A System for English Vocabulary Acquisition based on Code-Switching

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ABSTRACT

Vocabulary plays an important part in second language learning and there are many existing techniques to facilitate word acquisition. One of these methods is code-switching, or mixing the vocabulary of two languages in one sentence. In this paper the authors propose an experimental system for computer-assisted English vocabulary learning in context using a code-switching based approach for Japanese learners. First they introduce the CO-MIX system, an English vocabulary teaching system that uses code-switching for vocabulary acquisition. Next, they show how they utilize incidental learning techniques with graded readers to increase language proficiency. The authors present the system architecture, underlying technologies, and evaluate the system’s performance through user interaction with both a baseline and the proposed system by using a semantic differential scale. They also perform separate factor analysis of participants’ attitudes for both systems, an analysis of users’ mistakes and compare users’ language tests scores. Finally, the authors discuss the evaluation results and further development of this technology.

KEYWORDS

Code-Switching, E-Learning, Intelligent Tutoring Systems, Learning in Context, Natural Language Processing, Second Language Acquisition, Vocabulary Learning

INTRODUCTION

In the modern world, English has become a global language spoken in over sixty countries. English language proficiency is essential for cross-cultural communication and the necessity to know the language is constantly growing. This necessity leads to the problem of finding qualified teachers that can give students a chance to practice their language skills. Vocabulary is the most essential part of second language (L2) learning (Ling, 2010), and recently has become a topic of discussion for researchers, school curriculum designers (Jun Zhang & Annual, 2008; Nation, 2001) and others involved in L2 learning.

The problem of vocabulary acquisition is one of the most significant barriers to mastering foreign languages. In a spoken language, about 1,800 words constitute about 80% of the spoken corpus (McCarthy, 2004). Because some frequent words are often repeated, it is thought that learners can understand a large proportion of foreign language conversation with a relatively small vocabulary.
(McCarten, 2007). The importance of vocabulary is explained by Wilkins, who states: “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (Wilkins, 1972). However, previous research also suggests that although second language learners need to know a large number of words as a long-term goal, this is not an essential short-term goal (Nation, 2001).

A variety of approaches to vocabulary learning have been presented, but none have been proved to be the most effective way of studying language units. The way that new words are presented to students usually depends on teachers’ individual beliefs and teaching strategies. New possibilities for vocabulary acquisition can be found in the code-switching phenomenon, in which a word from one language is used in a sentence in which the grammatical structure belongs to another language. Code-switching presents a chance for students to think about new foreign language words in a deeper manner and offers the potential for expansion of the second language vocabulary. Recently this technique has become a target of interest for researchers in different domains, such as psychologists (Macaro, 2001), linguists (Coady & Huckin, 1997) and computer scientists (Labutov & Lipson, 2014).

Our Contribution

In this paper we propose CO-MIX system, an innovative learning application that can give students a chance to expand their lexical knowledge and utilize the advantages of the code-switching phenomenon. To the authors’ best knowledge there exists no robust methodology or teaching application for code-switching based vocabulary acquisition in e-learning. In addition, the code-switching effect on second language vocabulary acquisition has not yet been studied in the field of computer science. The novelty of this research comes from the fact that we present a code-switching based vocabulary acquisition method for the first time in the context of an e-learning system, with evidence to support the effectiveness of our method. We describe the design of the CO-MIX system, and discuss the results of our experiments to evaluate the usefulness of the presented learning application in learning L2 vocabulary.

Another novelty of this contribution is found in combining the phenomenon of code-switching with several other existing methods of teaching vocabulary (see Background section) that have been proved to be effective, and implementing them in e-learning software to facilitate second language word acquisition. An e-learning application should be equipped with a function to encourage users to actively participate in a learning task or increase their motivation to study. Therefore, we utilize the results of our previous study regarding the method of increasing user engagement presented by Mazur et al. (Mazur, Rzepka & Araki, 2011) by introducing various language quizzes to strengthen users’ motivation. In this paper we measure users’ attitudes towards the proposed system to prove that it is well accepted by the users and properly designed for applying code-switching method in an e-learning system. Moreover, with research results gathered through semantic differential method (described in subsection Research method) we provide evidence suggesting that the users find presented research relevant and useful. Another issue discussed in this work is the problem of automatic creation of study materials for second language teaching. We follow the general idea of an exercise generator presented by Ginsburg (2012) by developing our method for assessing the vocabulary proficiency level of the user with high frequency word lists. The assessment results are used by our system to choose the exercise appropriate to the user’s language ability.

Research Goals

The goal of the current research is to present a new vocabulary learning method for e-learning systems that employs code-switching phenomenon. To our knowledge, there has been no research conducted so far on this topic, so investigating how code-switching could be utilized in second language vocabulary
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Re-Enacted Affiliative Meanings and "Branding" in Open and Distance Education
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