An analysis of the advantages and disadvantages of multimedia application in English translation

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Abstract. This paper studies the effects of four different translation forms, namely Chinese, English, Chinese + picture and English + picture, on incidental vocabulary learning of Chinese students in a multimedia environment. The results showed that, except for the fill-in-the-blank task, Chinese translation promoted incidental vocabulary learning more than English translation. Combined translation of words and pictures is more conducive to incidental lexical learning than text-only translation. Among the four kinds of translation, the combination of Chinese and picture translation is the most effective for incidental vocabulary learning. The results of incidental vocabulary learning and word memory retention of learners with higher English proficiency are significantly better than those with lower English proficiency.

Keywords: Multimedia Environment, Translation, Influence

1. Introduction
Translation refers to the definition or explanation of unfamiliar words in bilingual learning to promote reading comprehension, usually located in the margin or bottom of the page, which can help readers to reduce the number of times to refer to the dictionary, so as not to interrupt the process of reading comprehension. It is a commonly used auxiliary form of foreign language learning. Translation plays a positive role in incidental learning of bilingual vocabulary. In recent years, some new features have emerged in related studies. First of all, the research focus has shifted from the effect of translation on incidental vocabulary learning to what kind of translation can better promote incidental vocabulary learning. For example, whether there is a significant difference between single translation and multiple translation on incidental vocabulary learning. Secondly, many achievements have been made in the study of translation forms in the multimedia environment [1].

With the development of computer and multimedia technology, the form of translation is no longer limited to the text form, and has become more diversified and visual, such as using animation or video translation, adding sound in translation, etc. This makes the translation easier to use, more convenient, and more conducive to maintaining the continuity of the reading. Therefore, translation can be divided into text translation, picture/visual translation, auditory translation and different combinations from the above. Some researches on multimedia translation are about whether electronic translation promotes vocabulary learning or whether the combination of text information and picture/image information is more effective for incidental vocabulary learning than single text translation or picture/image
translation. Finally, the study compares the effects of native language translation and bilingual translation on incidental learning of bilingual vocabulary [2].

However, the existing studies still have the following shortcomings:

1) There have been many researches on the effects of translation on reading comprehension and bilingual vocabulary learning, but researches on the effects of multimedia translation are still relatively scarce, especially in China.

2) There are great differences in the results of similar studies, and there is disagreement on a certain issue. Bilingual translation is more effective for advanced learners, while native language translation is more effective for low level learners. What kind of translation can better promote incidental lexical learning deserves further study [3].

3) Research on combinatorial translation in multimedia environment is relatively scarce. The testing tool is also flawed, failing to consider the use of words according to context in the writing of meaning (writing the meaning of the target word in English or mother tongue) and the recognition of definitions (selecting a definition that matches the target word from four options); However, the identification definition test adopts the form of multiple choice, which can lead to random guesswork, thus affecting the test validity.

Therefore, what kind of language should be used, in what kind of environment, in what form, and at what level of learners are the problems that should be paid attention to when studying the impact of translation on incidental learning of bilingual vocabulary. In order to remedy the above deficiencies, this study will investigate the effects of four different translation forms on incidental vocabulary learning of English students at different levels in a multimedia environment. These four translation forms include: Chinese translation, English translation, Chinese + picture combination translation and English + picture combination translation [4].

2. **Research the question**

This paper mainly studies three issues:

1) Do Chinese translation and English translation have different effects on incidental vocabulary learning?

2) Does the combination translation of words and pictures have different effects on incidental vocabulary learning from the translation of words and pictures?

3) Does translation have different effects on incidental vocabulary learning for learners of different English levels?

3. **Research methods**

3.1. **Research object**

The subjects were first-year non-English major undergraduates who had just entered a college and were divided into regular classes and experimental classes according to the results of college entrance examination and class placement test. A total of 104 people were selected as the subjects, including 53 (male 30, female 23) from the regular class and 51 (male 19, female 32) from the experimental class.

The independent sample t-test results show that there is a significant difference between the two classes' college entrance examination scores and class classification scores (T = 6.125, P = 0.000; Tclass = 10.277, Pclass = 0.000). The ordinary class and the experimental class represent the students with lower English level and those with higher English level respectively [5].

3.2. **Study Design**

According to the translation classification criteria of Segler (2001), the 24 target words in the reading materials were randomly divided into 4 groups with 6 target words in each group. The four groups of words are translated in four different ways, namely, Chinese translation, English translation, Chinese + picture combination translation and English + picture combination translation. The reading material is multimedia in Flash, and the target words in the text are highlighted. When the mouse cursor moves to
the target word, the translation of the target word immediately appears around; When the target word is removed, the translation disappears. In the translation, the English or Chinese interpretation should refer to the international authoritative dictionary, and try to reduce the length of the text, because if the text is too long, it will increase the memory burden of the test subjects and affect the test effect. Images are searched from the Internet according to the meaning of the target word. All participants completed the same reading task and were exposed to all four translations [6].

3.3. Test materials
The reading material was Grimm's "Seven Ravens". There are 936 words in the article, 95% of which fall within the range of 1000-2000 words in common use. The Forcast reading index of the article is 7.8, which indicates that the article is not difficult to understand.

The English teacher of the experimental class selected 41 difficult words (excluding proper nouns) from the text, and asked the students of another experimental class who did not participate in the formal test to write down the Chinese or English definitions of these words, and selected the target words according to the following criteria:
1) Words known by more than 5% of students are not considered;
2) Words whose meanings can be easily guessed from their roots or affixes are not considered;
3) It should include both the easiest nouns to learn and the most difficult verbs and adverbs;
4) Only consider words that occur only once in the text, so that the influence of frequency can be excluded.

In the end, a total of 24 target words were selected, including 10 verbs, 10 nouns, 3 adjectives and 1 adverb. Then, we used words within the range of 1000-2000 to replace other difficult words other than the target words in the paper, so as to avoid other difficult words interfering with the subjects and affecting the validity of the study [7].

3.4. Testing tools and scoring
The vocabulary test consists of two tasks: one is to identify the meanings (hereinafter referred to as "meaning") and write down the meanings of all 24 target words in either Chinese or English; The second is to choose words to fill in the blanks (hereinafter referred to as "fill in the blanks"). Which test participants identify the ability of word meaning, according to the context is divided into two groups, each group of 10 sentences, choose one from 12 candidate words, and in the blanks with proper form to fill in the corresponding sentence, each word can be used only once, at most two groups need to fill in the total 20 words (from the 20 words 24 goals in the word according to stratified sampling to select four translation form).

The two tasks of meaning and filling in the blanks are worth 1 point each, with a total score of 24 points and 20 points respectively. In the meaning task, participants were given 0.5 points if they wrote answers that were close to the correct meaning. In the fill-in-the-blank test, because only vocabulary knowledge is tested, one point is awarded for choosing the right word regardless of whether the form is correct or not. The total score for each task was divided equally into four parts based on the four translation forms of the target word, with a score of 6 and 5 for each part of the two tests [8].

4. Experimental steps
All the subjects read the text "Seven Ravens" on the computer in the language lab. Before reading, the subjects were told to understand the article as much as possible to prepare for the reading comprehension test later, so that the subjects could not only focus on the vocabulary, so as to achieve the effect of incidental vocabulary learning. The reading time is set at 10 minutes according to the requirement of rapid reading on the College English Teaching Syllabus of the Ministry of Education. The computer was then turned off and the subjects were asked to do a questionnaire and a live test. Questionnaire survey is mainly to investigate the situation of the subjects to check the translation, the time is 3 minutes, the result shows that 83.6% of the subjects to check all or most of the translation, 12.2% of the subjects to check half or several translations, the translation of high viewing rate to ensure the validity of the experimental results. The questionnaire was followed by a
vocabulary test for 25 minutes. Two weeks later, participants were given the delayed test without prior notice. The vocabulary questions were the same as those given in the immediate test. However, in order to reduce the negative effects of retention effect, the order of target words is different from that of the immediate test [9].

5. Results and analysis

In order to investigate the influence of language and pictures on the contingent learning of vocabulary, we first conducted a 2(Chinese, English) × 2(with pictures and without pictures) one-dimensional ANOVA on the meaning and blank-filling task of the immediate test and the delayed test. The results are shown in Table 1:

Through the statistics of the English learning ability of students in the experimental group and the control group, the relevant data in Table 1 are obtained [10].

**Table 1.** Data comparison of "English learning ability" between the experimental group and the control group

| Control content | Pre-test | Post-test |
|-----------------|----------|-----------|
| **Group**       | Test group | Control group | Test group | Control group |
| **The average score** | 2.780 | 2.540 | 3.240 | 3.050 |
| **Standard deviation** | 0.474 | 0.497 | 0.427 | 0.438 |
| **T value**     | 0.986 | 1.508 |
| **P value**     | 0.325 | 0.117 |

According to the data in Table 1, the average score of English learning ability of the experimental group and the control group in the post-test was improved compared with that in the pre-test. In this dimension, the independent sample t-test showed that there was no significant difference between the experimental group and the control group (P = 0.117 > 0.050). Paired sample t-test showed that there was no significant change within the experimental group and the control group, and the English learning ability of all subjects was improved to varying degrees after the experiment.

**Figure 1.** The effect of multimedia application in English translation

As shown in Figure 2, subjects in the experimental group showed a greater improvement than those in the control group. The experimental group generally holds a positive attitude towards English learning teaching, which indicates that the practice of English learning teaching can mobilize the interest and enthusiasm of non-English majors in English learning, stimulate their innovative thinking and critical thinking ability, and effectively improve the English learning ability of non-English majors.

**Table 2.** Cranach α coefficient of questionnaire compliance between the experimental group and the control group

| Cranach, s Alpha | Cranach, s Alpha Based On Standardized Items | N | of |
|------------------|---------------------------------------------|---|----|
| 0.708            | 0.716                                       | 25 |    |
Through the table 1 and table 2, table 3 comparison and analysis, thus, after systematic learning and training, the experimental group subjects students are learning to master English in basic procedures and steps, learned to analyze the grammatical structure of the original, and learned some English learning professional knowledge, bilingual ability and language ability significantly improved, English learning ability are improved to some extent

6. Conclusion
This study shows that translation can promote incidental vocabulary learning and retention of word memory, which has a positive guiding effect on vocabulary learning and is also a problem that needs to be seriously considered when compiling textbooks and reading materials. In this study, when the subjects received the double stimulus of words and pictures, the translated information could be linked in many ways, and the vocabulary memory would be more profound. In addition, the words and pictures of words could be linked together in the process of vocabulary extraction, making it easier. Therefore, in the incidental vocabulary learning, learners should pay attention to the combination of language and non-linguistic multimedia learning methods, so as to deepen understanding and memory and achieve better learning results. College English learners in lower grades should attach importance to the combination of words and pictures, especially the combination of Chinese and pictures to improve incidental vocabulary learning. Teachers should pay attention to the use of multimedia means for vocabulary teaching, which can produce better teaching results than only text presentation.

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