

Enhance Engineering Learning Using Cognitive Simulator

Authors : Lior Davidovitch

Abstract : Traditional training based on static models and case studies is the backbone of most teaching and training programs of engineering education. However, project management learning is characterized by dynamics models that requires new and enhanced learning method. The results of empirical experiments evaluating the effectiveness and efficiency of using cognitive simulator as a new training technique are reported. The empirical findings are focused on the impact of keeping and reviewing learning history in a dynamic and interactive simulation environment of engineering education. The cognitive simulator for engineering project management learning had two learning history keeping modes: manual (student-controlled), automatic (simulator-controlled) and a version with no history keeping. A group of industrial engineering students performed four simulation-runs divided into three identical simple scenarios and one complicated scenario. The performances of participants running the simulation with the manual history mode were significantly better than users running the simulation with the automatic history mode. Moreover, the effects of using the undo enhanced further the learning process. The findings indicate an enhancement of engineering students' learning and decision making when they use the record functionality of the history during their engineering training process. Furthermore, the cognitive simulator as educational innovation improves students learning and training. The practical implications of using simulators in the field of engineering education are discussed.

Keywords : cognitive simulator, decision making, engineering learning, project management

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