

A Study of Embodied-Cognitive Teaching Approach to Teach English Reading in College

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Abstract. English Reading plays an important role in English learning. Hence, improving the learners' English reading ability is one of the key issues for English teachers in colleges. This study conducts an experiment on teaching English Reading for the freshmen of E-Commerce major in a higher vocational college, in which the experimental group adopts the Embodied-Cognitive Teaching approach and the control group the traditional teaching approach. In order to ensure the reliability of the study, the data of the two groups of learners are obtained and recorded from the teaching platform. With the help of SPSS Statistic analysis software, the study finds that there is no significant difference in the scores of the instant intensive reading test and the instant vocabulary test between the experimental group and the control group. But there is significant difference in the scores of the instant extensive test and after-class vocabulary tests between the two groups; the experimental group performs better than the control group on the aspects of conceptual understanding and word decoding skills, which shows that Embodied-Cognitive teaching approach helps to improve the learners' reading ability and is one of the new and effective ways for teaching English Reading in Chinese colleges.

Keywords: English Reading; College English; Embodied-Cognitive Teaching approach.

1. Introduction

As a universal language, English has long been an important tool for spreading information and knowledge in China. English reading is not only the learning content for Chinese English learners, but also one of the important language skills that the learners must master. It is also an essential way to acquire information, absorb knowledge, develop the thought, understand the Western culture and the world and improve the personal quality for the English learners. In various English level tests in China, reading comprehension accounts for a very large proportion, such as 30% in the Practical English Test for Colleges, 30%-45% in the College Entrance Examination, 35% in the CET-4 and CET-6, 20% in the TEM-8, and 40% in the postgraduate English test. Therefore, how to improve learners' English reading ability has become an urgent problem for college English teachers in China.

2. Embodied-Cognitive Teaching

Cognitive instructional psychologists believe that the proficiency in reading depends on three elements: conceptual understanding, basic skills of automation, and cognitive strategies. Conceptual understanding means that the reader has knowledge related to the reading topic, the corresponding text schema, and related vocabulary knowledge. The basic skill of automation refers to the reader's decoding skill of words. Cognitive strategy refers to readers constantly changing their reading methods in order to achieve the purpose of reading comprehension, which is also known as "comprehension monitoring strategy"^[1]. Numerous studies have shown that differences in reading ability are closely related to declarative and procedural knowledge owned by individuals. Scholars

have analyzed and discussed the learners' reading ability on the macro level, such as from the perspective of discourse analysis theory, meta-cognitive theory and information processing theory, and on the micro level as well, such as morpheme, memory, syntax, emotion, etc.

The practice of language teaching cannot be separated from the guidance of theoretical linguistic research, and the view of language based on linguistic research directly affects the view of foreign language teaching; in another word, the view of foreign language teaching comes out of the view of language^[2]. On the basis of their criticism on empiricism and rationalism, Laykoff and Johnson set up a new philosophical theory: the Philosophy of Embodiment. Its core point of view is that the categories, concepts, reasoning and psychology are formed on the basis of their own physical experience, and the most basic patterns are gradually formed on the basis of the perception of body parts, spatial relationships and power movements. In the final analysis, cognition and meaning are based on physical experience^[3]. The three basic principles of the Philosophy of Embodiment are: the embodiment of mind, the cognitive unconscious, metaphoric thinking . Grounded on the Philosophy of Embodiment, Cognitive Linguistics (CL), created by Laykoff and Johnson, holds that language is not a natural ability, but a result of the comprehensive effects of objective reality, physical experience, human cognition, physiological base and other factors. It is formed from the interactive embodiment with reality and cognitive processing (embodiment-cognition, in short), and is a part of people's general cognitive ability. Chinese linguist Professor Wang Yin inherits the view of language based on the Philosophy of Embodiment and finds that the term of Cognitive Linguistics only express the “cognition” but not the “embodiment” in the process of localization of Cognitive Linguistic in China. After many turns of demonstration and argumentation, Professor Wang Yin adjusts the term of Cognitive Linguistics as the term of Embodied-Cognitive Linguistics (ECL)^[4] . ECL believes that language come from our interactive embodiment with reality and cognitive processing (embodiment-cognition) and language cannot be separated from people's physical experience in the real world[3]. The core of ECL is the principle of embodiment-cognition, that is, Reality-Cognition-Language. Supported by the core principle of ECL, the concept of Embodied-Cognitive Teaching (ECT) should provide a new direction for college English reading teaching practice.

3. Study design

3.1 Study Questions

In order to improve the English reading ability, this study conducts an experiment on teaching English Reading for college learners, in which the experimental group adopts the method of Embodied-Cognitive Teaching and the control group adopts the traditional approach. The research question is: will the learners in the experimental group perform better than the learners in the control group? If so, in what ways?

3.2 Study Objects

The study objects are the learners from two different classes in the first year of E-Commerce major in a higher vocational college, aged from 18 to 20. One class takes the Embodied-Cognitive Teaching methods (experimental group) and the other traditional teaching methods (control group). In view of the characteristics of learners in higher vocational colleges and the above research question, this study excludes the data of those learners with extremely low learning motivation and collects the date of 60 learners with stable performance and good learning attitude, in which 30 for the experimental group and another 30 for the control group.

3.3 Study design

Table 1 The Experimental Teaching Design for a College English Reading Lesson

	Experimental group	Control group
Content	Unit 2 Text A Office Etiquette	
Objectives	After learning, the learners can: 1. remember the key words and phrases in the text; 2. understand the main idea; 3. analyze the long and difficult sentences and understand details; 4. respect the office etiquette and improve the occupational quality.	
Key Points	1. How to help the learners memorize English words and phrases in the text; 2. How to promote learners understand the main idea of the text.	
Difficulty	How to promote the learners to understand the long difficult sentences and details in text.	
Strategies	Embodied-Cognitive Teaching Methods	Traditional Teaching Methods
Implementation	<p>Step 1: Extensive reading</p> <p>1. The teacher introduces the topic by video and guides the learners to discuss the topic by groups (10 minutes);</p> <p>2. The learners complete the instant extensive reading test (5 minutes);</p> <p>Step 2: Intensive reading</p> <p>1. The teacher guides the learners to draw a mind map of the text to help the learners understand the main idea of the text (20 minutes);</p> <p>2. The teacher promotes the learners to master the long and difficult sentences, understand the details, and memorize key words and phrases through the combination of pictures and words, roots and affixes and reasonable associations (40 minutes);</p> <p>3. The learners do the instant intensive reading test (7 minutes);</p> <p>4. The learners do the instant vocabulary test (8 minutes);</p> <p>Step 3: Reviewing</p> <p>1. The learners do the after-class vocabulary test 1 on the teaching platform one week later;</p> <p>2. The learners do the after-class vocabulary test 2 on the teaching platform three weeks later.</p>	<p>Step 1: Extensive reading</p> <p>1. The teacher introduces the topic orally (5 minutes);</p> <p>2. The learners read extensively and do the instant extensive reading test (15 minutes);</p> <p>Step 2: Intensive reading</p> <p>1. The teacher explains the text (paragraph by paragraph, sentence by sentence and word by word) to help students understand the main idea of the text, master the long difficult sentences, understand the details, and memorize the key words and phrases (55 minutes);</p> <p>2. The learners do the instant intensive reading test (7 minutes);</p> <p>3. The learners do the vocabulary test (8 minutes);</p> <p>Step 3: Reviewing</p> <p>1. The learners do the after-class vocabulary test 1 on the teaching platform one week later;</p> <p>2. The learners do the after-class vocabulary test 2 on the teaching platform three weeks later.</p>

3.4 Test Materials

The questions in the instant extensive reading test are T/F questions revised from the After Reading Comprehension 1 of the text, a total of 10 questions, 1 point for each. The questions in the instant intensive reading test are questions-and-answers-matching from the After Reading Comprehension 2 of the text and multiple choices from the After Reading Comprehension 3 of the text, a total of 15 questions, 1 point for each. The questions in the instant vocabulary test are multiple choices and blank-filling revised from the new vocabulary of the text, a total of 20 questions, 1 point for each. One week and three weeks later, the vocabulary test is to be conducted

again, named after After-Class Vocabulary Test 1 and 2. The content of the test is the same as that of the instant vocabulary test , but the order is to be adjusted.

4. Results and Discussion

4.1 Results

In order to ensure the reliability of the study, the data of the two groups of learners are obtained and recorded from the teaching platform. With the help of SPSS, the statistical results are as follows:

Table 2 The Average Statistical Results of the Experimental Group (EG) and Control Group (CG)

	Groups	Cases	N.	Mean	Std. Deviation	Std. Error Mean
Instant extensive reading test	EG	30	10	9.3667	.61495	.11227
	CG	30	10	8.1333	.93710	.17109
Instant intensive reading test	EG	30	15	14.1333	.86037	.15708
	CG	30	15	14.0000	.74278	.13561
Instant vocabulary test	EG	30	20	17.4333	1.19434	.21805
	CG	30	20	16.7333	1.65952	.30299
After-class vocabulary test 1	EG	30	20	16.7000	.98786	.18036
	CG	30	20	15.5333	1.56983	.28661
After-class vocabulary test 1	EG	30	20	15.1667	1.39168	.25409
	CG	30	20	13.4000	1.67332	.30551

Table3 The Test Results of Independent Samples in Experimental Group and Control Group

		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	sig	t	df	Sig (2-tailed)	MD	STD ERR OR	95% CI	
									Low er	Upper
Instant Extensive Reading Test	Equal Variances Assumed	1.873	.176	6.027	58	.000	1.23333	.20464	.82370	1.64296
	Equal Variances Not Assumed			6.027	50.069	.000	1.23333	.20464	.82232	1.64435
Instant Intensive Reading Test	Equal Variances Assumed	1.535	.220	.643	58	.523	.13333	.20752	-.28207	.54873
	Equal Variances Not Assumed			.643	56.791	.523	.13333	.20752	-.28225	.54892
Instant Vocabulary Test	Equal Variances Assumed	2.100	.153	1.875	58	.066	.70000	.37329	-.04723	1.44723
	Equal Variances			1.875	52.68	.066	.70000	.37329	-.04884	1.44884

	Not Assumed				7					
After-class Vocabulary Test 1	Equal Variances Assumed	5.906	.018	3.445	58	.001	1.16667	.33864	.48881	1.84452
	Equal Variances Not Assumed			3.445	48.854	.001	1.16667	.33864	.48610	1.84723
After-class Vocabulary Test 2	Equal Variances Assumed	1.186	.281	4.446	58	.000	1.76667	.39736	.97127	2.56206
	Equal Variances Not Assumed			4.446	56.136	.000	1.76667	.39736	.97071	2.56263

As shown in Table 2, the statistical results of the instant extensive reading test show that the average scores of the experimental group and the control group are 9.3667 and 8.1333. As shown in Table 3, the value of significance F is 0.176, much higher than the significant level ($p > 0.05$), hence there is no significant difference in population variance between the experimental group and the control group. The independent-sample t-test shows that the p-value is very small ($p < 0.05$), which means that there are significant differences between the two. The average scores of the experimental group and the control group in the instant intensive reading test are 14.1333 and 14.0000; the value of significance F is 0.220 and the independent-sample t-Test shows that the p-value is 0.523, which is much higher than the significant level ($p > 0.05$); hence there is no significant difference between two groups. The average scores of the experimental group and the control group in the instant vocabulary test are 17.4333 and 16.7333; the value of significance F is 0.153 and the independent-sample t-Test shows that the p-value is 0.066, which is much higher than the significant level ($p > 0.05$); hence there is no significant difference between two groups. The average scores of the experimental group and the control group in the vocabulary tests of one week later and three weeks later dropped from 16.7000 to 15.1667 and from 15.5333 to 13.4000; and the independent-sample t-Test shows that the p-value are extremely small in the these two tests ($p < 0.05$); hence there are greet significant differences between two groups. As shown in table 4, the p-value are extremely small ($p < 0.05$) in the three pairs of vocabulary tests and there are greet significant differences in each paired sample.

Table 4 The Test Results of Paired Samples of Vocabulary Test in Experimental Group and Control Group

		Paired Differences t-Test					t	df	Sig (2-tailed)
		Mean	Std Dev	SEM	95% CI				
					Lower	Upper			
1 st pair	Instant vocabulary test - after class vocabulary test 1	.96667	.73569	.09498	.77662	1.15672	10.178	59	.000
2 nd pair	After class vocabulary test 1 - After class vocabulary test 2	2.8000 0	1.17603	.15183	2.49620	3.10380	18.442	59	.000

3 rd pair	Instant vocabulary test - after class vocabulary test 2	1.8333 3	.94181	.12159	1.59004	2.07663	15.078	59	.000
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4.2 Research and Discussion

The statistics of the instant intensive reading test and the instant vocabulary test shows that there is no significant difference between the experimental group and the control group. The statistics of the instant extensive reading test and the after-class vocabulary test 1 and test 2 shows that there are significant difference between the 2 groups; which means that the Embodied-cognitive teaching approach does much better than the traditional teaching approach in improving the learners' reading ability. On the one hand, the learners perform much better in extensive reading, which proves that the learners do better conceptual understanding of the text on the basis of thematic knowledge when adopting the Embodied-cognitive teaching methods than adopting the traditional teaching methods; on another hand, the learners perform much better in the after-class vocabulary tests, which proves that the learners have better words decoding skills when adopting the Embodied-cognitive teaching method. The research results can be discussed from the following three aspects.

4.2.1 The cognition of the text topic

By taking the embodied-cognitive teaching approach, the teacher played a short video of "Essence of Chinese Cultural Etiquette" [5], and introduced the theme of "Office Etiquette" for the learners in the experimental group. Then, the teacher organized students to have group discussions on the on the following task:

Supposing you are a new graduate, please list at least SEVEN behaviors that is in line with office etiquette and SEVEN behaviors that is not in line with.

The learners in the experimental group actually have already acquired cognition of the concept of "Etiquette" with the help of the interactive embodiment and cognitive processing with the reality and the short teaching video. Through the activity of group discussion, the learners' cognition of "Etiquette" is activated and then the embodied experience conforming to the etiquette are extracted and projected into the category of "Office Etiquette", so as to complete the discussion task above and to form a new cognition of "Office Etiquette". Once the learners have developed a new conceptual understanding of "Office Etiquette", they can apply it to the instant extensive reading tasks, such as:

Q2: *You must wash your dishes when you are done with them.*

Q8: *Try not to be late for work. Q8: Try not to be late for work.*

Q9: *Be polite when you talk to your colleagues.*

Q10: *Never read other people's letters and emails.*

The learners could make the correct judgement on the above T/F questions on the basis of the cognition of "Office Etiquette" instead of reading the text and the statistics shows that the correctness of the experimental group is higher than that of the control group, the main reason of which lies in the experimental group learners' cognition of "Office Etiquette". In another word, the learners got familiar with the topic after a group discussion and used their thematic knowledge of the topic when taking the instant extensive reading test. Therefore, when teaching English reading for the Chinese learners, teachers should not only require students to master more vocabulary and grammar knowledge, but also pay more attention to the cultivation of the learners' ability to make reasonable prediction based on encyclopedia knowledge and embodied experience [6]. This is consistent with the views put forward by Liang Haiying and Han Baocheng, namely, the first step of meaning understanding is to get familiar with the topic and contextual factors of a text [7].




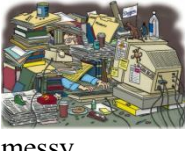

4.2.2 The cognition of text structure

When the learners are familiar with the topic, the teacher should try to help them to grasp the meaning of the text from a macro perspective and analyze the structure of it, that is, the semantic type or macro structure of the discourse [7]. As shown in Table 1, after taking the instant extensive reading test, the learners in the experimental group read the original text and collaboratively drew a mind map of the text structure to grasp the structure and understand the meaning. The learners in the control group read the text before taking the instant extensive reading test to grasp the text structure from a macro perspective; after taking the instant extensive reading test, the teacher taught paragraph by paragraph to consolidate the students' understanding of the text structure and the meaning of the text. The statistics in the Table 3 shows that there is no significant difference between the experimental group and the control group in the instant intensive reading test. In the aspect of understanding the meaning of reading texts, the teaching effects of two groups are almost no difference, that is to say, the teaching effect of adopting a group discussion by drawing a mind map of the text structure almost equals to that of independent reading with the help of teacher's oral lecturing. The cognitive activities of the text in the experimental group include "listening (to listen to others' views during group discussion), speaking (to express personal views during group discussion), reading (to read text independently), writing (to write the key information for the mind map), drawing (to draw a mind map of text)" and other experiential activities. The latter only includes "listening (to listen to the teacher lecturing the meaning of the text paragraph by paragraph) and reading (to read the text independently)". The result of instant intensive reading test indicates that the learners can have that same macroscopic understanding of the text with some cognitive activities as the teacher lecturing the text paragraph by paragraph. Moreover, the former is more in line with the current educational concept of "learning-centered".

4.2.3 Cognition of text vocabularies

As shown in Table 5, the different teaching strategies for the experimental group, such as the combination of text and image, root & affix, reasonable association, etc., combined the learning of vocabularies with the learners' physical experiences, promoted the process from interactive embodiment with the reality to the cognitive processing, and deepened the learners' understanding of vocabularies.

Table 5 Embodied-Cognitive Teaching Strategies for Vocabularies

Teaching Strategies	Vocabularies				
text and image	 punctual	 overhear	 photocopier	 messy	 jam
root & affix	unwritten	prefix "un-"	root "write"	suffix "-en"	
	newcomer	prefix "new"	root "come"	suffix "-er"	
	co-worker	prefix "co-"	root "work"	suffix "-er"	
	unorganized	prefix "un-"	root "organ"	suffix "-ise"	suffix "-ed"
association	professional	HUAWEI MatePad Pro		RedmiBook Pro	

When the teacher combines the meaning of vocabularies with the physical experience of learners, the learners have a more direct cognition of the vocabularies and a stronger and better memory of them, which is the main reason why the experimental group performs better than the control group

in after-class vocabulary test 1 and 2. The statistics in Table 3 also show that there is no significant difference between two groups in the instant vocabulary test; yet there are significant differences in the vocabulary tests after one week and after three weeks. Therefore, the teaching of vocabulary also needs to construct abstract conceptual meaning through concrete perception and experience. Only by combining concrete experience and cognition with abstract conceptual meaning can the learners truly and deeply understand the meanings of the vocabularies, and firmly and solidly memorize them for a longer time^[8]. It is necessary to use our physical perception and experience to teach meaning; without embodiment and cognition, the meaning of abstract concepts acquired is just a castle in the air, which has no foundation and may collapse or be forgotten at any time^[9].

5. Conclusion

Based on the basic principle of Embodied-Cognitive Linguistics, the principle of embodiment-recognition, this study conducts an experiment on teaching English Reading for the freshmen E-Commerce major in a higher vocational college, in which the experimental group adopts the Embodied-Cognitive Teaching approach and the control group the traditional approach. The study finds that adopting the Embodied-Cognitive Teaching approach in teaching English reading can improve the learners' performance in instant extensive reading test and in after-class vocabulary tests. Specifically speaking, the learners in the experimental group does much better than the learners in the control group in the aspects of conceptual understanding of the text and words decoding skills. This result is mainly attributed to the fact that the teacher guided the learners to have interactive embodiment and cognitive processing in the following three aspects: helping the learners to get familiar with the topic of the text and use the thematic knowledge of the topic; helping the learners to understand the text structure through different cognitive activities such as listening, speaking, reading, writing, drawing, etc.; and helping the learners to better memorize the vocabularies through the strategies of the combination of text and images, root & affix and reasonable association. The experiment proves that the application of Embodied-Cognitive teaching can effectively improve the learners' reading ability and is one of the new and effective ways for teaching English Reading in Chinese colleges.

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