

Effect of a Chatbot-Assisted Adoption of Self-Regulated Spaced Practice on Students' Vocabulary Acquisition and Cognitive Load

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Abstract : In foreign language learning, vocabulary acquisition has consistently posed challenges to learners, especially for those at lower levels. Conventional approaches often fail to promote vocabulary learning and ensure engaging experiences alike. The emergence of mobile learning, particularly the integration of chatbot systems, has offered alternative ways to facilitate this practice. Chatbots have proven effective in educational contexts by offering interactive learning experiences in a constructivist manner. These tools have caught attention in the field of mobile-assisted language learning (MALL) in recent years. This research is conducted in an English for Specific Purposes (ESP) course at the A2 level of the CEFR, designed for non-English majors. Participants are first-year Vietnamese students aged 18 to 20 at a university. This quasi-experimental study follows a pretest-posttest control group design over five weeks, with two classes randomly assigned as the experimental and control groups. The experimental group engages in chatbot-assisted spaced practice with SRL components, while the control group uses the same spaced practice without SRL. The two classes are taught by the same lecturer. Data are collected through pre- and post-tests, cognitive load surveys, and semi-structured interviews. The combination of self-regulated learning (SRL) and distributed practice, grounded in the spacing effect, forms the basis of the present study. SRL elements, which concern goal setting and strategy planning, are integrated into the system. The spaced practice method, similar to those used in widely recognized learning platforms like Duolingo and Anki flashcards, spreads out learning over multiple sessions. This study's design features quizzes progressively increasing in difficulty. These quizzes are aimed at targeting both the Recognition-Recall and Comprehension-Use dimensions for a comprehensive acquisition of vocabulary. The mobile-based chatbot system is built using Golang, an open-source programming language developed by Google. It follows a structured flow that guides learners through a series of 4 quizzes in each week of teacher-led learning. The quizzes start with less cognitively demanding tasks, such as multiple-choice questions, before moving on to more complex exercises. The integration of SRL elements allows students to self-evaluate the difficulty level of vocabulary items, predict scores achieved, and choose appropriate strategy. This research is part one of a two-part project. The initial findings will determine the development of an upgraded chatbot system in part two, where adaptive features in response to the integration of SRL components will be introduced. The research objectives are to assess the effectiveness of the chatbot-assisted approach, based on the combination of spaced practice and SRL, in improving vocabulary acquisition and managing cognitive load, as well as to understand students' perceptions of this learning tool. The insights from this study will contribute to the growing body of research on mobile-assisted language learning and offer practical implications for integrating chatbot systems with spaced practice into educational settings to enhance vocabulary learning.

Keywords : mobile learning, mobile-assisted language learning, MALL, chatbots, vocabulary learning, spaced practice, spacing effect, self-regulated learning, SRL, self-regulation, EFL, cognitive load

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