

## Chapter 10

# An Educational Game Helping Learners to Distinguish Similar Chinese Characters while Minimizing Human Efforts in Game Content Creation

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### **ABSTRACT**

*One of the difficulties in learning Chinese Characters is distinguishing similar characters. Usually similar characters have quite different meanings. This can cause misunderstanding and miscommunication in daily life. It is thus important for students learning the Chinese language to be able to distinguish similar characters and understand their proper usage. In this chapter, the authors propose some educational games to train students to distinguish similar characters. As Computer Assisted Language Learning (CALL) software, the proposed educational games can reduce the workload of teachers for delivering language lessons. By applying Computer Assisted Item Generation (CAIG) technique, a large amount of assessment items can be generated efficiently. The authors propose a method to identify similar Chinese characters such that the game content creation can be made automatic thus minimizing the human efforts. Learners need to understand the concepts rather than memorize the answers in order to perform well in the games. This results in a high replay value for the proposed educational games.*

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## INTRODUCTION

The evolution of computer technologies makes a big impact on traditional learning. The studies on how to use technology in language learning can be referred to as Computer Assisted Language Learning (CALL). The research study by Seong (2005) showed that the learners who used the CALL software had a better academic achievement as compared with the traditional approach. Educational games are involved in making the language learning more enjoyable. However, as Sasikumar (2007) pointed out in his study, the content and the feedback are often pre-defined by the assessor in the CALL software. It takes a lot of human effort to set up the content. The variability of the game content is limited to the available human resources. The replay value of such educational games is low due to this limitation as the learner may memorize the answer easily after playing those games once. In this article, we introduce our educational games designed for users to learn Chinese characters. The game content creation is automatic so that it can minimize human effort to generate the items one by one.

## BACKGROUND

### General approach in learning Chinese Characters

The Chinese language is composed of Chinese characters which are logographs. To master the Chinese language in terms of writing, a learner must first learn about the Chinese characters. There are different aspects in learning the Chinese characters, e.g., understanding the structure of a character, distinguishing similar characters as well as using a character in the correct context.

1. Understand the structure of a character: This is especially important for beginners who start to learn Chinese. They learn about the

structure of a character which is composed of basic components called radicals. For example, the character is 詩 composed of two radicals 言 and 寺.

2. Distinguish similar characters: Some characters look quite similar but with different meanings thus it is important for learners to be able to distinguish these similar characters. Teachers would put together similar characters and ask students to learn the difference. For example, the characters 己, 巳 and 卮 are three different Chinese characters that look very similar. Teachers would ask the learners to remember “己” is fully open on the left side; “巳” is half open on left side; and “卮” is fully closed on the left side.
3. Use the characters in the correct context: This involves looking at the characters in meaningful sentences or idioms. This can help students to understand the proper usage of the characters.

Teachers may offer students various activities in order to help them master each of the above aspects in learning the Chinese characters. For example, the teachers may ask students to copy the Chinese characters many times and hopefully students are able to understand the structure by the repeated handwriting exercises. On the other hand, teachers may provide students fill-in-the-blank exercises for teaching them to use the characters in the correct context. This would involve a lot of efforts from the teacher in order to monitor the progress of individual students. As a result, there is a demand for Computer Assisted Language Learning (CALL) software so that the teacher's burden can be reduced.

### Computer Assisted Language Learning (CALL)

The first Computer Assisted Language Learning (CALL) software was developed as the Plato Project from University of Illinois in 1960 as

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