ABSTRACT

The study was an attempt to investigate the effect of animated etymology on English speakers’ learning of Chinese characters. Twenty-one Chinese language beginners at an Australian university were randomly assigned into three groups using three different types of instructional materials to learn Chinese characters: a) paper-based plain text material with only English meanings; b) paper-based material with English meanings, pictures and static etymological information; and c) CALL material with English meanings, pictures and animated etymological information. The effects of three materials were tested under two task conditions: a) picture-enhanced tasks and b) non-picture-enhanced tasks. Through both within-group and cross-group comparisons, the statistical results indicate that the group using computer-based materials involving animated etymology significantly outperformed those using the paper-based materials with and without illustrated etymological information in both tasks and the advantages of paper-based illustrated etymological information over the paper-based group without such information are limited to the tasks involving pictures.

Keywords: Animated Material, CALL, Chinese Character Learning, Etymology, Multimedia

INTRODUCTION

Logographic characters, such as Hanzi in Chinese, Kanji in Japanese or Hanja in Korean, are notoriously challenging and laborious for foreign language learners, especially those whose first language is a Romanisation-based language. Since the 1980s, a method based on visual mnemonics demonstrating the relevant pictures has become a popular instructional practice for teaching characters among many teachers teaching Chinese as a second language. A series of mnemonic cards for character learning has been published since then (e.g. Mnemonics for 1600 Chinese Characters Schmidt, 2010) which provide detailed information about characters including the etymology, structure, stroke order, pronunciation and meaning, etc. However, such paper-based mnemonic cards have such obvious disadvantages as difficult access and inconvenient indexing. For example, if a teacher wants to demonstrate a particular character emerging in the teaching, it will take a lot of time to find it from a thick stack of cards. More seriously, the overloaded information on a single card makes it difficult to

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be noticed and effectively processed by students within a short time period.

In an attempt to overcome the disadvantages of paper-based cards, a computer-assisted language learning (CALL) animated instructional material for learning Chinese character was designed on the basis of multimedia learning principles and second-language learning theory to integrate multi-information of a character such as picture, semantic notes and etymological information into one single interface. In the study, this animation-based material was compared with two paper-based materials to examine its effects on learning Chinese characters. It was hypothesized that CALL software, which integrates rich etymological information of Chinese characters into animated multimedia materials, would reduce learners’ cognitive load and therefore facilitate Chinese character learning.

LEARNING WITH MULTIMEDIA MATERIALS

The Multimedia Learning Principle and Learning through Animations

According to multimedia learning theory (Mayer, 2001, 2009), three types of cognitive load are identified in terms of the effectiveness of the corresponding instruction and the appropriate load level that will directly affect the learning outcomes: they are Extraneous Cognitive Processing, Essential Cognitive Processing and Generative Cognitive Processing. According to Mayer (2009), Extraneous Cognitive Processing refers to “cognitive processing during learning that does not serve the instructional goal and that is caused by confusing instructional design” (p. 80). Therefore extraneous cognitive processing, in fact, results in an absent or ineffective learning. Essential Cognitive Processing refers to “cognitive processing during learning that serves to represent the essential materials in the working memory and that is determined by the inherent complexity of the materials”. Rote learning, for example, mainly results from essential cognitive processing during learning. Compared with the former two types of cognitive load, Generative Cognitive Processing is more likely to yield successful learning outcomes. It is “cognitive processing during learning that is aimed at making sense of the essential materials and can be attributed to level of motivation”. Generative processing facilitates the organizing and integrating process, which contributes to an in-depth processing of information in the working memory (Craik & Lockhart, 1972). Therefore, the design of instructional materials which directs the learner’s cognitive processing to a model of Generative Cognitive Processing would be the most effective. This idea, in fact, corresponds to the second-language learning theory in terms of integration of language input (e.g. Gass, 1997).

One of the most fundamental principles of multimedia design is the Multimedia Principle which indicates that people learn better from words and pictures than from words alone (Mayer, 2009). Some early studies of multimedia learning provide evidence that illustrations added to words contribute to the construction of learners’ mental models and facilitate learning (Bayman & Mayer, 1988; Mayer, 1987). In particular, semantic illustrations evoke meaningful learning by drawing learners’ attention to the explanatory information and organizing the information into a coherent system of representation (Mayer, 1989; Mayer & Gallini, 1990). Animations, as one popular multimedia design, have played an increasingly important role in learning (e.g. Mayer & Anderson, 1991 cited in Mayer, 2008).

Animation tries to create a link between visuals and language; in other words, it intends to make implicit knowledge explicit. The study by Mayer and Anderson (1991), for example, shows that adding animation to teaching materials results in a critical increase in learners’ understanding of the presented explanation due to the multimedia effect that “people learn better from animation and narration than from narration alone” (cited in Mayer, 2008, p30). Mayer and Moreno’s (2000) experiments in a multimedia science class further reflect the advantages of using animated visual aids is
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