and knowledge of texts and forms they take in terms of genre, and organization.

1. Schematic association

Schematic association of vocabulary is different from semantic association. Semantic association works in this way as Evelyn Hatch & Cheryl Brown's (2001) explanation:

> If you were given the word *farm* and asked to offer word associations, you would likely name buildings *(barn)*, equipment (tractor), animal (*cows)*, crops (*wheat*), and people (*farmer)*. You might associate the word with other rural (*ranch*) or city (*town*) terms. You might produce clang responses – words that rhyme (*harm*) or words beginning with the same sound (*fun, fall*). Each of these associations relates to the word *farm* in some way. (P. 65)

However, to English learners of Chinese, *farm* would never make you associate with *ranch,* which is of quite cultural difference especially to students living in urban places far from the pasturing areas. Conversely, Inner Mongolia is a reminder of ranch, not because Inner Mongolia is a ranch, but because

it's known for its grasslands which jingle bells for all Chinese. If the target word is *ranch*, it's learned and retained together with knowledge of Inner Mongolia for Chinese learners.

According to the founder of schema, Bartlett, one of the striking characters of schema is its associative character. And it's often depended on individuals' affective attitude (Bartlett1932). In this case, some semantically unrelated words are schematically related. For example, *Zhao Benshan* and *crutch* are semantically unrelated at all. But they are schematically related because Zhao Benshan reminds people of his short sketch, *Selling the Crutches*. Though "set" and "sit" are semantically related (Hatch & Brown, 2001), they are not schematically related.

Hirsh-Pasek et al.(1994, Palemo, 1963, Jenkin, 1970, Erin, 1957 cited in Hirsh-Pasek, 1993) state that subjects are more likely to semantically associate words but they illustrate it by giving the example that "thread", "pin", "sew" are associated to 'needle" rather than "nail" or "poker", which are also long, pointed objects, or rather "wheel" or "nettle" which sounds like "needle". This study assumes: Why "thread", "sew" etc are associated to "needle" rather than "nail" or "nettle" is that the former offers "a schema of sewing" instead of "a semantic field of sewing". In the schema of sewing, the typical words are "thread', "needle" instead of "nail" or "nettle". So in this study, any groups of words that involve the learners' affective attitude and can motivate their association with their previous knowledge and form meaningful contexts is called schematic association. For example, in word tests, students are often confused with "wheelchair" and "armchair". Maybe in some cases they are associated, but schematically, "wheelchair" is associated with "disabled people" and can be easily put in contexts like "Disabled people travel in their wheelchairs".

Based upon this, if the target word "butcher" is associated to " killing fat pigs, knife, blood, howl…" memory may become much easier.

2. Previous research into schema

Schema is mostly applied in reading comprehension and vocabulary guessing. The earlier researcher Hudson's (1982, cited in Wang Chuming, 1990) study showed that schema was more effective to poor learners than to good learners in reading comprehension. It's true, as Batia Laufer (1997) states, "one of the factors that contribute to successful guessing is the learners' background knowledge of the subject matter of the text or content schemata." Xiaolong Li (1988, from University of California) concluded from his experiment on comparing cue-adequate sentences with cue-inadequate counterparts in both reading and listening contexts, that subjects receiving cue-adequate sentences scored significantly higher in inferring and remembering the meanings of unfamiliar words in contexts and that, if contextual clues were equally adequate, subjects reading the sentences scored significantly higher in both inferring and remembering the contextual meanings of unfamiliar words than those listening to the sentences. He summarized that the more adequate the context clues, the more likely a relevant schema could be found. The more likely a relevant schema could be found, the more successful guessing and the higher score the subjects could get.

Batia Laufer pointed (1997) that successful vocabulary guessing through reading needs "compatibility between the readers' schemata and the text content." He further states that if the readers' schemata and the text content are contradicted, the reader may impose his or her interpretation on the text and try to understand individual words that will fit the global meaning, suppressing the clues that suggest a different interpretation.

That the clues are suppressed, in Xiaolong Li's opinion, results from cue-inadequacy besides cultural difference. So successful vocabulary guessing through reading should be on condition of adequate context clues of no cultural difference so that the text content is compatible with the readers' schema.

This study aims at schema applied in vocabulary learning can make vocabulary learning more effective.

3. The hypothesis

In this study, the schema-based oral vocabulary presentation was compared with rote repetition of word lists for testing three hypotheses. They were: Compared with those receiving rote repetition without schema-based vocabulary oral processing, subjects receiving schema-based oral vocabulary processing would 1) score higher in remembering the words; 2) score higher in word association; 3) score higher in word consolidation.

3.1 Subjects

The subjects are freshmen from two classes, Class 7(the control class) and Class 9(the experimental class). The control class consisted of 48 and the experimental class, 49, among whom there was one student in the control class missed the pre-test, and two students in the experimental class missed the post-test. So both of the two classes consisted of 47 students. Neither of the two classes had received any kind of the schema-based vocabulary training before the experiment. During the 12 weeks, all the students completed the English course and the experiment.

3.2 Materials

New College English (Second Edition) Integrated Course 1 is the required text book, of which vocabulary of Unit 1, 2, 4, 5, and 6 was presented in the way of the schema-based oral processing.

The two papers (a pre-test paper and a post-test paper) were set in accordance with the book *Language Testing & Its Methods* written by Liu Ruiqing (1991). The pre-test was in the form of: Chinese and English exchanging; filling the blanks; word spelling according to the first letter; the multiple choice. The post-test was in the form of: Chinese and English exchanging; word guessing according to a schema-related groups of word or description; word spelling in a schema-related description of context.

In the pre-test, the subjects were tested on the 3500 required words learned in middle schools. Posttest tested students on new words grouped in the schematical way, which were presented during the experiment.

3.3 Procedure

The experiment was carried out within 12 weeks (except holidays and exams). It was conducted during the regular class hours by the classroom teacher.

In the experimental class, before each text learning, new words were processed in the schema-based ways. During the new word presentation, the teacher intended to present old associated words (the underlined words) and the extra associated new words) to help the students have a better understanding of the new words, i.e. to activate their relevant schema. To have a face-to-face communication and also to develop the students' skill in speaking and listening, the word presentation was delivered through speaking. During the listening and speaking activity, body language and some necessary Chinese explanations of one or two specific words were offered when some individual students looked puzzled.

In order to ensure that the students in the control class also spent certain minutes repeating the assigned words, they were given the equipotent minutes to remember the assigned words by rote repetition in class. During the experimental period, the students were not assigned vocabulary memory work out of class, nor were they tested on vocabulary monthly as usual.

4. Data analysis and discussion

4.1 Data analysis

Table 4.1 shows that, on the pretest, there was almost no difference between the experimental class and the control class. For the experimental class, M = 49.49, SD = 11.28; for the control class, M = 48.89, SD = 12.53. T-test tells that there is no difference when the experiment starts (T=1.634. P=.109.)

After 12 weeks' schema associated vocabulary training, the difference is significant as is shown in Table 4.2 (T-test shows T=17.263. P=.000.)

Objects receiving schematic vocabulary association score significantly higher than those receiving rote recite of word lists, though both ways spend the same amount of classroom practice time. It seems that the schematic word association proves more effective rote repetition of the word lists.

4.2 Discussion

4.2.1 Issues

The two issues revealed from this study were: 1) the subjects scored even lower in Posttest than in the pretest, of which the total points were both 100. For the experimental class, before the experiment, Mean = 49.49,SD = 11.28; after the experiment, Mean = 45.66, SD = 20.33. The comparison between the pretest and Posttest for the experimental class shows as Table 4.3

2) As Table 4.3 shows, though there is significant difference between the experimental class and the control class in Posttest, yet the dispersions for the experimental class are also larger.

Probe to Issue 1:

Before the experiment, they had just finished middle school learning and had done lots of exercises to prepare for the National Entrance Examination. However, during the experiment time, a unit was finished in two class hours and they were not required any vocabulary assignment outside class.

Probe to Issue 2:

In Posttest, the highest marks in the control class were 77 and the lowest marks were 3. The difference between the highest and the lowest was 74. However, in the experimental class, the highest marks were 89 and the lowest marks were 2. The difference between the highest and the lowest was 87. The highest marks in the pretest for a student in the CC were 84. However, she scored 77 in Posttest. The highest marks in the pretest for a student in the EC were 75. However, she got 89 in Posttest. And the investigation on the schema-based vocabulary way revealed that some high-scored students in the EC were greatly influenced by this way. Greatly influenced by the schematically processed way, the high-scored students in the EC reported even higher in the posttests, but in the CC, the high-scored students reported lower in the posttests.. Thus, striking polarization happened and dispersion is large for the experimental class. However, in the control class, speaking loving does not reflect its priority. Table 4.4 is the connection for some high-scored and low-scored students between their pre- / post- tests and their post investigation.

4.2.2 Investigation

To confirm that it was because of the schema-processed word presentation improved the posttest for the experimental class, the two classes of students were investigated on the schema-based vocabulary association before and after the experiment. Table 4.5 reports the difference between the two.

The statistics above shows that before the experiment, the schematic word association for the two classes is basically at the the same level. For the experimental class, M = 12.49, SD = 3.24; for the control class, M = 11.72, SD = 2.8. However, after the experiment, for the experiment class, M = 21.26, SD = 4.3; for the

control class, M = 12.49, SD = 3.14. The investigation score is higher for the experimental class than for the control class after the experiment and also the vocabulary score is higher for the experimental class than for the control class, it proves the more schematic association, the higher score the students get.

Table 4.6 is the comparison and T-test for the EC and the CC before and after the experiment.

The table above shows before the experiment, there's not much difference between the EC and the CC. However, after the experiment the difference is notably significant. It proves the schematic vocabulary presentation did influence the experimental class and so their vocabulary retention is better than the control class.

4.2.3 Time spent on vocabulary during the experiment

A survey after the experiment showed that 91% students in the control class and 90% students in the experimental class spent no or little time on the word study during the experiment, except listening to the teacher's word presentation in class. Compared to 89% of the students who had stated that they learned words mainly outside class, the schema-based way can help retain words in long-term memory.

5. Conclusion and implications

The associated findings revealed from this study are: 1) The schema-based vocabulary presentation does improve word retention; 2) The more the subjects schematically associated words, the higher score they report; 3) It reduces students' time spent on vocabulary outside class and makes the classroom vocabulary learning efficient.

Since the schema-based oral vocabulary presentation can not only help learners better retain new words, but also reduce time spent on vocabulary outside class, new words in the relevant texts should be processed in the schematic way so as to make the texts reading easier and also make the vocabulary learning lively and interesting. Since the oral word presentation with body language can leave deep impression on the subjects and also arouse their interest, it's of great help for language teachers to make good use of body language and modulation in tone to leave image in their mind.

What has to be pointed out is that the schema-based way can help the good learners do even better in vocabulary study but proves ineffective to poor learners, so special attention should be paid to the poor learners.

Table 4.1 The pretest

Class	Number	Mean	SD
9	47	49.4894	11.28
7	47	48.8936	12.53

Table 4.2 The posttest

Class	Number	Mean	SD
9	46	45.66	20.33
7	46	29.28	16.67

Table 4.3 The comparison for EC and CC in the pretest and Posttest

Class	Pre-m	Pre-sd	Pos -m	Pos -sd
EC	49.49	11.28	45.66	20.33
CC1	48.89	12.53	29.28	16.67

Table 4.4: High and low scored students vs their post investigation

N	Post investigation of EC	Posttest of EC	Pre-test of EC	Post investigation of CC	Posttest of CC
1	28	89	75	22	77
2	28	87	69	16	62
3	26	75	68	19	60
4	26	71	68	18	53
44	17	13	35	13	10
45	16	10	35	12	10
46	13	6	33	8	6
47	12	2	26	9	3

Table 4.5: Difference between rote repetition and schematic association

Class	Mean	Std. Deviation	Std. Error mean
Pre-investigation of EC	12.4894	3.24287	.47302
Pre-investigation of CC	11.7234	2.81071	.40998
Post-investigation of EC	21.2553	4.30605	.62810
Post-investigation of CC	12.4793	3.14070	.45812

Table 4.6: T-test for the EC and the CC before and after the experiment

Paired Samples Test

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
Pair PR-in9 -- P	8.7660	3.08018	.44929	19.511	46	.000
Pair PR-in7 -- P	-.7660	1.89063	.27578	-2.777	46	.008

Reference:

[1] Bartlett, F C.(1932). *Remembering; A study in Experimental and Social Psychology*. Trans.Li Wei. (1998). (1st ed.). Zhejiang, China：Zhejiang Educational Press, Chapter10）

[2] Cook, G. (1989). *Discourse in Language Teaching: A scheme for Teacher Education*. (1st ed.). Oxford: Oxford University Press, (Chapter 6)

[3] Hatch, E. & Brown C. (2001). *Vocabulary, Semantics and Language Education*. (1st ed.). Cambridge: Cambridge University Press, (Chapter 4, Part 1)

[4] Hirsh-Pasek, K.et al. (1993). *Words and meaning: from primitives to complex organization.* (2nd ed.). Oxford: Oxford University Press, (Chapter 2).

[5] Laufer, B. (1997). The lexical plight in second language reading: Words you don't know, words you think you know, and words you can't guess. In: *Second language Vocabulary Acquisition,* ed. Coady & Huckin. (pp. 5-32). Cambridge: Cambridge University Press.

[6] Li, Xiaolong. (1988). Effects of Contextual Cues on Inferring and Remembering Meanings of New words. *Applied linguistics* Vol.9. No.4. (403-413).

[7] Liu, R.Q. (1991). *Language Testing and Its Methods.*(1st ed.). Beijing：Foreign language teaching and Research Press.

[8] Wang, C. M. (1990). *Applied Psycholinguistics----Psychical Research in Foreign Language Learning*. (1st ed.) Hunan, China：Hunan Educational Press. (Chapter 6)

[9] Widdowson, H.G.(1983). *Learning Purpose and Language Use*. (1st ed.). Oxford: Oxford University Press. (Chapter 3)