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Investigating EFL Learners' Reading Processes of Cognitive Activities in an English Reading Remedial Program

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Abstract: Reading comprehension is fundamental for EFL (English as a Foreign Language) college students; nevertheless, many EFL students struggle with reading. This study aims to (1) equip students with reading strategies through completing a series of reading tasks in a learning system, and to (2) explore students' reading processes. Students' reading processes have been put into six categories: remembering, understanding, applying, analyzing, evaluating, and creating. After completion of the remedial English reading program, the EFL college students were able to apply reading strategies and competently engage in reading activity.

Keywords: Reading instruction, concept mapping, reading strategy, online learning

1. Introduction

EFL college students are expected to have English reading strategies in order to complete reading assignments. However, studies have shown that many EFL college students have difficulty with reading comprehension. These EFL students do not have the necessary reading strategies, or fail to apply strategies effectively; consequently, they are under-prepared for higher education. Two major causes have been identified explaining why EFL students were unable to acquire reading strategies from teachers to increase their reading comprehension (Sung, Chang & Huang, 2008). First, it is reported that teachers do not have proper methods and resources to teach reading strategies explicitly. Second, reading instruction takes a significant amount of time and energy for teachers to demonstrate how to apply reading strategies efficiently to each student. Thus many college students did not receive explicit training in reading strategies from their teachers before entering further education.

To enhance students' reading comprehension, reading strategy training should be incorporated into reading instruction, and helps students process information more efficiently. On the contrary, reading strategy training is seldom implemented in the classroom, since it is intricate and many teachers find it burdensome. Often teachers cannot afford the time and energy to offer reading strategy training to students. Large class sizes in Taiwan keep teachers from providing individualized support and guidance to students. Students have little opportunity to learn how to employ reading strategies effectively to improve their reading comprehension; consequently, many Taiwanese students have difficulties when they are reading on their own. To enhance college student reading comprehension to meet course requirements, researchers indicated that reading strategies should be employed (Kim & Anderson, 2011). It is suggested that reading strategies should be taught explicitly for under-prepared students to enhance their reading comprehension, since the lack of reading strategies can interfere with students' learning in their domain knowledge.

Responding to the need for learning reading strategies, many studies have attempted to explore the nature and effectiveness of reading strategies. Several reading strategies have been advocated to improve student reading comprehension (Sung, Chang, & Huang, 2008). Those strategies include: (1) summarizing texts (e.g., identify main ideas), (2) self-

questioning, and (3) text enhancements (e.g., graphic and conceptual representations). Studies on employing reading strategies have highlighted the importance of conceptual representations (e.g., concept mapping and word clouds). Concept mapping and word clouds have been applied to reading activities to help improve student learning and reading comprehension. A conceptual map is a graphical map which visualizes concepts and relationships among concepts (Novak, & Canas, 2008). Concept mapping has been widely reported as positive in the facilitation of student language learning and reading (Hwang, Wu, & Ke, 2011; Liu, Chen, & Chang, 2010; Villalon & Calvo 2011). Villalon and Calvo (2011) stated that concept maps "have typically been used in reading activities to aid students' comprehension of texts" (p. 16).

In previous studies, researchers have focused discussion on the effectiveness of conceptual representations. Few studies have concentrated on the cognitive processes at work when employing conceptual representations in EFL reading instruction (Liu et al, 2010). Also, the process how students employ conceptual representations and how conceptual representations facilitate student reading comprehension is still unclear. Moreover, Computer-Supported Collaborative Learning (CSCL) environments serve as alternative approaches to helping co-construct knowledge and assist students with the self-monitoring of their own reading process. In a CSCL environment, a learning system serves as a tool to facilitate student collaborative reading. Students can easily employ concept mapping with the assistance of concept mapping software (Novak & Canas, 2008). It has been suggested that more empirical evidence should be collected to examine the pedagogical benefits of using conceptual representations in CSCL environments.

2. Design of the remedial reading course and the reading system

2.1 The remedial reading course

The main purpose of this study was to explore EFL student reading processes through an online reading system, and to investigate how conceptual representations facilitated student cognitive processes. During a 12-week remedial reading instruction program, students were required to apply conceptual representation strategies to complete reading tasks both in classes and in the online reading system. The students learned how to apply reading strategies through the following reading steps (e.g., remembering, understanding, applying, analyzing, evaluating, and creating) which were based on a revision of Bloom's taxonomy to comprehend reading materials (IOWA, 2012). The design of reading tasks aimed to raise student awareness of how to apply conceptual representations as a reading strategy. The students were trained to use conceptual representations to understand the macrostructure of articles, and to retain the given content. After the 12-week remedial reading instruction program, the students' post-test scores were calculated to provide a quantitative measurement.

2.2 The online reading system

In this study, the online reading system (ICan) helps the teacher to monitor student reading processes and evaluate their employment of reading strategies. The teacher can demonstrate how to read an article and employ reading strategies with scaffolding to improve students' reading comprehension. The reading system was designed by a research team where this study is conducted. In the system, the students have to read six articles and complete assigned reading tasks. The students can draw their own concept maps and compare those with computer-generated concept maps in the online reading system. In addition, the online reading system makes it possible for the teacher to monitor students' reading process and give students feedback based on their actions and products (i.e., concept maps, and summary writing). The remedial reading instruction program is designed for students to have the opportunity to practice concept mapping in a meaningful and interactive learning setting.

Students can observe the products of their peers and learn from each other using the reading system.

3. Conclusion

To boost EFL college students' reading comprehension and reading skills, the online reading system facilitates students to effectively engage in reading tasks and develop awareness of conceptual representations in their reading processes. This reading system offers students more opportunities to apply reading strategies into reading tasks. Moreover, with the integration of online learning and concept mapping, EFL students received extra support both from the teacher and the system. In this study, the students were aware of taking the advantage in their reading processes.

A paired-sample t-test was used to testify to whether conceptual representation training is an effective strategy to enhance reading comprehension. A significant difference ($t = 2.585$, $p<.05$) between the pre-test (Mean = 185.76, Std. Deviation = 42.17) and post-test (Mean = 216.22, Std. Deviation = 41.96) conditions was identified. This result highlighted how student reading comprehension improved after the implementation of conceptual representations. Also a one-way ANOVA test was conducted to compare the difference in mean performance (scores) among the less-proficient group, and more-proficient group. The different groups had significant influence on the improvement of the post-test ($F= 7.444$, $p<.05$). Scheffe post hoc tests showed that the less-proficient group was significantly different from the more-proficient group (Mean Difference = 25.21, Sig. = .006). These results corresponded to previous research that less-proficient students benefit more from conceptual representations training (Liu et al., 2010).

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