Study on Training Effect of Translation Software Based on Control Experiment*

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Abstract—**In order to investigate whether the training of translation software using skills can improve the trainees' speed and understanding of foreign language reading, a control experiment is conducted by taking college students from Fuzhou University of International Studies and Trade as the object in this paper. The results show that the training of translation software using skills can improve the participants' speed in answering English comprehension questions, but it makes no contribution in enhancing the correct answer rate.**

Keywords—skills training; translation software; control experiment

I. INTRODUCTION

The development of emerging forms of international business activities including cross-border e-commerce in recent years has further increased enterprises' demand for foreign language proficiency of the talents. However, the traditional foreign language training often costs a long period of time. The trainees have to spend several years and even a longer time for continuous learning, which is difficult to meet the explosive growth of market demand for relevant talents. On the other hand, machine translation technology has made a breakthrough in 2014 [1], and the translation effect is increasingly improved, being able to assist related personnel of the enterprises in international business E-main exchange very well. Nevertheless, training in translation software using skills is scarce.

As a result, this study aims to inspect whether the training of translation software using skills can improve the trainees' speed and understanding of foreign languages reading through control experiment, and put forward relevant suggestions.

II. EXPERIMENT DESIGN AND IMPLEMENTATION

A. Experiment Content and Dependent and Independent Variables Under Investigation

Based on the research purpose, the experiment designed for this study is to answer the English reading comprehension questions, the participants are college students, and the dependent variables under investigation are (1) speed in answering English reading comprehension questions, namely the number of English reading comprehension questions answered within unit time (20 min); (2) the correct answer rate, with the help of translation software. The independent variable under investigation is "have you ever received training in using translation software".

B. Type of Experiment Design

The one-group pretest-posttest design is adopted for the experiment in this study [2], which means that participants answer the English reading comprehension questions first (pretest) before receiving training of translation software using skills (giving independent variable), and calculate the speed and correct answer rate (dependent variables); after receiving the training, participants answer the English reading comprehension questions again (posttest), and calculate the speed and correct answer rate. The difference between results of pretest and posttest is regarded as indicator of training effect.

C. Experiment Implementation

1) Selection of participants: To make sure the basic conditions of participants are consistent as much as possible, participants are selected at random from college students with similar background. Specifically, 27 participants are selected at random from 119 students majoring logistics management in Fuzhou University of International Studies and Trade who take "Logistics English" as an elective course during the experiment ("Table I").

TABLE I. BASIC CONDITION OF PARTICIPANTS

Number of People	27
University	Fuzhou University of International Studies and Trade
Major	Logistics Management
Other Conditions	Select randomly from 119 students taking "Logistics English" as an elective course during the same period

2) Pretest implementation: Before receiving the training, participants take two tests on English reading comprehension questions answering respectively on October 30 and November 1, 2018 (pretest). Test time is 20 minutes, and the

content is to read English passage with the help of translation software and work on the multiple-choice questions relating to the passage (choose one from four). Each passage contains about 350 words with 10 multiple-choice questions. Adequate passages and questions are prepared to ensure continuous answering by participants during the test; meanwhile, make sure the time for each participant is 20 minutes by timing with software.

3) Training implementation: All participants start to receive the training in using skills of translation software about 1 week after the pretest. A total of 6 times of training are conducted with each costing about 40 minutes, the interval between the first and the last training is 35 days, each training is arranged at afternoon of Tuesday, and the interval between every two times of training is 7 days. Specific training time is shown in "Table II".

TABLE II.   TRAINING TIME

NO.	Training Time
1	2018-11-06
2	2018-11-13
3	2018-11-20
4	2018-11-27
5	2018-12-04
6	2018-12-11

The training is divided into two stages. First, participants listen to instructions on using skills of translation software, and then read English passage with the help of translation software and work on the multiple-choice questions relating to the passage (choose one from four). The passage and question type are the same as those in pretest, so participants can practice the translation software using skills they have gained in the process. Practice time is arranged for each time of training, and adequate quantity of questions is prepared to ensure continuous answering by participants during practice.

Specific training contents of translation software using skills are shown in "Table III".

TABLE III.   SPECIFIC TRAINING CONTENTS OF TRANSLATION SOFTWARE USING SKILLS

Skill 1	Make full use of multi-window function of Windows operating system to open multiple windows of translation software at the same time. In this way, new contents can be translated in a new software window without clearing the previous translated contents. On the one hand, it can save time spent in clearing the translating contents; on the other hand, the previous translated contents can be confirmed without retranslating, reducing the time spent accordingly.
Skill 2	At the time of copying original text to be translated to translation software window, do not use drag and drop selection, but select all (shortcut keys: Ctrl + A), or press key and click the end. In this way, selection accuracy can be improved, and ensure only one time of operation for copying continuous contents, so as to avoid waste of time caused by wrong selection or extra operation.
Skill 3	Locate the words in the passage by taking full advantage of look-up function (shortcut keys: Ctrl + F), which can help jump to the position of targeted word quickly when the meaning of a specific word in the context is to be determined, thus waste of time by searching by eye is avoided.
Skill 4	Make the best of dictionary to determine the meaning of a word, and if the explanation or example sentence in the dictionary is still in foreign language, you can retranslate it using translation software.
Skill 5	Take advantage of "improving translation" function. If there is an error in the content or grammar of the translation result, "improving translation" function can be used to rectify it. On the one hand, correct result can be obtained in the following translation, and on the other, translation quality of translation software can be enhanced.
Skill 6	Add a blank line in the original text to be translated to distinguish the content, and the translation result will also be separated by blank line accordingly.

4) Posttest implementation: Participants take two tests on English reading comprehension questions answering respectively on December 27, 2018 and January 2, 2019 after receiving the training (posttest). Test time, passage and multiple choice form as well as other test-related conditions are identical with those of pretest.

III.   ANALYSIS OF EXPERIMENTAL RESULTS

A. Data Collection and Data Cleaning

The results of each participant in pretest and posttest are calculated, including total number of questions answered and number of questions answered correctly, and then work out the correct answer rate of each participant. The question type is multiple choice of selecting one from four, so the expected value of correct answer rate is 25%, and the data of participants whose correct answer rate is below 25% is deleted. The data of correct answer rate reaching 100% is also deleted. Then, the total number of questions answered in pretest and posttest, average value of correct answer rate and standard deviation of the remaining data are calculated respectively. The data 3 standard deviations below average value or 3 standard deviations above average value is removed further. Finally, 22 groups of effective data are obtained.

B. Comparison of Pretest and Posttest Results

The total number of questions answered in pretest and posttest, average value of correct answer rate and standard deviation of 22 groups of data are calculated, with the results showing in "Table IV".

TABLE IV.   COMPARISON OF PRETEST AND POSTTEST RESULTS

	Total Number of Questions Answered in Pretest	Total Number of Questions Answered in Posttest	Correct Answer Rate of Pretest	Correct Answer Rate of Posttest
Average Value	17.54	32.04	62.65%	64.11%
Standard Deviation	9.66	18.29	0.1502	0.2042

It can be seen from the above "Table IV" that, average value of total number of questions answered increased from 17.54 in pretest to 32.04 in posttest, indicating that the training of translation software using skills has improved participants' speed in answering English reading comprehension questions; but, there is no big change in correct answer rate.

C. Hypothesis Test

Hypothesis test on the speed in answering English reading comprehension questions is conducted according to the abovementioned pretest and posttest results. Set the null hypothesis H0 as "the speed of answering pretest and posttest remains the same", alternative hypothesis H1 as "speed of answering posttest is greater than that of pretest" and the test result p is 0.2452. Therefore, it can be believed that the training of translation software using skills has improved participants' speed in answering English reading comprehension questions with more than 75% certainty.

IV. SUGGESTIONS

A. Popularizing Translation Software

The problems, such as considerable investment and long training cycle of traditional foreign language training, international business personnel's lack of foreign language proficiency, can be solved by using translation software. Effective translation software can save a lot of time in processing foreign language, and alleviate talent shortage of international business personnel.

B. Establishing Database of Proper Noun Translation

The translation effect of proper noun by existing translation software needs to be improved. Establishing database of proper noun translation is conducive to solving problems including improper meaning in the process of language conversion, or impossible to translate.

V. CONCLUSION

In order to investigate whether the training of translation software using skills can improve the trainees' speed and understanding of foreign language reading, a control experiment is conducted for this study by taking college students from Fuzhou University of International Studies and Trade as the object. The results show that the training of translation software using skills can improve the participants' speed in answering English comprehension questions, but it makes no contribution in enhancing the correct answer rate. Further research about methods for improving foreign language understanding by translation software is needed.

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