Research on the Application of Computer Recording Technology in Modern Chinese Bopomofo

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Abstract. With the development of science and technology, the computer has gradually replaced the pen and paper, and even is more important in many occasions. Also, people's dependence on the computer is deepening. While the importance of Bopomofo is in decline, Bopomofo teaching has been in a dangerous position. But actually, Bopomofo is the foundation of learning Chinese, the importance of language learning is self-evident. This paper mainly discusses the application of modern Chinese Bopomofo in computer recording technology.

Keywords: Computer, Quick-record Technology, Modern Bopomofo

1. Introduction
With the development of electronic computer technology, typing has evolved from a single mechanical type of text entry into a collection of text entry, including editing, storage, printing. This new way of processing words by electronic computer can record real-time speech information rapidly, and its recording speed can reach or even exceed the amount of information output by people's daily speech and debate. "Quick record" has gradually become a practical technology that can be popularized[1]. It is widely used for real-time recording of court proceedings, negotiations, interviews, meetings and other activities. It has taken a long time for this technology to develop from its infancy to today, which is engaged in the real-time collection of voice information and the generation of electronic text by using the quick-record machine.

2. The basic concept and development of computer recording technology
The computer shorthand refers to a modern practical technology. By using the computer, people can translate the language, text and other Chinese information into electronic text. It is the professional skill which must be possessed by those who are engaged in and prepared for the professions of writing, office work, foreign affairs and shorthand. In the process of public affairs activities of social organizations and business activities of enterprises and institutions, computers are used to organize and compile the recorded information and materials into documents in real time[2]. The stenography secretary and stenographer, who are mainly characterized by mastering computer stenography skills, have become an emerging professional army in recent years. And computer stenography has become an important means to improve work efficiency and expand information flow.
In China, the computer shorthand profession began from the 1990s. Chinese shorthand has a history of 112 years since Cai invented "transliteration" in 1896\cite{3}. However, due to the structural characteristics of Chinese characters, it is difficult to learn Chinese and to digitize Chinese characters, which has more negative constraints on the promotion and popularization of Chinese computer shorthand technology. Also, it limited the cultivation of Chinese computer shorthand talents\cite{4}. This article intends to take this as the breakthrough point, and makes the rough discussion. The statistical graph of Quick-record and Chinese Bopomofo input usage from 2011-2018, in China is shown as figure 1.

![Figure 1. The statistical graph of Quick-record and Chinese Bopomofo input usage, in 2011-2018, in China](image)

3. Computer recording technology and Chinese Bopomofo input method

At present, there are two main input methods: one is keyboard input; another non-keyboard type of input. At the same time non-keyboard input is divided into manual input and Bopomofo input two cases\cite{5}. At the beginning of the century, a company designed a new speed-spelling software, which could effectively summarize the language materials, allowing the sketchpad staff to input sentences without being interrupted, and with high accuracy, which also injected new development force into the development of keyboard input\cite{6}.

A few years ago, the wubi input method training class occupied the streets of the city, because of the enhancement of compatibility, the computer Chinese characters input has been a new breakthrough, Chinese characters input began to become as convenient as English, and the use of the same standard keyboard, so as to avoid the development of deformity. However, the wubi input method also has some problems, such as the need to unpick the root of the word, at the same time the typing speed is relatively slow and other problems, encountered some do not know the word, also cannot use wubi out, so the accuracy and efficiency of the short record are reduced. The comparison between Quick-record and Chinese Bopomofo input is shown as table 1.
Table 1. The comparison between Quick-record and Chinese Bopomofo input

| Comparison items       | Quick-record                                      | Chinese Bopomofo input         |
|------------------------|---------------------------------------------------|--------------------------------|
| Operation mode         | Two hand operation; Support two people to operate at the same time. | International standard operation; Support two more people to operate at the same time |
| Recording speed        | 220 words / min                                   | 200 words / min                |
| Practicability         | Need speed recorder                               | Standard keyboard              |
| Learning cost          | High                                              | Low                            |

Because of the long-term influence, Chinese characters input is mainly developed into characters by sound, Bopomofo input method more in line with the demand, as long as the Chinese Bopomofo foundation, you can use the Chinese input method, which is conducive to the promotion of rapid record technology. At present, there are many Chinese input methods in our country. You can input Chinese directly on the western Giampa’s. In order to facilitate the input of characters, it is necessary to encode these characters in a new way.

4. Application of modern Chinese Bopomofo in computer recording technology
The development of science and technology brought convenient for peoples’ life. While the frequency of using pens is getting smaller, the electronic equipment is used to record. In this background, the role of the modern Chinese Bopomofo is also weakened. Even so, Chinese Bopomofo is the foundation of Chinese literacy, learn Chinese Bopomofo for SuLu technology level is extremely helpful.

4.1. The change of Chinese language structure
Over time, modern Chinese Bopomofo has changed from monosyllabic words to word groups, and these combinations of words play a dominant role in the use of Chinese[7]. The development of Chinese characters is also interlinked, and the internal components of a word will also have new problems due to the change of syllabic order: the difference in the primary and secondary distribution of word meaning and sound and the word-formation structure of derived words, resulting in great changes in the Chinese language.

4.2. The adjustment of quick-record workflow
Due to the social environment, the terrain is complex, the population is large, and the dialect is complex. Therefore, when recording the work, the personnel should also pay attention to the relationship between dialects and Putonghua, know the differences between them, and be able to record correctly when writing. In their daily life, the stenographers also need to study specifically to promote the continuous improvement of stenographers.

4.3. Standardization of quick record input
In the quick record application, we usually use the following several spelling methods: the first is the sound and rhyme two spelling: the final as a whole, and the initial combination; The second is the initial two spelling: the initial pronunciation of the parts to find, ready to sound, and then read out the final, spell into syllables; Three spell continuous pronunciation: in the Chinese language some syllables with a medium, it can be divided into sound, medium, rhyme three components, in the pronunciation of linked into a syllable; The fourth is the combination of consonant and vowel connection method: the initial and vowel connection, constitute a Bopomofo components, and then the final connection after the spelling.

In shorthand, standardized pronunciation and skilful spelling are helpful for the input of Chinese characters. Accurate pronunciation can improve the accuracy of Chinese characters input. In the use of
Chinese Bopomofo input method, you can carry out some spelling conversion training, improve the spelling ability of shorthand, thus laying a foundation for fast Bopomofo input.

5. Application prospect of quick-record technology
Since the 1990s, stenographer has been widely used in many fields, and stenographer has gradually become a popular profession. In his book "the 100 best jobs of the 1990s and beyond," American columnist carol Kalman argues that court records will be the fastest-growing profession in the 21st century in the service industry. Court clerks, like judges and lawyers, are specially trained professionals. In United States, more than 60,000 court clerks are active in U.S. courts at all levels, keeping real-time records of trials.

In China, in 1997, the supreme people's court issued the notice on promoting the use of awei Chinese recording machine to realize the modernization of court proceedings in the national court system, promoting awei recording technology to the national courts. At present, the national court system almost all uses the Chinese recording machine to carry on the trial record[8]. The application of short - record technology also directly promotes the reform of the management system of court clerk in our country. In 2003, the supreme people's court promulgated the measures for the administration of court clerks of the people's courts, which clearly stipulated that the court clerks should be subject to a separate and serial employment system.

In fact, in addition to the trial records, the short record technology is also widely used in the public security. On-site records of various forums and seminars; On-the-spot records of office meetings of government organs, enterprises and public institutions; The website guest interview text broadcast; Screen display of the contents of the broadcast; The whole process records of diplomatic and commercial negotiations and other occasions that require real-time text collection.

In 2003, the ministry of labour and social security organized relevant experts to formulate the national occupational standards for sketched professionals, which standardized the occupational profile, basic requirements and work requirements. In this standard, a stenographer is defined as a person who uses a stenographer to collect voice information in real time and produce electronic text. This professional standard objectively reflects the current level of sketchbooks and the requirements of practitioners, and on the basis of fully considering the impact of economic development, scientific and technological progress and changes in industrial structure on the career of sketchbooks, it clearly defines the activity scope, work content, skill requirements and knowledge level of sketchbooks. It can be predicted that with the rapid development of China's economic construction and the gradual improvement of democracy and legal system, it will open up a wider application space for the quick-record technology.

6. Conclusion
In the process of learning Chinese, we should enhance the recognition of words and pay attention to the accumulation of words. First, establish a clear concept of common words, such as "devotion" is an idiom and "the People's Republic of China" is a special word. Secondly, attention should be paid to strengthen the accumulation of commonly used words, the timely classification of words, facilitate the sorting of vocabulary and strengthen memory. This will not appear in the input of the word into a single Chinese input, greatly improve the efficiency of the input. "Bopomofo input method" is such an effective tool to increase literacy and enhance the ability of word recognition. It puts commonly used words that are easy to use into its vocabulary. At the same time, the use of "Bopomofo input method" for Chinese characters input, not only consolidate the learning effect of Bopomofo, but also effectively improve literacy. The ingenious integration of the two has achieved the effect of "moistening things silently" and provided an effective method for the utilization of the resources of "two knowledge".

The vitality of stenography lies in its application, but we also realize that there is still a long way to go in the popularization of computer stenography in China, compared with the developed countries. We hope to have extensive academic and technical exchanges with stenography counterparts from all
over the world, so as to better play the role of Chinese computer stenography in the national economy and people's daily life, and jointly promote the development of international stenography.

Acknowledgments
This paper’s project is On the aesthetic value of dialect elements in Gao Jianqun's works.

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