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Single Loop or Double Loop Learning: English Vocabulary Learning Performance and Behavior of Students in Situated Computer Games with Different Guiding Strategies

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Abstract

In this study, a situated computer game was implemented for engaging students in English vocabulary contexts. Furthermore, two test-item guiding approaches, the cloze and multiple-choice guiding strategies, were embedded in the game to serve as guidance for the students. To investigate the students' performance and behaviors of learning English vocabulary with different guiding strategies, two classes of students were included to learn with the two approaches. The experimental results showed that the students using the game with the cloze guiding strategy had significantly better learning achievement with higher cognitive load than those learning with the multiple-choice guiding strategy. Moreover, from the behavioral pattern sequential analysis, it was found that the game with cloze item guidance engaged the students in both single loop situated learning (i.e., repeatedly trying to deal with the same set of learning tasks) and double-loop situated learning (i.e., trying to deal with the same learning tasks after reviewing relevant materials and adjusting their learning strategies). On the other hand, those using the game with multiple-choice item guidance only performed single-loop situated learning during the gaming process, meaning that they seldom reviewed relevant materials or adjusted their learning strategies before trying to solve the same learning tasks again. The findings imply that it is worth considering different test-item guiding approaches when developing English vocabulary games for future studies and applications.

Keywords: teaching/learning strategies, elementary education, human-computer interface, interactive learning environments, single/double loop learning

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