The Effect of Vocabulary Knowledge Instruction on Lexical Inferencing Ability of Chinese EFL Learners

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Abstract: Lexical inferencing ability refers to deriving the meaning from unfamiliar words in a reading passage, which is critical for English as a Foreign Language (EFL) in terms of learners' reading comprehension competence. To improve students' lexical inferencing ability, the present study implemented a vocabulary knowledge intervention in students from Grade 10 to 11. There were sixty students randomly assigned into two groups: experimental group (n=30) and control group (n=30). We conducted a two-month vocabulary knowledge instruction for the experimental group, which intended to strengthen the depth of vocabulary. The experimental group were instructed to find the definitions of ten Tier 2 words in a dictionary, read aloud, and discussed about the meaning of the new words under different contexts in each lesson. The control group took their regular English classes during the two months. Both groups took a lexical inferencing ability test abstracted from Scholastic Assessment Test (SAT) before and after the intervention. The data was analysed by means of mixed ANOVA method. After two-months, both the experimental group and the control group showed a significant improvement in lexical inferencing ability (F = 109.141, $p < .001$), but the experimental group showed a higher improvement than that of the control group (interaction effect: F = 20.564, $p < .001$). Findings indicated that our vocabulary knowledge intervention is effective in improving students' lexical inferencing ability in reading test, which have important implications for EFL learner's education.

1. Introduction

Lexical inferencing ability, referring to the process of deriving the meaning from unfamiliar words based on the contextual information, one's linguistic and word knowledge, is crucial for English as a Foreign Language (EFL) learners [1, 2]. A number of empirical studies have shown the role of word inferencing ability in reading test for EFL learners. For instance, Zhang and Koda [3] found that lexical inferencing significantly affected students' reading comprehension in the aspect of improving morphological awareness. Relatedly, Parel [4] also indicated that lexical inference can help students comprehend reading materials better especially for those with poor receptive vocabulary ability.

A variety of factors have been found contributing to students' lexical inferencing ability, including external and internal factors. External factors refer to those factors associated with the characteristics of the words and the reading text, such as the difficulty in the reading passage, word density etc.

Internal factors mostly refer to those related to the readers, such as readers' memory capacity, readers' attention to the information in the reading materials, and their vocabulary knowledge [5, 6]. Among these factors, students' vocabulary knowledge, as one of the internal factors, has attracted a lot of attention in recent years. Previous studies have indicated the crucial role of vocabulary knowledge in predicting lexical inferencing ability [7, 8, 9]. For example, Sternberg and Powell [10] found a significant correlation between students' lexical inferencing ability and their vocabulary scores.

In view of the importance of vocabulary knowledge, much attention has been paid to how to improve children's vocabulary knowledge. There are two approaches usually adopted, namely explicit and incidental learning. Explicit learning refers to direct learning of new words, and incidental learning refers to learning new words implicitly by extensive reading or increasing the exposure to English [11]. The two learning approaches have different effects. The incidental learning can mostly help students to have a preliminary understanding of the words, while the word meanings and word forms require explicit instructions from teachers. Norris and Ortega [12]'s meta-analysis suggested that it was more effective for students to learn new words by explicit word instructions than implicit learning [13, 14]. However, there are also studies questioning the effects of explicit vocabulary instruction on vocabulary acquirement. For instance, Nation [15] found that most of the new words taught at school were not actually acquired by students due to over-teaching of vocabularies. Although explicit instruction has the potential to benefit vocabulary learning, the type of words taught in class and the instructional methods matter most, particularly.

Regarding to what type of words should be taught in the class, prior studies suggested that Tier 2 words, such as "derive", "emerge", require more instruction by teachers than that of Tier 1 words (basic words, such as "leg", "bottle"), and Tier 3 words (subject-related words, such as "filibuster") [16, 17]. Tier 2 words are frequently showed in reading and contain different meanings in different contexts. Moreover, SAT also focuses on Tier 2 vocabularies in reading test [18].

For vocabulary instruction approaches, there is little consensus in previous research as well. However, our literature review indicated that an effective instruction should explain the meanings of the new words in multiple context, use examples to help student to comprehend, and promote students' active learning in classes [16, 19, 20].

Based on previous literature, the present quasi-experimental study aims to examine the impact of a two-month program of explicit vocabulary instruction on lexical inferencing ability in EFL learners from Grade 10-11. According to the literature, the intervention focused mainly on Tier 2 words instruction and paid attention to explain multiple meanings of the new words using many examples and facilitate active learning of students.

2. Methods

2.1. Participants

We recruited 60 Grade10-11 students (31 males, 29 females) randomly from an English enrichment center in Guangzhou, Guangdong province, China. The participants came from 5 public schools and the education quality of them were at medium level in Guangzhou. They were EFL learners and were planning to take Scholastic Assessment Test (SAT) in Grade 12. Written informed consents were obtained from both students and their parents.

2.2. Design

The current study is a quasi-experimental study. The experimental group received a two-month program of direct instruction of vocabulary knowledge and the control group received no treatment and took their regular English classes. To ensure the quality of the intervention program, we recruited

a teacher experienced more than five years of teaching and obtained a master's degree. The teacher taught both experimental and control groups to avoid the influence of the characteristics of the teacher.

2.3. Description of the Intervention

We selected 240 words, which had not been taught in students' regular English classes, from the Academic Word List (AWL) [21], which contains many Tier 2 words. During the instruction, students were instructed to find the new words in the dictionary and read them aloud. Next, students were instructed to type the new words in the search engine of Corpus of Contemporary American English (COCA) to find examples of these words in various contexts. By doing so, the students can selectively read the examples and understand the meaning of the words in different contexts and increase their engagement in the learning activities. Based on the searching results, the instructor would selectively instruct the definitions and discuss about the examples with students. For instance, the teacher would let students guess the meaning of the new words in different contexts and let them to construct new sentences by words they acquired. Altogether 10 words were taught in each lesson, and the program lasted for two consecutive months.

2.4. Data Collection and Analysis

All students took a lexical inferencing test as pre- and post-test, which were abstracted from the word-in-context test in SAT. Each item was scored as 0 = incorrect or 1 = correct. The test consists of 20 items with a 35-minute time limit. Students did not have the access to the correct answers after the pre-test and were assumed not to memorize the answers because the time interval was 2 months. After the two-month instruction, we administered the post-test for all students. Pre-test data was collected one day prior to the beginning of the intervention, and the post-test was administered one day after the intervention.

We initially summarized the demographic statistics of the experimental and control groups and tested whether the two groups were equivalent in lexical inferencing ability before the intervention. To examine the impact of our vocabulary knowledge intervention on students' lexical inferencing ability, we analysed the Group (experimental and control) $\times$ Time (pre-test and post-test) interaction effect through mixed-ANOVA analysis. A significant interaction effect (p value $< .05$) indicated that the difference between pre- and post-test was significantly differed in the two groups. The effect size was also evaluated by partial Eta squared, which smaller than 0.04 indicated a small effect, 0.25-0.64 indicated a middle effect, and larger than 0.64 indicated a large effect [22].

3. Results

Table 1: Descriptive results of the experimental and control group.

	Experimental group		Control group	
	M	SD	M	SD
Age	15.43	.63	15.60	.67
Pre-test	11.10	1.61	11.17	1.84
Post-test	15.10	1.65	12.80	2.70

Table 1 presents the descriptive statistics of students' age, pre-test scores, and post-test scores. There were 17 males and 13 females in experimental group, and 14 males and 16 females in control group. The mean ages were 15.43 for experimental group and 15.60 for control group. The differences

between experimental and control groups on the lexical inferencing ability test were not significant before the intervention, $t(58) = -.15$, $p = .89$. The results were displayed in Figure 1.
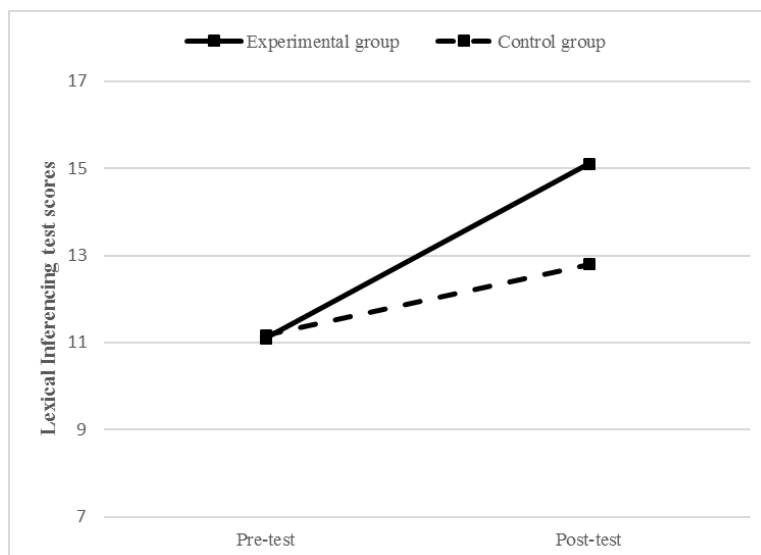

Figure 1: Pre-test and post-test of students' lexical inferencing ability.

We conducted a 2 (Time) $\times$ 2 (Group) mixed ANOVA analysis to examine the effect of the vocabulary knowledge intervention on students' lexical inferencing ability. The results were displayed in Figure 1. The results showed that the main effect was significant for Time, $F(1, 29) = 109.14$, $p < .001$, and for Group, $F(1, 29) = 7.87$, $p < .01$. Moreover, a significant two-way interaction was also found between Time and Group, $F(1, 29) = 20.56$, $p < .01$. A follow-up examination of the effect size indicated that the effect size was large for Time (partial $\eta^2 = .79$), small for Group (partial $\eta^2 = .21$), and medium for the interaction (partial $\eta^2 = .42$).

4. Discussion

The present study examined the influence of a two-month program of explicit vocabulary knowledge instruction on high school EFL learners' lexical inferencing ability. The findings indicated that the EFL learners who received vocabulary instruction performed better in lexical inferencing ability at post-test compared with that of control group. The difference in the improvement in lexical inferencing ability between experimental and control groups was characterized by large effect sizes. The finding is in line with the prior literature indicating that students' depth of vocabulary knowledge contributes to their effective lexical inferencing strategy [8]. Our results also corroborated the hypothesis that lexical inferencing is highly associated with the richness of EFL learner's conceptual and semantic system [23]. To be more specific, the ability of inferencing the meaning of unfamiliar words depends heavily on the knowledge basis, especially vocabulary knowledge [24].

The vocabulary knowledge intervention provides an opportunity for students to learn words in-depth in terms of listening, speaking, and using words. Another important advantage of our intervention program is that we taught Tier 2 words that are critical for inferencing the unfamiliar words from the reading text [25]. Learning Tier 2 words is useful because it typically appears in different contexts in multiple meanings. The teacher also taught different meanings and examples of Tier 2 words, which can be beneficial for students to use them in different reading contexts.

Furthermore, our intervention also promoted students' active learning since students were required to search the definitions of and the example sentences of the words by themselves.

However, several limitations to the study should be acknowledged. First, the participants came from public schools in Guangzhou, which only included a limited sample with similar background. Therefore, our findings should be cautiously generated to students in other backgrounds, such as those in private school. In the future, it would be better to include a more diverse sample to increase the generalizability of the findings. Second, there may be a Hawthorne effect (i.e., individuals modify their behaviour when they aware of being observed) in the intervention, since we did not provide any instruction for the control group. In the future, it would be better to provide other forms of instruction for control group, and to compare the effects of different instruction strategies.

5. Conclusion

The present study examined the effect of a two-month vocabulary knowledge intervention program on EFL learners' lexical inferencing ability. The findings indicated that strengthening the depth of vocabulary knowledge significantly improved students' lexical inferencing ability with a medium effect size. The results also demonstrated that explicit instruction on Tier 2 words may be a promising approach to improve students' lexical inferencing ability, especially when students are actively engaged in the learning activities, which have important implications for EFL learners' vocabulary teaching in the future.

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