Design of a Web-Based Sentence Analysis System to Support EFL Reading Instruction

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ABSTRACT
The purpose of this study was to investigate the effects of an on-line Cumulative Sentence Analysis (CSA) instruction on university engineering students’ English reading comprehension. Within the framework of CSA instruction, the reading comprehension process can be divided into six steps: identifying finite verbs, finding key words, separating clauses, identifying subjects and main verbs, adding words stepwise, and translating the sentence. The results showed that the experimental group achieved a higher level of reading comprehension performance following the instruction. Inter-group comparison also revealed that the experimental group significantly outperformed the control group in the post-test, while no difference was found between these groups in the pretest. The findings clearly demonstrated that on-line CSA instruction is an efficient and feasible approach to helping engineering students cope with their problems of reading English texts.

Keywords: Cumulative Sentence Analysis (CSA) Instruction, EFL Reading Strategy, Reading Comprehension, Syntactic Parsing

INTRODUCTION
Students’ reading ability has considerable impact on academic performance. Empirical studies have shown that students with proficient reading ability typically outperform the students with less-proficient reading skills (Lan, Sung, & Chang, 2009). It is also undeniable that reading creates important opportunities to promote the acquisition of a foreign language (Salinger, 2003). Previous studies have revealed that English reading comprehension ability has been regarded as essential in English instruction (Hsu, Hwang, & Chang, 2010). Especially for engineering students, reading in English is the core competence to absorb professional knowledge in academic settings and their future career, because many authentic textbooks and information about advanced technology have been published in English. However, it has been recognized that there is still a considerable number of engineering students struggling with reading in English in Taiwan. Smith (2011) mentioned that many English teachers in Taiwan...
would agree students who are not English majors are generally not highly motivated to learn English. In order to facilitate students’ ability of reading scientific and technical publications, it is suggested that specific reading strategies should be taught to the students so that they can solve their reading problems on their own.

Of special interest for research on web-based environments to support reading is the correlation between syntactic knowledge and reading comprehension. In L2 research, Alderson (2000) states that the knowledge of syntactic structure plays a significant role in second language reading. Reading requires syntactic knowledge because understanding grammar offers insight into the way writers construct text (Cajkler & Dymoke, 2005). To motivate our work, we mostly focus on the role of syntactic parsing in reading comprehension. We argue that some learners’ reading comprehension difficulty has been caused by their relative understanding of the sentences they engage. Theoretically, if a reader can’t understand the meaning of individual sentences, they would also encounter considerable difficulty with comprehension at text level. The purpose of this study is therefore to present a framework of Cumulative Sentence Analysis (CSA) instruction to support EFL students’ English reading comprehension. In what follows, some studies related to computer-assisted reading instruction and the relationship between syntactic parsing and reading comprehension are first reviewed.

LITERATURE REVIEW

Studies Related to Computer Assisted Reading Instruction

In order to help English as a foreign language (EFL) learners to foster their reading comprehension performance, numerous researchers have devoted themselves to develop on-line reading instruction. For example, some authors have used vocabulary recycling (Johnson & Hef fernan, 2006; Tozcu & Coady, 2004), or advance organizers with animation (Lin & Chen, 2007). In their study, Sung, Chang, & Huang (2008) provided an integrative computer-supported reading instruction system with multiple strategies. Sung, et al. (2008) identified several advantages of combining computers with reading strategy instruction. They show how computers can provide immediate individualized feedback to solve students’ problems, allow students to control their own learning pace, relieve teachers’ pressure of preparing materials, offer practical opportunities, and increase learners’ motivation through multimedia presentation (p. 1553). In a study conducted by Lan, et al., (2009), the researchers described a computer-assisted reciprocal early English reading (CAREER) system based on the rationale of balanced reading structure, immediate and specific feedback, and reciprocal learning scenario. The CAREER system provided cooperative learning opportunities and has successfully benefited young learners of English to improve their reading skills. Furthermore, Chen, Chen, & Sun (2010) reported on an interesting approach for improving EFL students’ reading comprehension by using a Tag-based Collaborative reading learning System (TACO) in which Web 2.0 Internet social tagging techniques were applied to provide a collaborative environment for reading English. The results show a significant reading improvement of the participants after the experimental course.

The review of the literature shows several merits of on-line reading instruction. For example, computers can provide personal feedback for learners to identify their reading problems. With the use of a computer system, learners can self-regulate their learning pace, teachers’ preparation for teaching materials can be reduced, more opportunities for exercises can be offered, or students’ learning motivation can be elevated through the use of multimedia materials. In other words, learners are offered more flexibility, because they can choose adaptive time, space and materials of learning.
Utilizing Adaptive and Intelligent Systems for Collaborative Online Learning
[www.igi-global.com/chapter/utilizing-adaptive-and-intelligent-systems-for-collaborative-online-learning/140741?camid=4v1a](www.igi-global.com/chapter/utilizing-adaptive-and-intelligent-systems-for-collaborative-online-learning/140741?camid=4v1a)

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