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## Combining e-books with mind mapping in a reciprocal teaching strategy for a classical Chinese course

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### ABSTRACT

Chinese texts contain the essence of traditional Chinese culture and humanistic spirit, although they are obscure and difficult to understand. The integration of e-books into language learning can play a positive role and improve reading comprehension because of the diversified support tools and features of multimedia interaction in e-books. Therefore, this study investigated the teaching of classical Chinese with a combination of e-books, reciprocal teaching, and mind mapping; the effects of this approach on reading comprehension and knowledge sharing were explored. The sample consisted of two tenth-grade classes of a vocational school. Both groups received the reciprocal teaching strategy with mind mapping. The control group received traditional paper books; the experimental group received e-books. Quantitative and qualitative analyses were used in this study. The results were as follows. (1) Classical Chinese reading comprehension aspect: The experimental group performed more satisfactorily than did the control group, indicating that the integration of the e-book resulted in this measurable improvement by enhancing learners' reading comprehension. (2) Knowledge sharing aspect: The pretest and posttest scores significantly differed between the experimental and control groups, indicating that diversified support tools can promote knowledge sharing. (3) Mind-mapping aspect: the scores of the whole structure (color and image), association skills, and the contents of the articles were more satisfactory in the experimental group than in the control group. (4) Learners had a positive attitude toward the combination of e-books, reciprocal teaching, and mind mapping.

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## 1. Introduction

With the continuous advancement of technology, our lives have become increasingly convenient, and teaching methods have also been evolving toward diversity and innovation (Jeng, Wu, Huang, Tan, & Yang, 2010). The development of mobile devices has aided in overcoming the limitations of traditional teaching; mobile devices offer advantages, such as portability, interaction, and immediacy, that have various applications in education (Chang, Lan, Chang, & Sung, 2010; Huang, Kuo, Lin, & Cheng, 2008; Hwang, Yang, Tsai, & Yang, 2009). The increasing use and popularity of mobile devices have led to the development of new approaches and trends in learning.

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In recent years, with the emergence of e-books, numerous studies have investigated the applications of e-books in education from different perspectives (Bennett, 2011; Grimshaw, Dungworth, McKnight, & Morris, 2007; Kang, Wang, & Lin, 2009; Korat & Shamir, 2008; Korat, 2010; Shamir & Shlafer, 2011; Shamir, Korat, & Barbi, 2008; Sung, Chang, Lee, & Yu, 2008; Woody, Daniel, & Baker, 2010). Among them, studies on the integration of e-books in language learning have reported that diversified support tools and multimedia interaction features in e-books could play a positive role in language learning in terms of vocabulary, comprehension skills, and reading (Korat & Shamir, 2008; Korat, 2010; Shamir et al., 2008). Numerous language textbooks in the e-book format have been found to be helpful in enhancing learners' capacities for interpreting texts, understanding words, and applying sentence structures and grammar learning, all of which are vital aspects of language learning (Day & Bamford, 1998; Gehard, 1996).

In Chinese learning, students often find classical Chinese texts obscure and difficult to understand. However, sentences in classical Chinese texts contain the essence of traditional Chinese culture and therefore constitute a crucial part in the cultivation of one's humanistic spirit (Feng, 1994; Ivanhoe, 2001). To read classical Chinese texts, a reader must have exceptional capacities for word association and logical judgment (Huang, 1982), which are similar to those required for mind mapping, which works through free associations with keywords and features such as logical memory (Buzan, 1995). Mind mapping enables learners to have open and critical thinking and to acquire capacities for information integration, reasoning, and creation. This study was conducted by blending mind mapping into teaching activities. By drawing mind maps, learners were encouraged to associate concepts with the interpretation of knowledge, thus enhancing their capacities for critical thinking, integrated thinking, creativity, and reasoning (Davies, 2011; Kokotovich, 2008; Mueller, Johnston, & Bligh, 2002; Sabbah, 2015).

A message becomes information, and this information in an arranged format becomes knowledge (Nonaka & Takeuchi, 1994). Students gain knowledge through learning and understanding. Sharing increases the value and flow of the knowledge, multiplying it further (Huysman & Wit, 2004; Nousala & Miles, 2009). Therefore, if members have higher willingness to share their knowledge, a greater benefit of knowledge would be produced (Bock, Zmud, Kim, & Lee, 2005). The knowledge sharing-mechanism is mainly based on knowledge exchange and communication. Students use structured mind mapping to present the comprehension and concept of knowledge, and mind mapping helps students communicate and exchange their knowledge, which contributes to knowledge transmitting and sharing (Andy, 2004; Leonardi, 2017; Tang & Chiang, 2009). Moreover, because each person has its own cognitive process, students can be able to jump out of original knowledge categories through knowledge sharing and then create new knowledge and ideas (Drucker, 1999).

Considering that teaching strategies used in the course of learning activities affect learners' selection, acquisition, and construction of information, learners' behaviors and thinking can also be affected during the course of learning (Weinstein & Mayer, 1986). Thus, teachers should provide learners with instructional scaffolding and help the learners to improve their reading in a gradual manner with the ultimate aim of enhancing their comprehension skills. The following four main teaching strategies of reciprocal teaching were chosen as methods to be used in the process of classical Chinese teaching: predicting, questioning, summarizing, and clarifying (Salyer, 2015; Blanch Gelabert, Corcelles Seuba, Duran Gisbert, Dekhinet, & Topping, 2014). By using these four main strategies, learners can obtain clear instructions during their reading, and with appropriate guidance and assistance, their prior knowledge can be invoked to facilitate their mastery of key points in texts. During this process, details scattered throughout texts can be integrated and summarized, thus helping learners in their development of metacognition and relevant skills (Nina, Nadine, & Joachim, 2013; Rashina, Annette, Shiree, Bridget, & Jason, 2014).

This study integrated an e-book learning system into the teaching of classical Chinese reading; the immediate and interactive multimedia support services in the e-book learning system were able to provide learners with rich, diversified learning content and teaching activities. In terms of the design of teaching strategies, reciprocal teaching was used as the basic method; it was complemented by scaffolding oriented mind mapping. This helped learners develop their capacities for metacognition, critical thinking, and reading comprehension. This study combined multimedia e-textbooks with reciprocal teaching and mind mapping for classical Chinese teaching; the main purpose of this study was to investigate the effects of applying this combination on learners' capacities for reading comprehension and knowledge sharing.

## 2. Literature review

### 2.1. Applications of reciprocal teaching in reading

Reciprocal teaching is a common strategy for teaching reading. Reciprocal reading was proposed by Palincsar and Brown (1984) to promote the dialog between teachers and learners who could then establish the text together. By using instructional scaffolding, teachers can help learners with their reading in a gradual manner. In dialog with teachers, learners can learn to apply the four reading strategies of predicting, questioning, clarifying, and summarizing to actual reading scenarios, thus enhancing their capacities for reading comprehension (Nina et al., 2013; Palincsar & Brown, 1984; Rashina et al., 2014; Teele, 2004; Yang, 2010).

In recent years, numerous studies have been conducted on the applications of reciprocal teaching in different fields, involving research participants from all walks of life. Most academic studies on reciprocal teaching have examined English teaching; some information science publications have studied Spanish teaching and German teaching. The greatest number of past research subjects were primary school students; smaller numbers of preschool students, middle school students, and university students have also been studied. The research mostly focused on reading comprehension, writing, reading fluency,

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