

# Gamification Experience in STEM Learning Environments for Higher Education Students

Calvo Prieto, L. F.; Herrero Martínez, R.; Santamarta Llorente, M.; Paniagua Bermejo, S.

University of León (Spain)

## Abstract

Students of engineering science and technology, in the field of Higher Education, usually take on their subjects, by the elaboration of the teaching plans and the obsolete interdepartmental structure of our Universities, in a fragmented way (working with the subjects like disconnected parts); that is, without considering the relationship that exists in the real world between them all.

In order to avoid this conflict, during this investigation, a board game has been designed and created that allows adapting the STEM educational domain in the Higher Space to dynamic characteristics of playful activities; all in order to build a gamified environment during the learning process.

The effect of the use of this board game on both, academic satisfaction and academic qualification of the engineering student has been assessed, through a planned, organized, directed and systematic research process, based on the hypothesis that the use of this game allows, not only acquire knowledge, but ability to integrate knowledge of subjects of a STEM environment. The analysis of the results verified the starting hypothesis by endorsing the positive effect of the use of gamification elements in STEAM environments.

**Keywords:** board game; engineering teaching; game based learning; learning process; teaching resources.