

Comparing Low-Fidelity and High-Fidelity simulations from a pedagogical perspective

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Introduction

This conference paper examines the comparison of Low-Fidelity and High-Fidelity simulations from a pedagogical perspective. The goal of the research is to find out which type of simulation is usable from a pedagogical point of view. Many studies have shown simulations to be a useful tool. When considering the feasibility of simulator-based training there are many benefits: the safe environment, reduced training costs, environmentally friendly and fast access to the exercise. In maritime industry, simulations are in a significant role. The use of simulations is important, especially from an environmental point of view. Pedagogy is a crucial factor in the utilization of simulations. The effectiveness of using simulations is based on how well knowledge can be transferred from simulations to real life. Studies have indicated that simulation exercises must always have a goal or target.

Materials and methods

The backbone of this research consists of a comparison of 11 different studies. These studies examined the significance of LF and HF simulations from a pedagogical perspective, with a primary focus on their learning effects. The studies were identified through searches conducted in the Scopus and Google Scholar databases over a span of approximately 1.5 years. The selection criteria prioritized factors such as the original publication date of the articles (excluding publications older than 10 years) and the comprehensive coverage of the subject under investigation.

Results

In the studies compared within the research, the majority (72.7%) yielded results indicating no significant difference in learning outcomes between LF and HF simulations. In practical terms, the learning outcomes of LF and HF simulations are similar.

The research data indicates that there is not much difference between Low-Fidelity and High-Fidelity simulations when comparing from a pedagogic view. Especially in healthcare, High-Fidelity simulations can even weaken learning outcomes. The results of this conference paper have implications for other fields as well. In maritime industry the use of lighter simulations could bring efficiency and reduce environmental impact.

Implications on sustainable maritime operation

The maritime industry is a good example of an industry where the use of simulation is beneficial. Expensive equipment, which is rarely available for training, can be cost-effectively replaced by simulations. In the maritime sector, it is generally talked about its environmental effects. The effective use of simulations contributes to the development of the maritime industry to become more environmentally friendly. Thus, in the maritime industry, the use of simulations, especially for educational purposes, is significant.