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ABSTRACT

Cognitive and Affective Outcomes of Digital Game-based Learning: Seeking for Evidence-Based Design Principles

According to recent meta-analyses digital learning games can be effective learning solutions (Wouters et al., 2013; Clark, Tanner-Smith, & Killingsworth, 2016), but surprisingly the analysis conducted by Wouters et al. (2013) revealed that digital game-based learning (DGBL) does not engage and motivate students more than traditional instructional methods. This is against our common beliefs about motivational power of games and likely rooted on conceptual considerations and myths instead of robust empirical research. On the other hand, it has been argued that the poor integration of instructional and game design principles is common and undermines the usefulness of DGBL. The problem is that game-based learning as a research field is still in its early stages and lacks a scientifically proven theory that guides the research efforts. Thus, it is crucial to investigate how different characteristics of games influence on cognitive and affective outcomes of DGBL and to identify scientifically proven design principles for DGBL. In this talk we will explore the science of DGBL in a critical but also in a pragmatic way. We will consider the ingredients of DGBL through theoretical lenses and several scientific studies particularly in the area of game-based math education. The topics of discussion will include DGBL design principles, cognitive and affective outcomes of DGBL, and DGBL analytics. Overall, the attendees will gain a mindset for evaluating DGBL solutions and interventions more critically.
