



## **Progression of Learners' Mental Model in Performing a Complex Learning Task: The Effect of Two Problem-Solving Strategies**

**Aubteen Darabi**

[adarabi@lsi.fsu.edu](mailto:adarabi@lsi.fsu.edu)

The Learning Systems Institute (United States)

### **Abstract**

Cognitive Load Theory (CLT) recommends instructional strategies for enhancing learners' performance. As one of those strategies, worked-out examples have been contrasted with conventional problem solving in many studies investigating their effectiveness on learners' performance. In this study, the author investigated the effect of these strategies on the progression of learners' mental models. A group of senior chemical engineering students were randomly assigned to a simulated problem solving task using the two instructional strategies. One group used the product-oriented worked examples designed according to the principles of cognitive load theory. The other group used the conventional problem solving method analyzing the problem based on the available information and trying to develop a solution to it. The progression of participants mental models were measured throughout the experiment. Participants in both strategies showed considerable progression of mental models. However, the progress for the worked example group was significantly better.