

## Gamified Physics Classes, at Higher Education

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### Abstract

*Gamification is defined as the use of game design elements in a non-game context [1]. Despite the fast spreading throughout the corporate and business world [2], few applications have been done in the Higher Education. Gamification in Education is a methodology intending to motivate students to acquire academical knowledge and soft skills, while keeping them engaged with the learning process. This study reports the proposition of a gamified class about electric resistors, the first of a 12-topic-discipline offered to 2nd year students in Physics and Engineering. Moodle was elected as the platform to gamification due to its native resources and the easy access to plugins. The storytelling was based on the daily use of electromagnetism, at home. Adopting a Flipped Classroom methodology and a narrative based on the household power consumption, traditional contents about resistors and electricity were given. In order to customize and enrich the class, some optional contents were made available. The access to the laboratory was constrained by approval in 4 graded quizzes. Every activity was acknowledged by virtual coins, to be converted in benefits, and points, to rank students. Considering that our aim was not to prevent students having access to the laboratory but prepare them to get a high performance, those students not approved in the quizzes were given a second call. In case of systematic failure, students could attend to laboratory activities, however receiving a grade equal zero. This way, students had the opportunity to learn more about the subject and solve doubts directly with the teacher, however receiving a penalty by their previous failure. The overall student's acception was excellent and they reported that gamification can be a more engaging methodology than traditional classes, further developing soft skills and academic knowledge. The opportunity to perform the experiment was considered essential, and could not be substituted by videos or texts, since new doubts and concerns are pointed out during the practice, when the teacher is present. Gamification can be a methodology able to engage students, giving them more than just information, but also soft skills, inserting them into an environment where collaboration, competition, proactivity, communication skills, team work, time management and responsibility are required. Knowledge and personal development are the aims, and students deserve to be enjoyed.*

**Keywords:** *Active learning, higher education, gamification, physics.*

### References

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