

Introduction

As university admission rates reveal a climbing trend in Taiwan, many researchers have noticed that the academic performance of university students has failed to meet basic requirements in English comprehension. Therefore, helping college students to achieve required English competencies has become one of the most significant and emergent needs in Taiwan. Most universities in Taiwan have already implemented a graduation threshold to ensure that each student will graduate with a certain level of English competency. Such an implementation of a graduation threshold highlights the need for remedial instruction and extended learning because students are not meeting the higher academic expectations.

Implementing an English competency graduation threshold poses several challenges for school administrators and teachers (Huang, 2010). Firstly, the large class sizes and the wide range of students' readiness levels can make choosing an appropriate curriculum and instruction difficult (Tomlinson, 2003). Secondly, limited instructional hours of the English class for non-English major students in universities contribute to ineffective learning (Huang, 2010). Thirdly, many university students express the need for a more effective and efficient method of learning English (Huang, 2010). Current class materials and instructional strategies neither satisfy the students' readiness level nor promote an improvement of their English reading comprehension. English instructors in Taiwan place emphasis on correcting students' grammar and increasing vocabulary size during reading instruction. In addition, students in Taiwan are seldom taught to employ

reading strategies to foster their reading comprehension (Liu, Chen, & Chang, 2010). Therefore, researchers suggest that schools provide additional support and resources to augment regular curriculum and instruction. This study chose university freshmen as participants as they usually need a period of adjustment to become more active and progressive learners, as well as scaffold and extend their learning experience beyond the classroom (Fry & Ketteridge, 1999).

In response to Huang's (2010) claim for alternative English reading approach in remedial context, several studies have explored using concept mapping as learning assistances to enhance the reading comprehension of English as a Foreign Language (EFL) students. Concept mapping, a visual tool (also known as a graphic organizer), can help challenged readers understand their reading material by transferring the textual content into concrete images (Liu et al., 2010). Meanwhile, these images aid students to integrate messages systematically so that they can capture ideas of a reading passage without investing too much time. Concept maps also allow students to create individual understanding of their reading by using and varying fonts, lines, and images. Their capacity for enhancing English reading comprehension have been confirmed, particular for connecting new ideas to prior knowledge (Williams, 2004), encouraging students to monitor their own reading process (Liu et al., 2010), engaging learners in a dynamic process that develops meaningful comprehension (Cassidy, Valade, & Garrett, 2010) and providing alternative and creative ways to represent reading comprehension (Majid & Sadegh, 2009).

However, research on the effects of concept mapping for reading ability and for learners of various linguistic competencies are still varied (Liu et al.,