

# Testing a digital serious game on statistics learning with future school and high school teachers

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**Abstract:** This paper presents the pedagogical design and evaluation of a digital serious game, BiasedDistributions, aimed at teaching central tendency measures to students enrolled in undergraduate and master's education programs, in a more amusing, interactive and engaging way. The game's design is grounded in constructivist learning theory and incorporates elements of experiential training in order to address the challenges often faced by education students in grasping statistical concepts. We describe the design of the game, the methodology applied in the experiment and the results of two rounds of testing with a total of n=56 participants within an online learning institution. We evaluate increase in knowledge, player experience, and actual game usage collected via learning analytics. The results show a moderate increase in knowledge, high user engagement and reveal several usability problems that can be addressed in future game versions, highlighting both the promise of our approach and the importance of validating games to diagnose and improve their effectiveness.

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