# The Practice and Application of Computer-Aided Translation Technology in English Teaching

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**ABSTRACT:** English teaching is essential to computer-aided translation technology (CATT). It can improve students' learning efficiency and cultivate their comprehensive ability. It can also promote China's cultural dissemination and international exchange. This paper mainly introduces the characteristics of computer-aided translation technology and how to effectively apply it to real life to analyze and study its significant impact on our daily work. Then this paper designs an English teaching-assisted translation model based on computer-aided technology. Then the performance of the English teaching model is tested by simulation. The test results show that the accuracy of computer-aided translation is more than 92%, and the translation time is within 10s. This shows that the model can meet users' needs and provide constructive suggestions and opinions for English teachers to improve English teaching.

**KEYWORDS:** Computer-aided translation technology, English teaching, practical application, performance, English teaching model

## I. INTRODUCTION

With the continuous growth of computer technology, China has gradually begun to use CAT in English teaching, but many domestic universities have not yet fully mastered this field (Marzulina, Mukminin, Desvitasari, Yaakob and Ropawandi, 2018; Klimova, 2018). However, some schools have carried out relevant research and achieved specific results. However, due to its late start, lack of experience, and other reasons, this discipline is still in the primary stage, and there are many problems and defects to be solved and improved. At the same time, some schools neglect the application of computer technology, even ignoring the content and teaching mode in this area, dramatically affecting the improvement of students' learning ability and comprehensive quality (Saienko, Olizko, and Arshad, 2019; Basal, 2019).

Although some achievements have been made in the research of CAT in foreign countries, it lags behind foreign countries due to China's national and international conditions. First, domestic scholars have made an in-depth discussion on computer translation theory. At present, the problems existing in the application of information technology in English teaching in China are mainly manifested in the following aspects: First, there is a lack of relevant professionals; second, there is no unified standard to guide practical activities; third, in the actual operation process, Nowakowska, Beben, and Pajecki (2020) and Akayoğlu (2021) believed that it is unable to effectively realize the characteristics of information resource sharing, diversification, and multi-channel communication methods. Some scholars have analyzed English information retrieval and decoding systems and discussed how different methods could improve translation quality, efficiency, and accuracy. Some scholars, taking a university as an example, discussed the information technology tools and related software used in English teaching. This research project mainly discussed language coding technology and computer-aided design (Bowen, 2021; Wang, Kumar, and Dinesh, 2021). Therefore, based on computer-aided technology, this paper studies translation technology in English teaching.

With the rapid growth of computer technology, people have new requirements for information transmission, storage, and processing capabilities, which requires us to improve their translation speed in the process of learning constantly. And all this depends on the computer network. Therefore, integrating modern information technology with English teaching is an important topic facing foreign language education in China. This paper mainly introduces the research status and growth trend of language knowledge extraction and application utilizing computer-aided translation, and then analyses and discusses the impact of computer technology on traditional grammar, syntax, semantics, and other information transmission capabilities and puts forward corresponding suggestions.

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CATT is based on the language information of the text. It uses computers, voice, and other tools to express relevant information and to understand the relationship between sentences, phrases, and text content to achieve the information processing and expression between English learners and text content. Its main task is to convert language knowledge into images, voice, and other forms. In this case, it is necessary to use the network for data transmission (Tlili et al., 2021; Tzagkourni, Chlapana, and Zaranis, 2021). At this stage, it is required to complete information transmission and data sharing through the Internet. At the same time, it is also required to use computers as media to store files, translate, and do other activities. In addition, computer technology can be applied. The application of this method in English teaching will also cause many problems. There are some problems in the students' learning process. Second, teachers cannot quickly grasp these knowledge points and skills, leading to many mistakes or irregularities in the classroom. CATT takes voice as the information carrier and uses multimedia forms such as images, words, and charts to convert text language into digital content. Using CATT in English learning can improve the efficiency and quality of English teaching. Specifically, through the analysis and retrieval of different paragraphs, we can better understand the meaning to be expressed and use network resources to achieve the retrieval and editing of relevant knowledge information so that students can more easily and quickly obtain the information they want.
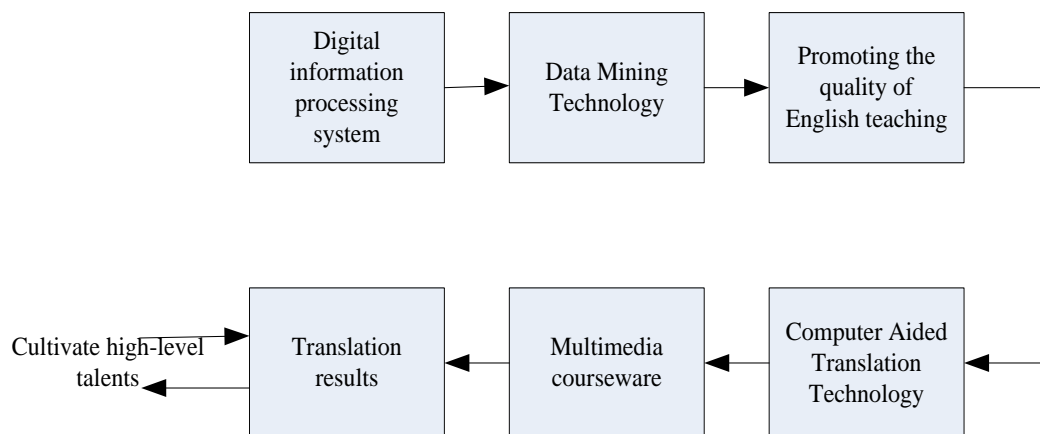


**Figure 1. Digital information processing system**

It includes digital information processing systems (multimedia courseware) and data mining technology. As shown in Figure 1, this method can help students better learn and understand what they have learned and improve teachers' professional quality and work efficiency. On the one hand, it can promote the quality of English teaching. On the other hand, it is a summary of experience in the practical application of CATT. It can make it easier for students to understand and master knowledge and skills. It can also improve students' ability to analyze and apply the professional texts they have learned and their comprehensive quality in other aspects to cultivate high-level talents (Sharadgah, Sa'di, 2022; Alotaibi and Alharbi, 2022).

The classification of CAT can be divided into the following aspects:

(1) Translate by text and voice. In this case, we need to use language to express information. Voice is the most straightforward way to convey information. Therefore, it has vital flexibility. In addition, it has the characteristics of accuracy and high automation required at a higher level. In addition, it can help improve the effectiveness and efficiency of English learning. In addition, it can help students better understand and memorize the meaning of words to carry out translation and other advantages and characteristics.

(2) Press Computer-aided translation. Take text as the primary information, and express it in text, pictures, etc. The corresponding numerical symbols and letter elements are added to the language materials, and the translation activities, mediated by grammar, are produced through language or other means and used together with computer technology.

(3) Appropriate translation methods should be adopted according to different contexts. Modifying the language content after completing the corresponding tasks as required is to achieve the English teaching goal on the original basis. Based on network technology translation, this way can transmit language information through the Internet and complete language exchange and communication. Its feature is to use computers to achieve data sharing and communication functions to achieve fast and accurate decoding, timely and efficient processing, and flexible use. At the same time, it can also supplement and modify the text content on the computer to improve the quality of translation.

(4) Translations are classified by language category. In computer software, English can be regarded as a system and a text, text, or other forms of information expression. For other topics, unique methods should be used to solve the problems, such as how to transform each other and deal with the relationship between them.

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CATT is a text-based language structure and information processing method based on digitalization, informatization, etc., with the help of a computer network communication system to connect with the relevant content in the decoding software. However, traditional manual translation has many drawbacks: the first is that the intention conveyed by the original text cannot be accurately understood, and the second is that the translation cannot be correctly understood; third, there may be an unnecessary loss, waste, and cost problems when incorrect decoding occurs, and even a lot of time is needed to modify and retranslate them. The principle of computer translation technology is to analyse and process a large amount of data and information in the computer and explain them accordingly. This translation method can effectively improve the efficiency of translation understanding. In English learning, you can use the network, multimedia, and other tools to complete the expression of relevant content. Figure 2 is a computer-aided translation process.
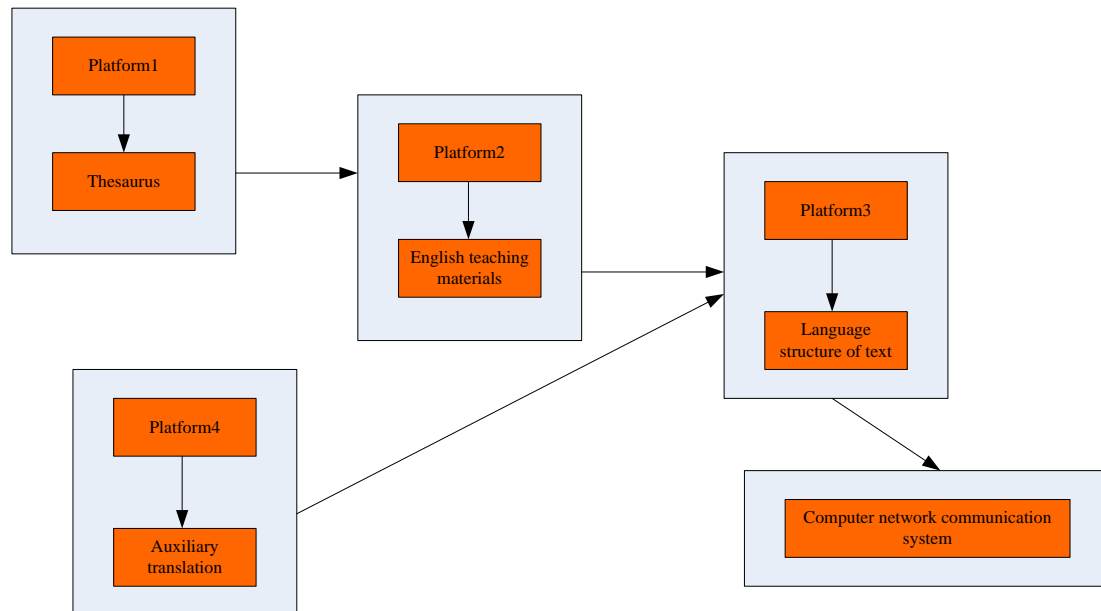


**Figure 2. CATT process**

The use of this technology in English teaching mainly includes text and word sentence conversion. The second aspect is to accurately locate, label and translate the words after the text is converted so that students can more quickly master the information to be expressed and complete the corresponding tasks. This method can not only solve many problems in traditional English teaching. In practical application, it can also realize the communication effect and efficiency improvement between students and teachers. In addition, it can also apply computer-aided technology to pronunciation, vocabulary, and the relationship between words to improve translation ability and quality. The initialization steps of the relevant parameters of the algorithm are as follows:

$$\frac{\ell}{\ell\,\Theta_i}\,k(\Theta_0,\Theta_1,\ldots,\Theta_n) \tag{1}$$

The gradient of the cost function is multiplied by the step size to obtain the descent distance of the current position, namely:

$$\beta\,\frac{\ell}{\ell\,\Theta_i}\,\mathrm{k}(\Theta_0,\Theta_1,\ldots,\Theta_n) \tag{2}$$

It mainly includes functional modules such as image processing and text retrieval and can integrate and comprehensively apply multiple language modes. In addition, information resources can also be shared through the integration of voice, grammar, and other knowledge points. As shown in Formula 3, data mining algorithms can be used to analyze data and draw conclusions, and neural network technology can predict future growth trends.

$$f(\varphi,\Theta) = \frac{r^2 I_s(r,\varphi,\Theta)}{P_s} \tag{3}$$

This method can help students to understand and remember what they have learned effectively. In this case, computer networking, standardization, and scientific and reasonable application are needed to ensure that students can better use computer information processing ability and application effect be guaranteed. In addition, a complete translation system can be built based on modern information technology to promote English teaching quality and improve work efficiency.

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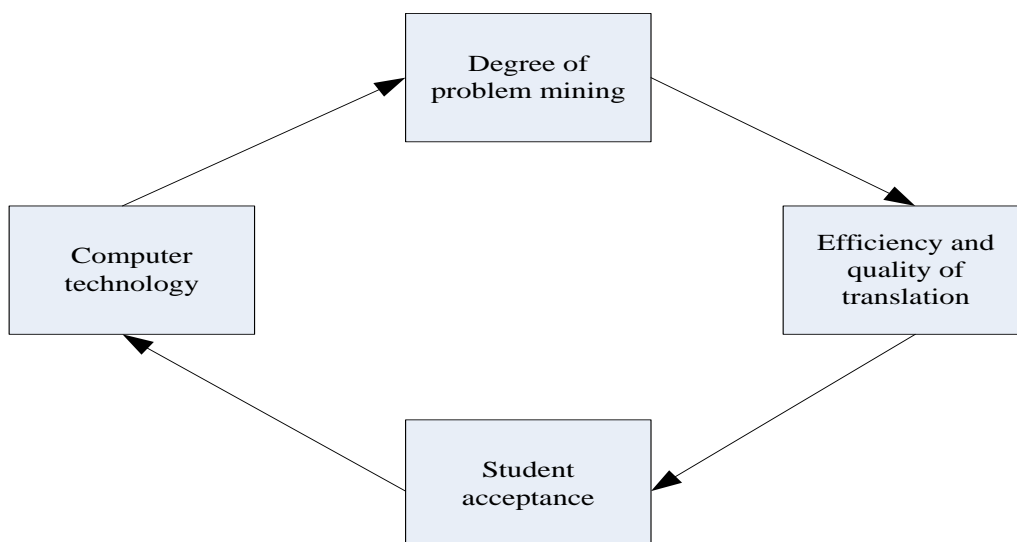
## II. METHOD



**Figure 3. An English teaching model based on CATT**

The teaching mode based on computer-aided translation (as shown in Figure 3) is mainly an innovative application of the "listening, reading, writing and speaking" method used in traditional English classes, effectively improving students' learning process efficiency and providing teachers with a new idea. For example, computer software can simulate listening practice in the listening training stage. In this way, language knowledge can be more intuitive. In addition, it can also help stimulate the improvement and growth of students' thinking, memory, and understanding ability. With the application of CATT, English teaching mode is more flexible, and students can learn independently according to their needs. This way can improve the student's ability to understand and master knowledge points, promote teachers' professional growth, and cultivate high-quality talents.

Using CATT can effectively improve students' learning ability in English teaching and help them better adapt to social life. Therefore, the method needs to be tested experimentally. Through the test, we can find problems and improve their shortcomings promptly. At the same time, we can detect whether students' thinking patterns and memory have improved. In the traditional classroom, teachers usually use the "spoon feeding" method to complete the pronunciation practice and listening and reading English words.

In contrast, for CATT, many computer languages are used as the basis. Therefore, this model contains all the essential knowledge points, such as words and sentence patterns. Then, according to the role of different corpora between each sentence, the hierarchical structure units of each stage are divided. Finally, these basic modules are divided into several small blocks according to specific rules. In each small block, the best ones are selected as translation team members, and they jointly evaluate and provide feedback on the translation.

## III. RESULT

In the application process of CATT, its primary function is to comprehensively analyse different types of language information and make corresponding teaching model innovations according to the actual situation. This method can provide students with more complete, accurate, and comprehensive English learning materials. Table 1 shows the data of the CAT function test in the English teaching model.

**Table 1. Functional Test Data of the English Teaching Model**

| Test Times | Number of Translated Words | Translation Accuracy (%) | Translating Time (s) |
|---|---|---|---|
| 1 | 32 | 95 | 5 |
| 2 | 43 | 94 | 4 |
| 3 | 53 | 97 | 7 |
| 4 | 31 | 94 | 9 |
| 5 | 52 | 92 | 6 |

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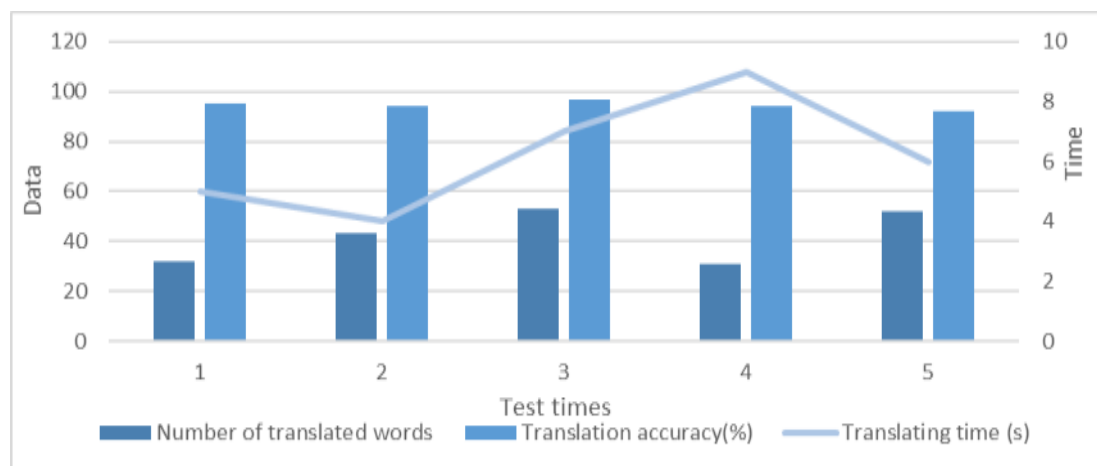


**Figure 4. Functional test of English teaching model based on CATT**

In the teaching process, through CATT, students' learning situation, English knowledge structure, and thinking mode can be combined with practical application. It is difficult for different language projects, so testing and analyzing the model is necessary according to the specific content. For simple grammar courses such as words and sentence patterns, it is necessary to focus on mastering these basic concepts and logical relationships. In some complex sentence patterns, it is also necessary to note that there is some correlation between sentences. This requires us to help students complete their learning tasks and improve their thinking patterns through CATT. As can be seen from Figure 4, the accuracy of computer-assisted translation is more than 92%, and the translation time is within 10s. This shows that the model can meet the needs of users.

**IV. CONCLUSION**

With the continuous growth of computer technology, English teaching mode is also changing. Traditional classroom education can no longer meet the requirements of students' English learning. It has become an inevitable trend to solve this problem by utilizing computer-aided translation. This paper mainly discusses how to realize language knowledge and information exchange through the combination of computer and modern information technology, and on this basis, it puts forward two different types of online reading methods, application strategies, and relevant suggestions, hoping to provide references for future teaching of colleges and universities in China using Internet technology and bring more convenience to English learners.

**REFERENCES**

1) Marzulina, L., Habibi, A., Mukminin, A., Desvitasari, D., Yaakob, M. F. M., & Ropawandi, D. (2018). The integration of social networking services in higher education: Benefits and barriers in teaching English. *International Journal of Virtual and Personal Learning Environments (IJVPLE)*, *8*(2), 46-62.

2) Klimova, B. (2018). Mobile phones and/or smartphones and their apps for teaching English as a foreign language. *Education and Information Technologies*, *23*, 1091-1099.

3) Saienko, N., Olizko, Y., & Arshad, M. (2019). Development of tasks with art elements for teaching engineers in English for specific purposes classroom. *International Journal of Emerging Technologies in Learning (IJET)*, *14*(23), 4-16.

4) Basal, A. (2019). Learning collocations: Effects of online tools on teaching English adjective-noun collocations. *British Journal of Educational Technology*, *50*(1), 342-356.

5) Nowakowska, M., Bęben, K., & Pajęcki, M. (2020). Use of data mining in a two-step process of profiling student preferences in relation to the enhancement of English as a foreign language teaching. *Statistical Analysis and Data Mining: The ASA Data Science Journal*, *13*(5), 482-498.

6) Akayoğlu, S. (2021). Teaching CALL to pre-service teachers of English in a flipped classroom. *Technology, Knowledge and Learning*, *26*(1), 155-171.

7) Wang, E., Kumar, P. M., & Dinesh, R. (2021). Semantic graphical dependence parsing model in improving English teaching abilities. *Transactions on Asian and Low-Resource Language Information Processing*, *20*(3), 1-14.

8) Bowen, D. (2021). Word order detection in English classroom teaching based on improved genetic algorithm of block coding. *Journal of Intelligent & Fuzzy Systems*, *40*(4), 6901-6912.

9) Tlili, A., Hattab, S., Essalmi, F., Chen, N. S., Huang, R., Chang, M., & Burgos, D. (2021). A smart collaborative educational game with learning analytics to support English vocabulary teaching, *International Journal of Interactive Multimedia and Artificial Intelligence*, *6* (6), 215-224.

10) Tzagkourni, E., Chlapana, E., & Zaranis, N. (2021). Implementing theoretical approaches using ICT in teaching English as a foreign language. *Education and Information Technologies*, *26*(5), 6203-6226.

11) Sharadgah, T. A., & Sa'di, R. A. (2022). A Systematic Review of Research on the Use of Artificial Intelligence in English Language Teaching and Learning (2015-2021): What are the Current Effects? *Journal of Information Technology Education: Research*, *21,* 337-377.

12) Alotaibi, K. A., & Alharbi, M. G. (2022). Assessing the Learning Outcomes of Using Mobile Game Integration in Teaching English Vocabulary: A Case Study of Saudi Arabia. *International Journal of Sociotechnology and Knowledge Development (IJSKD)*, *14*(1), 1-16.