

## Teaching Innovation in a University Degree on Automotive Engineering

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### Abstract

In this work we implement a flipped classroom methodology in two engineering courses, both with a heavy weight given to problem solution. In this sense the theoretical background is given to the students in short videos. In class, the students are first evaluated by a test, in order to encourage them to see the videos. In one course the test is gamified, while not in the other, so that the different level of encouragement can be assessed. The students will then be presented with conceptual problems that help them think and discuss about the theoretical background. Finally, problems are done in theoretical sessions. The aim of this methodology is to facilitate a deeper learning of the needed theoretical background, an issue in which students struggled due to lack of motivation. The results of the methodology are evaluated by comparing exam results, by interviewing the students on their satisfaction regarding the teaching material and active learning activities, as well as their perceived learning (we use SEEQ and KPSI) and subjectively by the teacher.

**Keywords:** Active learning; creativity skills; flipped classroom; transversal skills; critical thinking