Application of Computer-Aided Translation in Interpretation Learning Under the New Liberal Arts Horizon

Renna Gui(✉)

School of Foreign Languages, Nanchang Institute of Technology, Nanchang, China
86050651@qq.com

Abstract. In the context of the development and prosperity of economic globalization, translation, as a means of information transmission in intercultural communication, plays an increasingly important role. The translation market has an increasing demand for talents, which requires higher quality of talents. However, the training speed of translation talents in colleges and universities is relatively slow. This paper mainly studies the application of computer-aided translation in interpreting learning from the perspective of new liberal arts. This paper first introduces the new arts and computer-aided translation related content, and then discusses the application of computer-aided translation in practical teaching. Through the comparison of the results of pre-test and post-test, it can be seen that the experimental class which applied computer-aided translation in interpreting learning has made great progress, showing a difference with the control class.

Keywords: New Liberal Arts Perspective · Computer-Aided Translation · Interpretation Learning · Interdisciplinary

1 Introduction

Its application has penetrated into various fields including the education industry, which has had a huge impact on the traditional work, study and life style, and the traditional teaching method has also undergone a huge change. Education informationization is the requirement of the times, the computer-aided instruction system for subject courses has changed the traditional teaching mode and met the requirements of the development of current education informationization. "Internet + Education" has transformed the traditional education model, and education has adapted to the requirements of The Times. Nowadays, with the development of economic globalization and the prosperity of international cultural exchanges, translation has played a decisive role. In the future, the translation market will have higher requirements on the quality of translation talents and the demand will be greater. It is imperative to accelerate the cultivation of translation talents and improve their quality. Computer-aided translation originates from computer-aided language learning, that is, using multimedia assisted interpretation training [1]. The opportunities provided by computer-aided translation are very stimulating and challenging for interpreting teachers and trainees. In addition to the training received in the

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classroom, it is also important for students to receive additional training, feedback and materials after class [2].

Computer Assisted Instruction, or CAI, uses a Computer system to help teachers teach students. The United States is the first country to study and apply the computer-assisted instruction system. Most of the foreign research and development in this field, following the main line of development of the United States, has experienced 60 years from the beginning of the application, and now the development is booming, the application is more and more extensive, the system is more and more mature [3]. At present, many colleges and universities have introduced computer-aided Translation teaching system into foreign language Translation teaching. Computer-aided Translation (CAT) commonly used include SDL Trados, Memoq, Omegaat, Snowman CAT, Langri CAT, etc. [4]. In addition, there are server versions of CAT software, such as Chuanshen, Yaxin and other foreign language training platforms or machine-assisted translation teaching systems. Compared with the advanced experience of foreign countries, although China has begun to recognize the role of computer-aided translation, its importance is still poorly understood [5].

Based on the computer aided translation of network technology, translation memory technology and database technology, this paper provides an information-based independent teaching platform for teachers and students. To improve the level of translation and translation innovation ability, improve the quality of translation personnel, to meet the needs of translation personnel in today's era.

2 Computer-Aided Interpretation Learning in the New Liberal Arts Vision

2.1 The Main Content and Significance of New Arts

The New arts compared with the traditional arts, is the global new revolution of science and technology, economic development and socialism with Chinese characteristics into a new era as the background, to break the liberal arts, inheritance and innovation, cross and fusion of traditional mode of thinking, to share together as main way, promoting multidisciplinary cross, depth fusion, promote upgrading traditional art, from the subject orientation to demand oriented, From professional segmentation to cross integration, from service adaptation to support guidance." In this definition, it highlights the most distinctive feature of the new liberal arts that is different from the traditional liberal arts – interdisciplinary [6]. New arts stressed discipline between open and inclusive, comprehensive and connectivity, should break the barriers between disciplines and the traditional disciplines, cross and penetration, enhance dialogue, in the process of interdisciplinarity explore the new growing point of the traditional disciplines, promote innovative research, to create a new academic frontiers.

The concept of the new liberal arts has important epochal significance. The new arts emerge as The Times demand, which is reflected in the following aspects: Is a modern industrial show highly complex, large scale development pattern, the key point of modern science and technology, major theoretical breakthrough and innovative technological inventions appear more in the infiltration of communion between disciplines,

more questions depend on the different experts in the field of cooperation, resources integration, the whole chain of innovation. This requires that the new liberal arts must play an important role in the new round of scientific and technological revolution and industrial reform, train comprehensive talents and provide necessary think tank support in the development of emerging technologies such as artificial intelligence, genetic engineering, virtual technology and block chain. Secondly, the traditional liberal arts cannot fully meet the new requirements of the new era to some extent, which also urgently requires the liberal arts to adjust and improve themselves in the new era [7]. For example, in terms of research scope, the use and promotion of big data analysis technology, human-computer interaction, machine learning, knowledge mapping and the social attributes of artificial intelligence are in urgent need of more participation and cooperation of liberal arts talents. In terms of research methods, traditional research topics of liberal arts, such as consciousness, language and psychological mechanism, also use and transplant interdisciplinary research methods for in-depth exploration.

2.2 Computer-Aided Translation Technology

Since the birth of computer in 1947, the academic circles began to try to use computer for machine aided translation (CAT). The development process of CAT translation method reflects the different stages of people using computer to realize automatic translation. The first stage is based on the method of language rules, which holds that as long as the theory and means of human translation are "instilled" into the computer, it can simulate human to realize translation, but language rules cannot cover complex and changeable language phenomena. The second stage is the empirical method of learning from the actual language. Both obtaining translation templates from translation examples or statistical model Translation (SMT) belong to this category. The third stage is neural network translation (NMT), which is an end-to-end overall translation model. The progress of these three research methods reflects the transformation roadmap of machine translation strategy: from imitating human translation rules to the analysis and reorganization of language structural components, and then to the translation strategy of integration [8].

Google found that in the translation of multiple samples, the neural network machine translation system reduced the error by 55%–85% or more. However, the training cost of NMT is still too high. Google brain researchers Denny britz, Anna Goldie, thang Luong and Quoc Le conducted a large-scale analysis on the super parameters of NMT architecture, and put forward some novel ideas and practical suggestions for establishing and expanding NMT architecture.

This section mainly introduces terminology management techniques, translation memorization technology and corpus management system. Terminology management techniques and tools include Excel, Access, SDL Multi Term, Word Fast, etc. The general functions of a term management tool are to extract terms, create, manage and maintain a term database, edit term data, retrieve and filter terms, share and publish terms, set data security, etc. Due to the continuous updating and development of technology, the term management system has realized the standardization, networking and integration [9].

Translation memory technique is one of the computer aided translation techniques. Its working principle is as follows: Translated version will have been fed into a computer, to save the original in the translation memory, when open the translation software,

translation memory software translator will each fragment and memories in the data analysis of the existing translation remained contrast, can be extracted in the translation of the original memory in the library search the same or similar libraries, translation results provide reference for the translator, the translator can choose, edit or abandoned. The new translation does not need to be repeated, but only needs to refer to and use the previous translation results, so as to avoid unnecessary duplication of work by users, thus greatly improving the translation efficiency.

Corpus management of computer-aided translation software can be divided into word base management and sentence base management. This paper mainly analyzes vocabulary management. A term is a term for a particular subject. A glossary is a list of bilingual or multilingual comparison words, including auxiliary information such as definition, subject, part of speech, etc. [10]. There are cloud corpus data platforms at home and abroad. The famous one abroad is TAUS Data Cloud. TAUS is the abbreviation of Translation Automation User Society. Headquartered in Amsterdam, the Netherlands, TAUS is a platform to provide data sharing and translation cutting-edge knowledge for the global language and translation industry. It aims to provide strategic suggestions for the language service industry and help formulate industry standards. Domestic corpus data platforms mainly include Tmxmall and UTH. Among them, Tmxmall provides corpus online alignment, focusing on the research and application of cloud corpus big data products and technologies, real-time monitoring system integration technology, private cloud corpus management and corpus mall trading platform. Translators can complete corpus production and corpus management and utilization by using its online alignment and private cloud. The interactive interface of the corpus alignment tool "online alignment" is humanized, and the accuracy of alignment results is high. Its intelligent alignment algorithm can automatically align the sentences of "one to many, many to one, many to many" in the original and translated corpus, greatly reducing the manual workload. Up to now, the platform has accumulated hundreds of millions of pairs of high-quality corpus, covering news, politics, law, finance, machinery, medicine, patents, construction and other vertical fields. UTH is mainly engaged in corpus big data infrastructure construction and language application technology innovation. Its parallel corpus involves 33 languages, covering cross-border e-commerce, international engineering, equipment manufacturing, film and television media, cultural tourism, social media, higher education and other fields [11].

3 Computer-Aided Translation and Interpretation Learning Experiments

3.1 Effect Test Method

Effect test to select two natural classes (two class results, the number of close close), in the process of experiment, the same teacher at the same multimedia network classroom, respectively in the two class teaching content is the same, different teaching strategies of teaching, the control class kept the traditional teaching, the experiment class in interpreting teaching based on the technology of computer aided translation.

3.2 Knowledge Level Test Paper

Before the implementation, the students in the experimental class and control class were tested. The pre-test papers related to interpretation learning were made according to the content of the interpreting textbooks and used to measure the initial level of students. The topic of the post-test paper is related to interpretation learning.

3.3 Questionnaire Design

Based on the existing domestic and foreign research results on computer-assisted interpretation in colleges and universities and the learning psychology theory of college students, this study elaborately designed a questionnaire, which closely revolves around the current situation of computer-assisted interpretation in colleges and universities in China. The questionnaire is divided into three parts: the explanatory words of the questionnaire, which explain the purpose of the survey, and make a promise of confidentiality; In the main part of the questionnaire, the interviewees were asked to give feedback on the basic situation of computer-aided interpretation teaching in their colleges and universities.

After soliciting the opinions of relevant experts, the structure, content, language expression and other aspects of the questionnaire were revised and improved for many times. After the preliminary questionnaire is formed, objective examination method is adopted, students of our school are selected to conduct a small-scale pre-survey, and then the questionnaire is simply tested for reliability. The questionnaire is further adjusted and modified according to the problems in the pre-survey, and finally the questionnaire is determined.

3.4 Reliability Analysis of the Questionnaire

This article uses Cronbach's α coefficient to test the internal consistency of the questionnaire. From a statistical point of view, the reliability coefficient of any test or scale is above 0.70, indicating that the internal consistency of the test or scale is good, and that the questionnaire has high internal consistency. The reliability analysis formula is as follows:

$$rtt = \frac{2rhh}{(1 + rhh)} \tag{1}$$

$$a = (\frac{k}{k-1}) * (1 - (\frac{\sum Si2}{ST2})) \tag{2}$$

Cronbach's α coefficient of the questionnaire in this paper is 0.921, indicating that the questionnaire in this paper has a high internal consistency.

4 Experimental Results and Analysis

4.1 A Pretest Scores

The purpose of this paper is to find out whether the computer-aided translation can promote learners' interpreting training and thus improve the interpreting performance

Table 1. Independent Samples Test of Pretest Part

		F	Sig
Part 1	Equal variances assumed	2.031	0.159
Part 2		1.237	0.279
Part 3		2.175	0.152

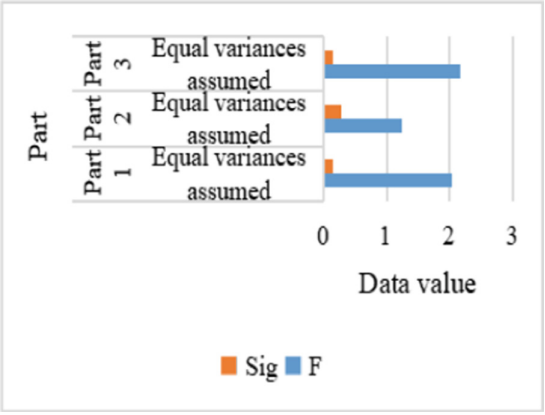

Fig. 1. Independent Samples Test of Pretest Part

of the test subjects. In the pre-test, the experimental group and the control group were given the same test at the same time. The participants were randomly divided into several groups. Through data analysis, we can find that there is no significant difference in their performance in parts 1, 2 and 3 of the pre-test.

As shown in Table 1 and Fig. 1, it is clear from the above analysis that there was no significant difference in the performance of the testers during the pre-test. Specifically, if the Pretest Part 1 score is placed within the 95% confidence interval of the difference, the significance is 0.159 (BBB 0.05), which means that the null hypothesis is accepted. In other words, there was no significant difference between the experimental group and the control group in consecutive interpretation (part 1) before the course and training. In pretest part 2, the significance was 0.279 (BBB 0.05). There was no significant difference between the experimental group and the control group in the performance of consecutive interpretation before the course and training. The significance of pretest part 3 was 0.152(BBB 0.05). In this regard, we also need to accept the null hypothesis that there is no significant difference between the experimental group and the control group in the performance of consecutive interpretation before the course and training.

Data analysis showed that in the pre-test stage, there was no significant difference between the two groups. The performance difference between the experimental group and the control group was statistically significant. After that, the participants went through a 10-week course and related self-training.

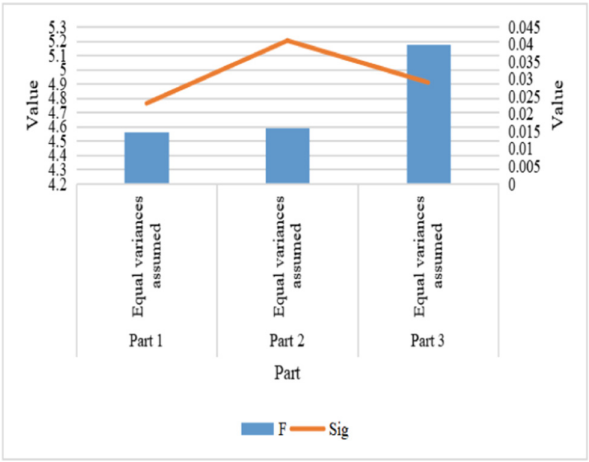

Fig. 2. Independent Samples Test of Posttest Part

4.2 After the Test Result

As shown in Fig. 2, it is obvious that there are significant differences in the performance of participants in the post-test. Specifically, if the Posttest Part 1 score is placed below the 95% confidence interval for the difference, the significance is 0.023(<0.05), rejecting the null hypothesis. That is to say, after the course and training, there is a significant difference between the experimental group and the control group in the performance of consecutive interpretation (Part I). The significance of Pretest Part 2 was 0.041 < 0.05. Here, the author needs to deny the null hypothesis, that is, there is a significant difference between the experimental group and the control group in the results of consecutive interpretation (Part 3) after courses and training. The significance of Pretest Part 3 was 0.029(<0.05). In this regard, we need to deny the null hypothesis that there is a significant difference between the experimental group and the control group in the results of consecutive interpretation (Part 3) after courses and training.

5 Conclusions

Computer-aided translation software can provide solutions to strengthen interpretation classroom teaching and support students' autonomous learning, and can also make the connection between classroom work and autonomous learning closer. The results of the experimental group were greatly affected by the application of computer-aided translation. After a 10-week course and subsequent interpreting training, all participants in both the experimental and control groups improved their interpreting scores. Through data analysis, we found that before the course and training, the two groups were at the same level, but after the course and training, the experimental group was significantly better than the control group. Given that the independent variable of this study is the use of computer-aided translation software and the dependent variable is performance, it is safe to say that the use of CAIT software improves the interpreting performance of the subjects to a large extent.

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