

Reform of College English Vocabulary Teaching with the "Vocabulary Handout" as the Core from the Perspective of the Levels of Processing Theory

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Abstract: Under the theoretical framework of Levels of Processing, this study designs and implements a university English vocabulary teaching model with the "Vocabulary Handout" at its core. This innovative vocabulary teaching model is driven by two testing sessions, selects vocabulary based on students' recent learning needs, and applies the Levels of Processing Theory to conduct shallow processing, deep processing, and elaborative processing on target words. The scientific design and implementation of university English vocabulary instruction have positively influenced the teaching and learning of vocabulary in the university context.

1. Introduction

In the absence of grammar, very little can be conveyed, but without vocabulary, nothing can be conveyed (Wilkins, 1972)^[8]. This highlights the importance of English vocabulary in English learning. However, in the curriculum of non-English majors in universities, English vocabulary teaching is not an independent subject or course; it is merely an organic component of college English teaching (Huangbin, 2013)^[5]. In many cases, due to the heavy workload and limited class hours of college English courses, English vocabulary teaching is often greatly compressed. Additionally, traditional English vocabulary teaching is often dull and students can hardly connect vocabulary they learnt with practical usage, leading to students' lack of interest in learning English vocabulary and teachers' being confronted with time-consuming but inefficient teaching dilemma. In light of this, many domestic scholars have conducted extensive research on English vocabulary teaching from different perspectives. Zhang Yingqiu (2005)^[11] approached the study from the perspective of metacognition in science and technology and college English vocabulary teaching, Zhang Ping (2010)^[9] studied the contrast of mental lexicon association patterns among English learners in China, and Gao Xiang (2013)^[4] focused on traditional linguistic research on vocabulary, mainly examining the extension and change of word meanings from a diachronic perspective. However, in order to truly improve the effectiveness of vocabulary teaching and enhance students' learning interest, English vocabulary instruction needs to consider how to meet students' immediate learning needs and improve their vocabulary memory effects (Zhang & Wu, 2005)^[10]. Therefore, this study is

under the theoretical framework of Levels of Processing and designs college English vocabulary teaching from the perspective of memory processing.

This project is guided by the Levels of Processing Theory of cognitive psychology, which aims to propose a processing framework for memory. Since the beginning of the 21st century, second language acquisition has started to incorporate the research findings of contemporary cognitive psychology, and memory has been an important research topic in cognitive psychology (Luo & Zhao & Xing, 2016)^[6]. Cognitive psychologists divide the memory process into three stages: information encoding, information storage, and information retrieval (Atkinson & Shiffrin, 1968)^[1]. Under the influence of the quality of second language input, learner's internal factors and task demands, information encoding (or information processing) affects the quality of information storage or the effectiveness of memory (Skehan, 1998)^[7]. Information storage is further divided into three stages: sensory memory, short-term memory, and long-term memory. In order to improve memory effectiveness, based on the views of Atkinson and Shiffrin, Craik and Lockhart (1972)^[2] proposed the Theory of Levels of Processing, which includes form-based processing and semantic-based processing, namely, shallow and deep processing. The former mainly involves reciting the pronunciation of words and copying words, while the latter goes through three stages: contextual processing, non-contextual processing, and re-contextual processing. Craik and Lockhart pointed out that the duration and effectiveness of memory retention depend on the different processing methods and the depth of processing. Building on the theoretical framework of Levels of Processing, Craik and Tulving (1975)^[3] further proposed elaborative encoding strategies.

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2. Methodology

2.1 Research Material

Participants: This study was conducted at a comprehensive university with 16 colleges and 50 majors. The university implements a stratified teaching approach for college English, dividing students into three levels (A, B, C) based on their performance in the College English Test Band 4. The research consisted of two rounds of teaching practices. In the first experimental teaching phase, the researcher applied the brand new model of college English vocabulary teaching to all students. In the second experimental teaching phase, two classes (501 and 520) were selected from the three A-level classes. The number of students in these two classes is similar and the students exhibited no significant differences in both the College English Test Band 4 scores and the previous semester's final English exam scores ($p > 0.05$). Class 501 was designated as the control group, while class 520 was assigned as the experimental group.

Textbooks: Throughout the study, *New Theme College English Integrated Course* Book Three and Book Four were used. This books were published by Changchun Publishing House and edited by university faculty members. Specifically, the third book of the series was employed during the experimental teaching phase, and the fourth book was utilized during the second experimental teaching phase. Each unit of the textbooks consisted of three sections: Section A, Section B, and Section C. Following the school's academic plan, the teaching process focused only on Section A of each unit and its key vocabulary. Section A articles from the first, third, fifth, sixth, and seventh units of the third book were selected, while Section A articles from the second, fourth, fifth, sixth, and seventh units of the fourth book were chosen. Each article in the textbooks was accompanied by numerous new words and phrases; however, the vocabulary list lacked cognitive fixation points, leading students to often overlook vocabulary learning.

2.2 Experimental Design

Research Questions: Under the guidance of the Levels of Processing Theory, this study conducted shallow, deep, and elaborative processing of English vocabulary. Corresponding vocabulary handouts were created for each unit taught in the reading class. Vocabulary instruction revolved around these handouts, overturning the traditional approach of randomly selecting vocabulary for classroom teaching. The study attempted to answer the following questions:

(1) How should vocabulary instruction be designed within the framework of Levels of Processing, considering the characteristics of English courses for non-English major students and their English proficiency?

(2) Does vocabulary instruction based on the Levels of Processing Theory have a positive impact on vocabulary learning?

Vocabulary Instruction Design

The vocabulary instruction in this study involved two teaching modes: traditional vocabulary instruction and vocabulary instruction centered around vocabulary handouts.

(1) Traditional Vocabulary Instruction:

The researcher selected unfamiliar words that could potentially affect students' reading comprehension based on previous teaching experience. The instruction included explanations of word roots, affixes, definitions, parts of speech, collocations, example sentences, and derived words. An immediate test was administered one week after students learned the vocabulary. The test consisted of memory-based questions and productive tasks, totaling 15 questions with a maximum score of 40. The memory-based questions assessed vocabulary definitions, word roots and affixes, synonyms and antonyms, and alternative words. A retention test was conducted two weeks after vocabulary learning, using the same test format and scoring system as the immediate test. The retention test retained the questions with lower scores from the immediate test and included some other new questions.

(2) Vocabulary Handout Mode:

Design of Vocabulary Handouts: This innovative college English vocabulary teaching mode, guided by the Theory of Levels of processing, centered around vocabulary handouts. The design of the handouts took into consideration students' recent learning needs. The handouts covered shallow, deep, and elaborative processing of key vocabulary, and included two tests as task requirements to actively engage students in vocabulary learning.

Target Words: The vocabulary handouts highlighted the key vocabulary (i.e., target words) from Unit Section A of the course text (Table 1), based on students' recent learning needs. The researcher taught Class A students at the A-level, and their recent learning needs were focused on preparing for the College English Test Band 6 (CET-6). Therefore, the selection of vocabulary for the handouts was based on words that belong to the CET-6 vocabulary, with a preference for high-frequency words in the past five years of CET-6 exams (frequency indicated in the upper right side of each word). The design of target words took into consideration students' learning needs, aiming to draw their attention to vocabulary and stimulate their enthusiasm for learning.

Table 1 Vocabulary Handout (Excerpt)

	outset ¹	bully ³	potent ¹	initiative ⁹ ₁
Word-building	out-: outside set: to put		-pot-: capable of -ent: <i>adj.</i> ending	
Word in context	I made it clear right from the outset that I disapproved.	1. That's a bully idea for reviving the town's retail center. 2. the school bully	1. a potent force 2. a potent tea	1. a United Nations peace initiative 2. She did it on her own initiative.

		3. My son is being bullied at school.		
Definition				
Word form				
Synonym/antonym				
Collocation				
Alternative word	×	<i>n.</i>	<i>n.</i>	<i>n.</i>
Definition: 1. very effective and powerful 2. at/from the beginning of sth Synonym & antonym 1. robust/rich/strong/concentrated/heady/mild/weak/light/thin/delicate/powerful/influential/significant/impotent/weak/powerless/insignificant/feeble/unimportant 2. [a.] great/terrific/excellent/wonderful/prime/awesome/superb/fabulous/fantastic/vile/terrible/awful/bad [n.] intimidator/abuser/harasser/hector [v.] abuse/oppress/mistreat/injure/care for/foster/nurture/cherish Collocation 1. [n.] big ~/real ~/class ~/school ~/playground ~ [v.] ~ sb into doing sth/~ sb into sth 2. at/from the ~ of sth.				

Utilization of vocabulary handouts: Firstly, the vocabulary handouts provided target words, pronunciation symbols, and example sentences. Students were required to infer the part of speech of the target words based on the example sentences. The English definitions, synonyms, and antonyms, as well as common collocations of the target words, were arranged in a random order, and students needed to analyze and fill in the blanks. These designs took into consideration reducing students' academic burden and avoiding students resorting to searching for unauthoritative knowledge content online. Secondly, other elements such as word roots, affixes, and cognates required students to consult dictionaries and filled in the information themselves. This design aimed to stimulate students' subjective initiative. The vocabulary handouts were in full English version, avoiding students' excessive reliance on Chinese in English learning.

Test Mode: The tests consisted of immediate tests and retention tests. The immediate test was conducted one week after students have studied the vocabulary handouts. The test included memory-based questions and productive tasks, totaling 15 questions with a maximum score of 40. The memory-based questions assessed vocabulary definitions, word roots and affixes, synonyms and antonyms, and alternative words. Among them, definitions, word roots and prefixes, and synonyms and antonyms were multiple-choice questions, where students selected the correct definition, vocabulary, or affix from four options provided. The alternative words question was a subjective question that required students to spell words based on the question's requirements.

The retention test was conducted two weeks after students have studied the vocabulary handouts. The test format and scoring system were the same as the immediate test. The retention test retained the questions with lower scores from the immediate test and included additional new questions.

Teaching Process: The teaching process of the new English vocabulary instruction mode was as follows: One week before teaching a new unit, the vocabulary handouts were distributed to students for self-study and preview. In the first class, the researcher used Rainclass platform to administer an immediate test based on the vocabulary

handouts. The researcher gave lecture on vocabulary which students didn't grasp well. After class, the answer to the vocabulary handouts was provided. In the second class, the researcher continued to use Rainclass platform to administer a retention test based on the vocabulary handouts, keeping the questions with lower scores from the first test and adding new questions. The researcher provided further classroom explanations for the vocabulary with lower scores in the test. The researcher reflected on the vocabulary instruction.

Research Procedure: This study went through two rounds of teaching practices: an exploratory teaching phase (first round) and an experimental teaching phase (second round). In the exploratory teaching phase, the researcher employed the college English vocabulary instruction mode centered around vocabulary handouts, guided by the Theory of Levels of Processing levels, in all the A-level classes. At the end of the phase, students' opinions and suggestions were collected to guide the next round of teaching. In the experimental teaching phase, the researcher further refined the new college English vocabulary instruction mode based on the feedback received in the previous phase. One control class and one experimental class were selected from the classes taught. The control class followed the traditional teaching mode, where key vocabulary was selected for classroom instruction based on the teacher's experience. The experimental class adopted the college English vocabulary instruction mode centered around vocabulary handouts. Vocabulary tests were regularly conducted for both classes, and at the end of the semester, an independent samples t-test was performed to compare the average scores of all vocabulary tests conducted throughout the semester, aiming to evaluate the instructional effectiveness of the two vocabulary teaching modes.

2.3 Data Collection

Data collection was divided into two phases, lasting for two semesters. The first phase was the exploratory teaching phase, primarily using questionnaire surveys to extensively collect students' acceptance, opinions, and suggestions regarding the new vocabulary teaching mode

centered around vocabulary handouts. This data served as support and guidance for the second phase of experimental teaching. The second phase was the experimental teaching phase, which involved conducting immediate tests and retention tests throughout one semester in both the control class (501) and the experimental class (520) for five teaching units. The average scores of these tests were subjected to an independent samples t-test to observe the teaching effectiveness of the new vocabulary teaching mode and provided guidance for subsequent vocabulary instruction.

2.4 Data Analysis

Exploratory Teaching Phase: During this phase, a computer program called "Wenjuanxing" was used to collect extensive opinions from students. The researcher created a satisfaction survey questionnaire specifically for the new vocabulary teaching mode centered around vocabulary handouts. The questionnaire consisted of five multiple-choice questions and one open-ended question. The overall satisfaction of students with the new vocabulary teaching mode centered around vocabulary handouts reached 93.55%. Regarding the design of various parts of the vocabulary handouts, including the selection criteria for target words based on recent learning needs, matching of synonyms and antonyms, vocabulary collocation, and satisfaction with the all-English mode, the satisfaction rates were 93.55%, 83.87%, 83.87%, and 64.51% respectively. In addition, the participating students provided many constructive opinions and suggestions. For example, student 16 suggested "providing memory techniques for vocabulary in the handouts," student 67 suggested "increasing the number of target words in the handouts," and student 134 suggested "adding example sentences in the vocabulary collocation section."

Experimental Teaching Phase: During this phase, the researcher used SPSS software to perform an independent samples t-test on the average scores of all immediate tests and retention tests conducted throughout one semester in the control class (501) and the experimental class (520). Firstly, a comparison was made between the average scores of the control class (501) and the experimental class (520) in the immediate tests and retention tests to examine whether there were differences in teaching effectiveness between the traditional vocabulary teaching mode and the new vocabulary teaching mode (Table 2). Then, a separate comparison was made between the immediate test scores and retention test scores of the control class (501) (Table 3) and the experimental class (520) (Table 4) to determine which teaching mode, traditional or new, was more conducive to vocabulary retention.

Table 2 Comparison between the average scores of the control class and the experimental class

Test Variable	Class	Number of Cases	Average Value	Standard Deviation	t	Sig.
Immediate Test	501	38	29.95	6.920	3.984	0.000
	520	35	35.43	4.461		
Retention Test	501	38	26.26	8.526	4.826	0.000
	520	35	34.06	4.485		

Table 3 Comparison between the immediate test scores and retention test scores of the control class

Test Variable	Class	Number of Cases	Average Value	Standard Deviation	t	Sig.
Immediate Test	501	38	29.95	6.920	2.068	0.042
Retention Test	501	38	26.26	8.526		

Table 4 Comparison between the immediate test scores and retention test scores of the experimental class

Test Variable	Class	Number of Cases	Average Value	Standard Deviation	t	Sig.
Immediate Test	520	35	35.43	4.461	1.283	0.204
Retention Test	520	35	34.06	4.485		

3. Research Results

Based on the results of the survey questionnaire collected during the first round of exploratory teaching, students show a high level of satisfaction with the new university English vocabulary teaching model, which focuses on vocabulary handouts, with a satisfaction rate of 93.55%. Students generally recognize the role of vocabulary handouts in stimulating vocabulary learning motivation and interest, with 96.78% of students believing that they are effective. This provides support and a foundation for the sustainable development of the vocabulary teaching model centered around vocabulary handouts in future English teaching, including the next round of experimental teaching. Additionally, after experiencing the first round of teaching, students provide many suggestions and recommendations for the new vocabulary teaching model. Based on these suggestions, the researchers make modifications to the vocabulary handouts, including: 1) increasing the number of target words from 15 to 20 from the first round of teaching; 2) incorporating the method of memorizing word roots and affixes into the vocabulary handouts. The researchers provided commonly used word roots and affixes related to the target words in the vocabulary handouts; 3) adding a large number of example sentences with Chinese translations in the vocabulary collocation section to help students better understand the usage of vocabulary.

Based on the test results calculated through SPSS software after the second round of experimental teaching, over the course of one semester, in vocabulary tests for five teaching units, the experimental class (520) consistently outperform the control class (501) in both immediate and retention tests. From a two-tailed perspective, the control class (501) shows a significant difference between immediate and retention test scores, with immediate test scores being much higher than

retention test scores, indicating that students' English vocabulary retention was not ideal. The experimental class (520) shows no significant difference between immediate and retention test scores, with immediate test scores only slightly higher than retention test scores, indicating that students' English vocabulary retention was relatively solid and lasting. According to the results of independent samples t-tests, the traditional vocabulary teaching model is not effective in helping students learn and retain vocabulary. On the other hand, the new vocabulary teaching model centered around vocabulary handouts is far more effective than the traditional vocabulary teaching model in helping students master vocabulary usage and improve vocabulary retention. It plays a positive role in students' English vocabulary learning.

4. Discussion

The traditional university English vocabulary teaching model mainly relies on teachers' teaching experience as the main reference for selecting target words, which does not align well with students' learning needs. As a result, students lack clear goals and motivation for vocabulary learning. Moreover, the traditional vocabulary teaching methods predominantly involve teacher-centered vocabulary lectures, and students are mostly passive recipients of knowledge, without actively participating in the learning process. As a result, students have poor vocabulary usage and retention.

The new university English vocabulary teaching model, with vocabulary handouts as its core, incorporates two tests after each unit, namely immediate and retention tests, which effectively encourage students to study and process vocabulary information seriously. By selecting target words based on students' recent learning needs, the model greatly enhances students' emphasis on vocabulary, thereby improving their learning motivation. The vocabulary handouts contain information such as word roots, affixes, definitions, synonyms, antonyms, and collocations, which require students to consult dictionaries for learning and fill in the tables in the handouts. The teacher provides accurate and reasonable choices, thereby maximizing students' subjective initiative and cultivating their autonomous learning ability. The handouts cover various aspects of vocabulary processing, including shallow and deep processing, as well as elaborative processing, which comprehensively help students understand, use, and remember vocabulary. The vocabulary teaching model centered around vocabulary handouts adopts a pre-class distribution and preview, in-class tests and focused vocabulary explanations, and post-class review mode, effectively addressing the problem of time-consuming and inefficient vocabulary teaching.

It is worth noting that the university English vocabulary teaching model centered around vocabulary handouts emphasizes student autonomous learning, with teacher explanations serving as guidance and assistance. During the implementation of the research, the researchers found that some students lacked autonomy in their independent learning and were dependent on the classroom environment. Therefore, in future teaching, it

may be beneficial to encourage students to engage in group learning, where students with different levels of autonomy are grouped together. Students can work collaboratively in groups before the class, with the aim of promoting collaborative learning and progress, and enhancing the effectiveness of vocabulary learning.

5. Conclusion

This study applies the Levels of Processing Theory to analyze students' language learning and memory processes, focusing on the relationship between vocabulary and cognition, as well as vocabulary and psychology. From the perspective of enhancing vocabulary memory through cognitive processing, the researchers scientifically design and implement English vocabulary teaching, aiming to maximize students' vocabulary size within the limited teaching time, improve students' motivation for vocabulary learning, and enhance their vocabulary retention. The study has had a positive impact and driving force on the teaching and learning of university English vocabulary.

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